

**THE EFFECTIVENESS OF DISASTER RISK REDUCTION STRATEGIES IN  
PROMOTING HOUSEHOLD FOOD SECURITY IN PALAM SUBCOUNTY,  
KATAKWI DISTRICT, UGANDA**

**BY**

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**12/MMSPPM/27/040**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF MANAGEMENT SCIENCE  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A  
MASTER'S DEGREE IN MANAGEMENT STUDIES (PROJECT PLANNING AND  
MANAGEMENT) OF UGANDA MANAGEMENT INSTITUTE**

**JANUARY, 2016**

**DECLARATION**

I, PATRICK OKWANY, declare that this dissertation is an original work and has not been submitted for the award of a degree in any university or institution of higher learning for academic purposes.

**Signature** .....**Date**.....

**APPROVAL**

This dissertation entitled “The effectiveness of disaster risk reduction strategies in promoting household food security in Palam sub county, Katakwi district, Uganda” was conducted under my supervision and is submitted for examination with my approval.

Signed ..... Date.....

**MR. GODFREY MUGURUSI**

Signed..... Date.....

**MR. INNOCENT NUWAGABA**

## **DEDICATION**

This research work is dedicated to my late mother Jacinta Akech, my father Okello Emmanuel plus my beloved wife Esther Akullo and my child Austin Adrian.

## **ACKNOWLEDGEMENT**

This is to express my heartfelt gratitude to all those who supported me academically and spiritually, enabling me to accomplish this piece of work.

I am extremely grateful to my supervisors Mr. Innocent Nuwagaba, Mr. Godfrey Mugurusi and Professor Benon Basheka for the immense advice and guidance that they rendered to me in the course of developing my dissertation.

I also wish to thank all Uganda management institute consultants and staff for their cooperation with me during the course of this study.

I would also like to appreciate the support I received from Mr. Peter Omoding and Mr. Patrick Opio during collection of data for this dissertation.

Lastly but not least, I would like to thank all my respondents for their open minded willingness in responding to the questions.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

ADPC	Asian Disaster Preparedness Center
ASB	Arbeiter Samariter Bund
CCA	Common Country Assessment
CRED	Center for Research and Epidemiology of Disasters
DFID	Department for International Development
DDMR	Department of Disaster Management and Refugees
DRR	Disaster Risk Reduction
FAO	Food and Agricultural Organization
HERR	Humanitarian Emergency Response Review
HFA	Hugo Framework for Action
IFRC	International Federation of Red Cross and Red Crescent Societies
JICA	Japan International Cooperation Agency
MDG	Millennium Development Goal
NPDPM	National Policy for Disaster Preparedness and Management
NAADS	National Agricultural Advisory Services
NGO	Non-Governmental Organization
TPO	Trans cultural Psychosocial Organization
UHP	Uganda Humanitarian Profile
UNISDR	United Nations International Strategy for Disaster Reduction
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program

URCS      Uganda Red Cross Society

USD      United States Dollars

WFP

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## **CHAPTER ONE INTRODUCTION**

### **1.1 Introduction**

This study assessed the effectiveness of disaster risk reduction strategies in promoting household food security in Palam Sub County, Katakwi District. This chapter presents the background to the study, statement of the problem, purpose of the study, research questions, hypothesis, and study justification, scope of the study, operational definitions of the study concepts as well as a delineation of the conceptual model.

### **1.2 Background to the Study**

#### **1.2.1 Historical Background**

According to the 2011 World Bank annual development report, one in four people on the planet live in areas of fragility, conflict, and criminal violence (World Bank Report, 2011). This exposure has drawn communities into a cycle of vulnerability and losses as successive disaster have struck before they could recover from such hazards. Over the past three decade (1975-2008), 2.2 million people have lost their live in natural hazard induced disaster excluding epidemics, with associated economic losses amounting to USD 1,527.6 billion. In the period from 1988-2007, studies indicate that 76% of all disaster events were hydrological, meteorological or climatological in nature accounting for 45% of the total death and 79% of the economic total loss caused by natural hazards (Benson, 2007). This therefore calls for greater investment and action in disaster risk management globally because it helps to avoid (prevention) or limit (mitigation and preparedness) the adverse impacts of hazards, thereby minimizing vulnerability and disaster risk as well as facilitating early recovery after shocks (FAO, 2013).

The concept of disaster management thinking and practice first evolved in the 1970s and has since seen a wider and deeper understanding of why disasters happen, accompanied by more

integrated, holistic approaches to reduce their impacts on society. In 1989, the United Nations initiated the international framework for action for the international decade for natural disaster reduction. This was then followed by Yokohama strategy and plan for action of 1994 and the international strategy for disaster risk reduction of 1999 (UNSIDR, 2013). The Hyogo Framework for Action (2005-2015) represents the most recent paradigm on disaster management- disaster risk reduction (DRR) and embraces earlier thinking and practice and is widely used by international agencies, governments, disaster planners and civil society organizations. This framework sets out an ordered sequence of objectives (outcome-strategic goals-priorities) with five priorities for action that attempt to capture DRR. (IPCC, 2007)

Even with The Hyogo framework in place, disasters are on the rise globally and trends are leaving people vulnerable to the effects of disasters and inflicting greater damage, loss and dislocation on vulnerable people worldwide. Over the recent past, there has been an increment in the number of small and medium disasters especially floods, storms and epidemics (IRC, 2010). However, this increment could also be attributed to advancement in technology that has greatly improved disaster reporting and also awareness on the various hazards. Recent report by UNSIDR 2011, states that 64% percent of the world population has been affected by natural disaster in the last 20 year and that 2011 registered the highest economical loss in history of over USD 366 billion with 80% of this in the Asia pacific region.

According to the 2007 JICA report, Asia and Africa are the continents greatly affected by natural and human induced disasters with Africa having the highest death associated with drought. Furthermore, the report indicates that 90% of deaths due to disaster occur in developing countries and that socio-economic losses due to disaster are highest in developing countries (IPCC, 2012). This therefore means that a lot of financial and other resources have been diverted to relief and rehabilitation assistance to disaster prone areas every year.

The African Union/NEPAD has been at the forefront in the development of regional platform for disaster reduction since 2003. The platform has helped in streamlining policies and institutional mechanisms in many African countries. These led to the establishment of the Africa strategy for DRR with the support of UNISDR and World Bank. The main goal of this platform is reduction of social economic and environmental impacts of disaster on African people and economies and thereby achieving the MDGs and other developmental aims in Africa (UN, 2010). Despite the above developments, poverty, population growth, climate change and corruption has greatly increased disaster effect in Africa than in the developed world. Furthermore, scarce resources and competing priorities make it difficult for African countries to dedicate resources for DRR (IPCC, 2012)

In Uganda, disasters are a common occurrence with considerable impact on lives and livelihood. The earliest case of disaster recorded in Uganda is the 1897 earthquake (DDMR, 2004). From 1980 to 2010, Uganda has recorded a total of 61 disaster events with 4,938,644 people affected. The economic loss due to these hazards has been estimated at USD 72,671 ([www.prevention.net](http://www.prevention.net), retrieved 2013). Over the past three decades, Uganda has experienced a number of disasters which include and are not limited to the followings; Displacement of people as a result of civil strife; Famine due to drought; Epidemics of humans, crops and livestock, Earthquake; Floods and Landslide; Technological accidents as a result of inadequate safety procedures and recently the most frightening phenomenon of terrorism (U.H.P, 2012). Vulnerability to these disasters is a complex phenomenon with economic, social, political and cultural dimensions and is further augmented by the geographic location and geophysical characteristics of Uganda as a country.

Because of the increasing frequency and intensity of disasters in the country, the government of Uganda has over years evolved in its strategy to reduce disasters. The government put up the national disaster preparedness policy and institutional framework in 1999 and later updated in

2003. This was further strengthened by the drafting of the National Disaster Management Bill (DDMR, 2004). In 2008, the government of Uganda established a National platform for Disaster risk reduction in compliance with 2005 Hyogo framework for Action. This platform brings together all the various stakeholders involved in disaster risk reduction in the country and is coordinated by the office of the prime minister. At district level, district disaster management committees have also been established and they report to the National platform. This committee is headed by the Chief Administrative Officers in the district, Sub county Chiefs in the sub counties, parish chiefs in parishes and local council one chairperson in the villages (UHP, 2012). However, these committees do not have technical competence and facilitation to manage disaster risk reduction and further still some district don't have functional committees.

### **1.2.2 Theoretical Background**

There are many models that have been put across by various scholars on DRR and food security. Some of these include for example the Malthusian model of famine that state that populations if not checked doubles every 25 years thus growing at geometric rate while food increases at an arithmetic rate and hence incapable of feeding the population (Ross, 2000). The expand-contract model of disaster management which looks at DRR as a series of activities that runs together rather than as a sequence (ADPC, 2000). But, for purpose of this study, the following theories will be discussed; the livelihood model, the disaster crunch model and Amartya Sen's entitlement theory. These models have been selected because they contain key component of the variables under study and will therefore help in explaining and understanding the relationship between the variables.

The livelihood model divides assets required by communities into six basic categories. They include human, social, political, financial, physical and natural assets. The livelihood model looks at DRR as a way of protecting the capital assets of the community and thus promoting

more livelihood options and sustainable development. This is usually done through developmental interventions that focus on increasing the asset base of individuals or community and therefore reducing vulnerability to disasters. The theory further clarifies that activities should cover a wide range of development sectors and that the developmental interventions must not erode or diminish other classes of assets. The theory therefore argues that wealth in terms of assets can create disaster resilience and eventually food security in households or communities (ADPC, 2000).

Another theory that is commonly used to underpin disaster studies is the disaster crunch model advanced by Blake *et al* in 2003. This theory looks at disaster as result of interaction between vulnerability and a hazard. According to Blake *et al* (2003), vulnerability is as a result of what they termed root causes such as political and economic factors that establish power with an environment.

Last but not least, the entitlement theory states that food insecurity results from deprivation of one or a combination of the four basic entitlements. These four entitlement described by Amartya Sen are; production entitlement, labor entitlement, trade based entitlement and inheritance and transfer based entitlements. Disasters act by compromising these entitlements leading to food insecurity by destruction of agricultural infrastructures and assets, crops, inputs and production capacity.

### **1.2.3 Conceptual Background**

Disaster risk reduction is concerned with putting the institutional and management mechanism in place to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation, preparedness and response. For purposes of this study, other DRR strategies such as prevention, rehabilitation and recovery will not be considered (WFP, 2011).

Disasters cannot be fully prevented. It's imperative that community participation is fully embraced to determine the level of tolerable damage. The first step in disaster reduction is mitigation; this involves development of legal systems and frameworks, human resource development, installation of constructions and preparation of financial incentives in case of a disaster (JICA, 2007). Mitigation also involves reducing disaster effects using appropriate technologies and farming practices in communities. This can help to reduce the risk of crop losses due climate related hazards but can also stabilize and even increase yields.

Disaster preparedness focuses on reducing vulnerability to disasters. Reducing vulnerability requires proper understanding of the dynamic factors that influence it. Vulnerability remains a debated concept, with origins in natural disasters, poverty and food insecurity literature (Cutter 1996). Preparedness assumes a future recurrence of a disaster and seeks to reduce its impact on food security in the event that it occurs by for example diversification of asset base, planting early maturing crops and food storage.

Emergency relief response includes supplies such as food, water, and evacuation tents and development of emergency- response systems to help disaster victims conduct relief activities for themselves. Although these initiatives are very important in the event of a disaster, they are not sustainable and therefore cannot be used as a strategy for building community resilience.

Amartya Sen in his entitlement theory explained that factors such as drought or floods and consequent crop failure do not cause famine but rather the inability to acquire food through either purchase or exchange or transfers (Sen, 1981). This concept was used in understanding the relationship between food security and disaster. Disasters cause destruction of agricultural infrastructures and assets, crops, inputs and production capacity. These hazards therefore have a direct impact on agriculture and food security by interrupting food production, market access, and trade and food supplies. They also reduce incomes, deplete savings and erode livelihoods

and have negative consequences on livestock production by reducing rangeland productivity and rangeland yields leading to food insecurity, overgrazing and degradation of the ecosystems.

#### **1.2.4 Contextual Background**

In eastern Uganda, the Elgon and Teso sub regions are suffering from landslides and floods, drought and famine, conflicts and cattle raiding. This vulnerability compounded by unpredictable weather patterns and Karamojong raiding, continues to negatively impact on food security in this region. Though internal displacement has ended in the Teso sub region, various factors still undermine resettlement and recovery such as lack of adequate social services and limited livelihood opportunities (UHP, 2012). Between August and September 2011, at least 21 people died in mudslides and thousands displaced by floods that submerged homes and devastated villages across eastern Uganda. According to URCS Report 2012, 15,619 households with a population of over 80,000 were affected by floods in eastern Uganda. The road between Soroti and Katakwi via Gweri Sub County was cut off and also the road between Amuria to Katakwi via Ajeleik was impassable (URCS, 2012).

The Teso sub region is one of the poorest regions in Uganda suffering from cyclical floods, drought, famine, conflicts and cattle raiding. The region experiences flooding due to the flow of water from the Karamoja region to the low lying parts of the Teso sub region. In the last quarter of 2011, torrential rains caused flooding in the sub counties of Palam, Ongongoja, Ngariam and Magoro sub counties in Katakwi district where several crops like cassava, groundnuts, and potatoes rotted causing widespread food insecurity in the district (U.H.P 2012).

### **1.3 Statement of the Problem**

Recent evidence suggests that disasters have a negative effect on food security and livelihoods (WFP, 2011). According to Bihiigwa (1999), disasters are the major cause of food insecurity in Uganda contributing more than forty percent of food insecurity in the Country. In Katakwi district, the Government through Katakwi District Local Government and other development partners are implementing many projects aimed at improving household food security such as NAADs, NUSAF and relief distribution. Other interventions include; Ecosystem management and restoration, Village savings and loans association, provision of quick maturing crops, livestock projects, Hygiene and sanitation, and infrastructure development (TPO, 2013).

Despite these interventions by the government and other development partners, 66.5% of the people in Katakwi district live on one meal a day and food insecurity is far from being eliminated with farmers still vulnerable to disasters such as floods and drought leading to poverty and food insecurity (ASB, 2013). According to TPO (2013) report, the major factors contributing to food insecurity in the district are; poor quality seed, insecurity, poor soil fertility, pest and diseases, natural disasters like floods and drought among others. Furthermore, this condition is worsened by human activities such as poor farming practices, deforestation aggravated by rapid population growth which condemns the population to chronic poverty and hunger. This study therefore assessed the effectiveness of the DRR strategies in promoting household food security in Palam Sub County. The research also helped in understanding the relationship between DRR interventions and household food security in the region and in particular Palam Sub County.

### **1.4 Purpose of the Study**

The purpose of the study was to assess the effectiveness of disaster Risk Reduction interventions in promoting household food security in Palam sub County, Katakwi district.

### **1.5 Objectives of the Study**

(i)-To determine the effectiveness of disaster mitigation in promoting household food security in Palam Sub County.

(ii)-To examine the effectiveness of disaster preparedness in promoting household food security in palam Sub County.

(iii)-To determine the effectiveness of disaster emergency response in enhancing household food security in Palam Sub County.

### **1.6 Research Questions**

(I)-To what extent does disaster mitigation promote household food security in Palam Sub County?

(ii)-Does disaster risk preparedness promote household food security in Palam Sub County?

(iii)-To what extent does disaster emergency response enhance household food security in Palam Sub County?

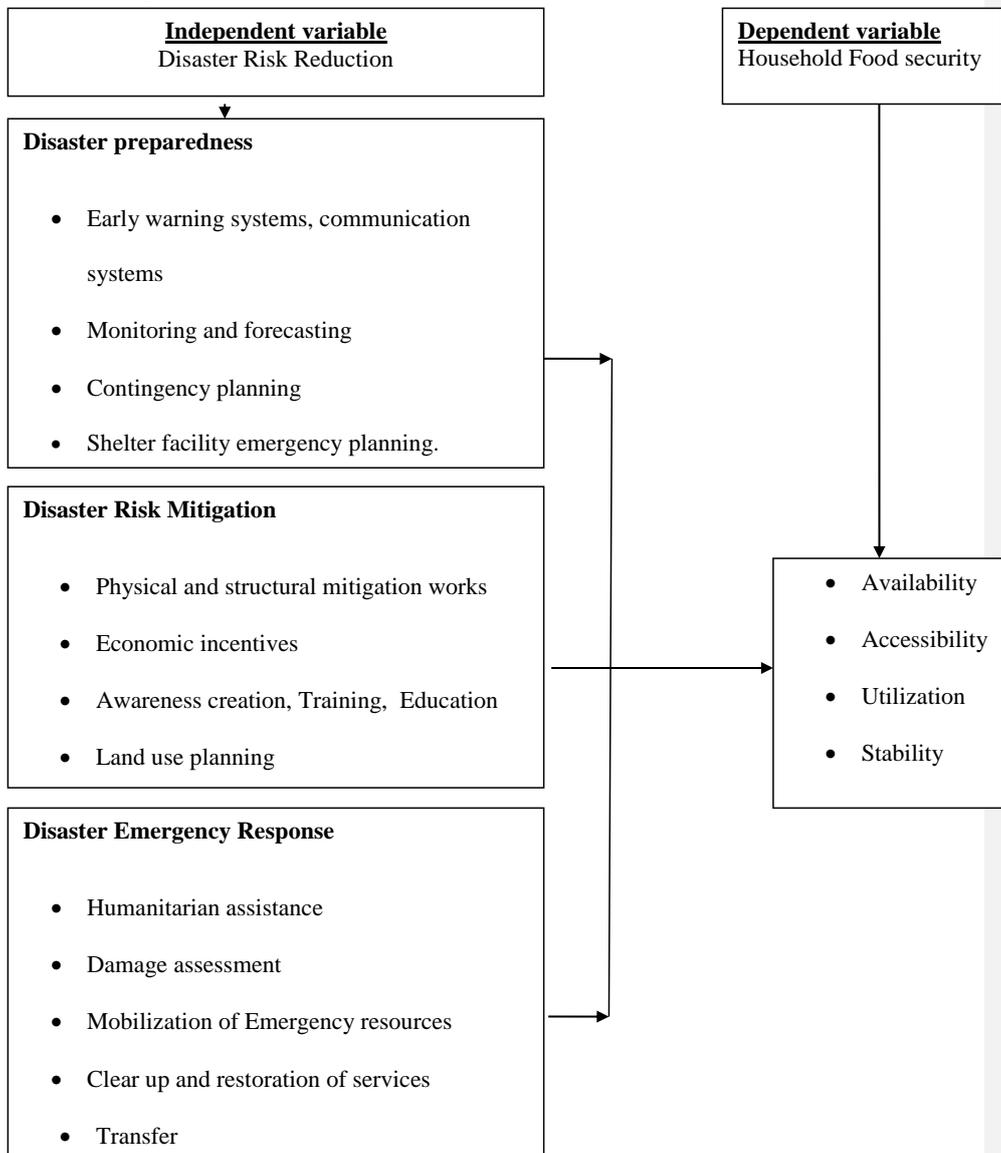
### **1.7 Hypotheses of the Study**

(I)- Disaster risk mitigation effectively promotes household food security in Palam Sub County.

(ii)- There is a significant relationship between disaster preparedness and household food security in Palam Sub County.

(iii)- Disaster emergency response effectively enhance household food security in Palam Sub County.

### 1.8 Conceptual Frame work



**Figure 1: A conceptual framework showing the relationship between disaster risk reduction and household food security**

Source: Adapted and modified from W.F.P strategic plan (2008)

The study was based on the assumption that the way disaster risks are managed affects household food security. In this study, the independent variables were disaster risk mitigation, Disaster preparedness and disaster emergency response. These independent variables were used to explain or account for any variation in household food security in Palam Sub County. Kelly (1998), states that comparing actual conditions with a theoretical model can lead to a better understanding of the current situation and therefore facilitates in the planning process and the comprehensive completion of disaster management plans.

The conceptual model above revolves around three phases of disaster risk reduction; disaster risk mitigation, disaster preparedness and emergency response. Such models do not cover all aspects of disaster risk reduction and have some limitations like describing disaster stages only (Asghar, 2006). Furthermore, Kimberly (2003) asserts that most models portrays response as the biggest and most visible phase in disaster risk reduction and places mitigation and preparedness as driving forces behind a successful response.

This study will therefore assess how these three dimensions of DRR can help in promoting household food security in Palam Sub County. Household food security will be explained using the following dimensions: Availability, accessibility, utilization and stability.

### **1.9 Significance of the Study**

The study findings are expected to be used by different categories of people in many ways:

First and foremost, the study is expected to provide useful information to the policy makers especially in the ministry of agriculture animal industry and fisheries and the ministry for disaster preparedness and relief in Uganda. The study findings is expected to provide an insight into the contribution of disaster risk interventions to household food security and this is will help to estimate how much needs to be done in the area to improve household food security and disaster resilience and also how to ensure sustainability of such strategies.

The findings are also expected to provide a source of up to date literature to academicians, future scholars and researchers who may wish to carry out more studies on the subject matter of disaster risk reduction and household food security.

#### **1.10. Justification of the Study**

Since the beginning of 2007, Katakwi district local government together with other development partners have been actively involved in disaster risk management interventions in the whole of Katakwi district. However, various reports and observations do not clearly indicate how these disaster risk interventions have improved household food security in the district. Palam Sub County was chosen because of the chronically high incidence of floods and water logging in this area leading to destruction of crops. This area has also suffered from recurrent incidence of cattle rustling by the neighboring Karamojong (U.H.P 2012). The study was conducted to come up with appropriate recommendations on how disaster risk reduction can be used to increase house hold food security.

#### **1.11. Scope of the Study**

The scope of the study was divided into geographical, content and time scope.

##### **1.11.1 Geographical Scope**

The study covered the whole of Palam Sub County. This area was chosen because of the chronic floods, drought and Karamojong insurgency leading to food insecurity and malnutrition. The study involved key stakeholders in disaster risk management like district technical staff and developmental partners like NGOs. The development partners and the district staff were selected because of their major intervention in disaster management and food security.

### **1.11.2 Content Scope**

The study was to establish the effectiveness of disaster risk reduction strategies in promoting household food security. However, focus was on finding out if disaster mitigation, preparedness and emergency response in Palam Sub County are capable of ensuring sustainable household food security.

### **1.11.3 Time Scope**

The study covered the period from January 2007 to January 2014. This is the period when the concept of disaster risk management was over emphasized by both the NGOs and Katakwi district local government

## **1.12 Operational Definitions**

**Risk:** Is an uncertain event which may cause a possibility of loss, injury, disadvantage, or anything that has a negative impact on a program (Hubbard, 2009).

**Disaster Risk Reduction:** This is the systematic development and application of policies, strategies and practices to minimize vulnerability, hazards and the unfolding of disaster impacts throughout a community. In the broad concept of sustainable development, it is a process of analyzing exposure to risk and determining how to best handle such exposure (DFID, 2006).

**Disaster Mitigation:** Refers to the lessening or limitation of the adverse impacts of hazards and related disasters (IFRC, 2011).

**Disaster Preparedness:** Refers to activities designed to minimize loss of life and damage; organize the temporary removal of people and property from a threatened location; and facilitate timely and effective rescue, relief and rehabilitation (UNDP, 1992).

**Disaster Emergency Response:** These are steps or procedures taken upon discovery of unacceptably high degree of exposure to one or more risks (Hubbard, 2009).

**Disaster:** Large scale shocks, affecting a large number of people at the same time, risking large scale human hardship including famine (NPDPM, 2010).

**Food security:** The ability of the household to get adequate food, in a stable and sustainable manner irrespective of the nutritional composition (Bahigwa, 1999)

**Food availability:** Refers to having sufficient amount of food in appropriate qualities, supplied through local production or imports through food aids. (FAO, 2006)

**Food utilization:** Refers to the ability of people to make use of the available food effectively. This can be deterred for example by disease outbreaks (Bahigwa, 1999).

**Food accessibility:** Means being able to acquire food either by producing or through purchasing from the markets or public distribution means (Bahigwa, 1999).

**Food stability:** Refers to the adequacy of food supplies “at all times” and to the potential for losing access to the resources needed to consume adequate food since even a temporary disruption to food supplies or access can have fatal consequences (FAO, 2006).

## CHAPTER TWO LITERATURE REVIEW

### 2.1. Introduction

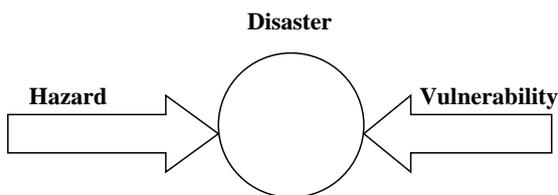
This chapter presents the literature that has been reviewed. It is arranged under different variables of the study, namely; Theoretical review of disaster risk reduction, the linkage between Disaster mitigation and house hold food security, disaster preparedness and household food security and disaster response and household food security.

### 2.2. Theoretical Review

Different theories were used to under pin this study and thus help in explaining the relationship between disaster risk Reduction and household food security in Palam Sub County.

#### 2.2.1 The Disaster Crunch Model

This model attempts to explain that disasters are not random and that they do not occur in isolation. This model states that disasters are usually natural or man-made hazard acting on a vulnerable population. The hazard and vulnerability combine to squeeze or ‘crunch’ a population resulting into a disaster as shown in the diagram below.



**Figure 2: The disaster crunch model**

This theory also known as pressure and release model was developed by Blake et al, (2003). This theory further asserts that vulnerability to disasters result from what they called root causes. The root causes such as political and economic systems establish a distribution of power within the society which determines access to resources. This theory explains that a

disaster occurs at a tangent between two opposing forces, those of natural hazards and the process that generate vulnerability. It's when these two forces coincide that a disaster strikes.

The model identifies a progression of vulnerability in which the root causes are nurtured by a multitude of dynamic pressures and can lead to unsafe conditions.

### **2.2.2 Amartya Sen's Entitlement Theory of Famine**

This theory forms the basis of most of the approaches used in assessing food security. Sen Postulates that food insecurity exist not because there isn't enough food but because people do not have access to sufficient food (Sen, 1981). He described four entitlements in which lack of one or a combination leads to food insecurity. He divided the entitlements' as production entitlement, own labor entitlement, trade based entitlement and inheritance and transfer entitlement. Famine therefore occurs when a number of people suffer from a complete collapse of this livelihood sources.

Despite the success of this theory in explaining food security situations, it however has certain limitations. Sens model looks at famine and other food related emergencies as economic disasters. De Waal (1990) pointed out that the theory looks only at rights within a given legal structure but some transfers are illegal acts and therefore not accommodated in this approach such as violence. In Africa, the association between violence and famine is so strong that it cannot be under looked and the way that resources like food are acquired by some groups at the expense of others (De Waal,1990).

De Waal (1990) further criticizes this theory on two fronts; first it implies a straight forward decline in entitlement leading to hunger then malnutrition, starvation and finally death. Secondly the theory implies that people's actions are determined by their need to consume food. Corbett, (1988) also adds that people's response to famine often referred to as "coping

strategies” shows that their priorities in times of food stress are to preserve productive assets to protect livelihoods rather than to meet immediate food needs.

Despite the gaps in Sen’s theory and multiple dimensions of food insecurity in Katakwi, it will however be of relevance in understanding the relationship between disaster risk reduction strategies and household food security in Palam Sub County.

### **2.2.3 The Livelihood Model**

This model illustrates the holistic and people centered attitude to orientation to livelihoods. It divides the strength and capacities of people or communities into six categories that embrace assets and resources. The model describes wealth not only in terms of financial, physical and natural assets but also in terms of health, education, social organization and political influence.

A community or individual with a wide distribution of assets throughout the six categories will be less vulnerable than a community without these assets since they are able to withstand and cope with the impacts of disasters. Diversity of the assets and resources therefore determine the magnitude of the effects of a disaster on a population. For example a community with strong housing and a good social structure can withstand and recover from floods better than a displaced community with poor houses and also lacking organized social structures.

The livelihood model considers development intervention as activities that increase the capital asset base of the society. These interventions cover wide variety of sectors such as education, micro credit, HIV prevention strategies and agricultural strategies. The model illustrates that developmental interventions should be sustainable, and that these interventions should not diminish or erode other categories of capital assets (Concern, 2005).

Disaster risk reduction can therefore be thought of as protecting the capital assets of the community which in turn improve the resilience of the community to hazards and hence sustainable development.

## 2.3 Conceptual Review

The study will be based on the assumption that the way disaster risks are managed affects household food security.

### 2.3.1 Disaster Risk Mitigation

Mitigation means “to make less severe,” and is usually undertaken to reduce the intensity, frequency, scale, and impacts of hazards (Concern, 2005). Mitigation of disaster involves structural and physical mitigation works, economic incentive, land use planning and awareness, training and education on disasters among others. Kofi Annan in one of his speeches emphasized the need to prevent as opposed to response.

*We must shift from a culture of reaction to a culture of prevention.....it's more humane ...also much cheaper...Kofi Annan, 1999*

Many successive disaster mitigation programs in the third world countries has enlightened everyone involved about the fact that dealing with risk and insecurity is a major part to develop poor people's livelihood strategies thus the incorporation of disaster mitigation, preparedness and related activities within many poverty alleviation programs (Christopholos, 2001).

Economic intervention is an essential element in any disaster risk mitigation as poverty makes people vulnerable. An appropriate economic activity is important in poverty reduction and is an essential component on any disaster risk reduction strategy (Twig, 2004). Concern, 2005 further indicates that poor countries even suffer far greater losses in their GDPs than richer countries in disaster situations. In mitigation therefore, organization should empower communities through for example increasing access to credit facilities and opportunities to borrow money and promoting more initiative for risk transfer. Interventions such as SACCOs have been promoted by the government of Uganda to try to address the above problem with little progress due poor saving culture, weak financial institutions and lack of collateral.

Initiation of advanced land use planning can be used to reduce exposure of populations to hazards. This involves formation of designs for different geographical and administrative scales; studies and mapping; analysis of economic, environmental and hazard data and formation of alternative land use-decisions (UN Report, 2006). Proper land use planning can help in disaster mitigation by discouraging settlement and construction of key installations in hazard prone areas including consideration of service routes for transport, power, water, sewage and other critical activities.

The Structural measures of disaster mitigation that can be used include the followings; construction of earth bunds, gabions cages, dams, contour planting, strengthened buildings, raised river banks, re-afforestation and storm drains (Brunner, 2007). These measures are however associated with hydro-metrological and geological hazards and there is need to expand it to include measures such as promoting dialogue between conflicting communities, relocation of settlements, public health campaigns, vaccination programs (both humans and livestock) agricultural practices such introducing quick maturing crops or drought resistant varieties, awareness and education programs.

Public awareness and education for disaster is also one the most important components of any mitigation program. It seeks to turn available human knowledge into specific local action to reduce risk, build asset base and create resilience. Research has shown that people only take action when; they know specific actions that can be taken to reduce risk; they are convinced that these actions will be effective and believe in their ability to carry out the tasks (Mileti *et al.*, 2004). According to IFRC guide 2011, there are four basic approaches to disaster awareness creation and education which include; campaigns, participatory learning, informal education and formal school based interventions. The lacks of functional structures due technical incompetence and resource gaps have however hindered awareness creation and education in most parts of Uganda (UHP, 2011).

### **2.3.2 Disaster Preparedness**

Planning for disasters allow for speedy response to adverse situations and minimizes their effects. This involves preparing a detailed contingency plan for immediate implementation, if and when, the need arises (Hamburger, 1990). Contingency planning emphasizes reactive planning, it's better to plan to eliminate the risk than to plan how to overcome it...(however)...It's better to plan to overcome it than to increase the cost and extend the duration to pay for it (Turner, 1993).

Effective food security and hazard early warning system should be an essential component of disaster preparedness (WFP, 2011). An appropriate early warning system should be able to detect, monitor, forecast risks and disseminate appropriate, clear messages to populations at risk and stakeholders mandated to respond (UN Guide, 2006). Early warning systems can therefore help to save lives and to some extent livelihood if specific governance and other frameworks are in place to support inter- agency collaborations.

Communication and coordination are among the most critical elements of disaster preparedness hence the need for an integrated communication platform. However, Mc Entire (2002) and Auf d r Heide (1989) also agreed in their social and behavioral research that coordination is major challenge among groups, individuals that respond to disasters.

According to Horlick-Jones (1993), the communication of information about hazards and risks to the community has a key role in prevention and mitigation of disasters. Communication has become a 'life blood' of any community in a disaster situation between the victims, rescuing institutions, donors and government.

### **2.3.3 Disaster Emergency Response**

This focuses on the immediate and short term needs of the affected community. Emergency response minimizes the total cost of disaster risk while at the same time ensuring that the long

term damage is reduced. According to DFID Report 2004, humanitarian assistance plays a significant role in saving lives and relieving suffering in emergency situations. However, the report identifies gaps in humanitarian assistance such as sideline of local leadership, governance and technical capabilities as factors that affect the long term resilience of such interventions. Furthermore, the lack of legal provisions in areas related to cross border activities such as tax, visas, customs, domestic legal status and transport are not sufficient to address issues of international assistance in emergency disaster situations (UHP, 2011).

Most emergency response in Uganda mainly involves food supplies to the affected population. However other strategies such as cash for work and food for work have proved to be effective and efficient as an emergency response strategy (Jenden, 1995). Developmental organizations can engage the community in activities such as road repairs and rehabilitation of a community dam in exchange for cash or food. Jenden further clarifies that such interventions have multiple advantages such physical rehabilitation and financial enhancement which can stimulate economic recovery. On the other hand, studies have shown that food aid supplies often deprive the household choice. This also explains the rampant sale of relief food aid by households affected by disaster. Despite all the above, most emergency humanitarian and recovery and safety net programs focus on food aid at the expense of non-food assistance (DFID, 2004).

Though relief aid is still paramount in reducing the impact of disasters, DFID (2006) however, states that it does not address the root causes of disasters and that overreliance on relief aid results in perpetuation of existing risks and a cycle of recurrent disasters. It's therefore important that relief interventions should include efforts to tackle longer term challenges of risk reduction.

For any good response strategy, there is need for damage, loss and needs assessment. Appropriate response can be effectively achieved if there is an all-inclusive rapid assessment

tool which will answer immediate questions at the onset of a disaster such as “what”, “where”, “how many people are affected” and “needs” (UHP, 2011).

## **2.4 Actual Review**

### **2.4.1. Disaster Risk Reduction**

Reducing disaster risk is cost effective and is the best way for providing value for money. The humanitarian emergency response estimates that UK£ 1 spent on disaster prevention saves £4 in response, and warns that years investment can disappear if risk reduction is ignored (HERR, 2011).

The number of disasters has increased greatly over the recent past particularly hydro-meteorological hazards such as floods, drought, tropical storms and wild fires. The number of disasters has increased from 195 per year in 1987 -1998 to 365 per year in 2000-2006 and the trend is likely to continue in the coming years (CRED, 2007). However, this dramatic increase could also be related to the improvement in the reporting of disasters. The numbers of people affected by disasters are also increasing as well as losses due to numerous disasters. Between 2000 and 2006, on average a total number of 230 million people worldwide were being affected every year.

The Hugo framework for action (HFA) is the key instrument in the implementation of disaster risk reduction adopted by the member states under the United Nations. Despite the policy in place, governments find donors reluctant to fund risk reduction and yet when they declare a disaster, the funds flow freely. Moreover, there is evidence that donors only respond to media pressure but when the story ceases to be news, the donor’s interest in post disaster rehabilitation and building resilience wanes.

Disasters such as drought trigger immediate food crises but can also have long term impact especially when combined with other pressures such as conflict, poor governance and

HIV/AIDs. Poorly planned attempts to reduce risk can make matters worse for example poor planning of vital services in resettlement may result in the creation of new risks or worse still increase risk for people elsewhere e.g. engineering approaches to minimize floods in Bangladesh resulted in risks in other places (DFID Report, 2004).

#### **2.4.2. Disaster Risk Mitigation and House Hold Food Security**

The environment is a very important asset in disaster mitigation and improving household food security. This is because most disasters are either caused or exacerbated by ecosystem degradation. Well managed ecosystems can reduce the risk of hazards such as landslides, flooding, avalanches and storm surges (Sudmeier *et al*, 2009). The international institute of rural reconstruction and save the children, (2007) points out that drought may be accelerated by environmental degradation resulting from overgrazing, poor cropping pattern, poor conservation technique, stripping of top soil, depletion of surface and subsurface water supplies and unchecked urbanization.

Planning risk reduction and response strategies requires thorough understanding of risk and vulnerability in terms of who is vulnerable, where they are and why they are vulnerable. There is need for an improved information system, monitoring and risk analysis at all levels of implementation of disaster planning (Concern, 2005). Risk planning should focus on the poor food insecure and most vulnerable members of the community without assets and entitlements.

For proper risk planning, there is need to involve the community in the planning process. The community and vulnerable people should be the primary drivers of any actions aimed at building the resilience of the community. Also the risk reduction strategies should be aligned to the national development plan for greater effectiveness, disaster risk management and climate change management starting from poverty reduction strategy, food security and sustainable development (JICA, 2007).

Furthermore, the gap between sectoral organizations should be bridged to allow for timely sharing of disaster information and also the communities should be availed with climate information whenever they require. Lastly priority should be given financially to activities aimed at reducing disaster effects.

Strategies by Government and communities should aim at establishing a risk finance, transfer and insurance initiative directed at reducing risk and increasing livelihood. Projects such as livelihood early assessment and protection (LEAP) by WFP in Ethiopia and R4 Rural Resilience initiative by Oxfam America with initiatives such as insurance for work have greatly scaled up productive assets and protected livelihoods. Furthermore early warning system and contingency planning have been integrated to generate contingent finance pool provided by World Bank and other donors (WFP 2011).

#### **2.4.3 Disaster Preparedness and Household Food Security**

Globally, WFP has developed an Inter-Agency Standing Committee which supports the development of national and regional food security and hazard early warning systems.

By working closely with communities, organizations can build the resilience of communities through cost effective measures such as building cereal banks, and improving land management techniques (WFP 2011).

Provision of climate information and early warning can help farmers make appropriate decisions. The provision of climate information after the 1991/2 drought in South Africa helped in preparing for subsequent El Nino–Southern Oscillation events, reducing negative impacts such as food insecurity (Dilley, 2000).

#### **2.4.4 Disaster Emergency Response and Household Food Security**

Disaster preparedness and response is a critical part of DRM. Preparedness helps to improve response to, recovery from future threats to food and nutrition security and to reduce their potential negative impact on livelihoods.

Schilderlinck, (2009) explains four critical household food coping strategies in disaster emergencies. He said that once a disaster strikes a household, it responds by: liquidation of productive assets e.g. livestock; food consumption adjustments (lower quality of food and less meals per day); calling on community level facilities (charity, credits, and support from village level institutions or networks) and reliance on emergency response (food aid). However, some of these coping strategies have negative consequences to the household. Liquidation of household assets decreases the asset base of the household and therefore increasing their vulnerability to disaster risk. Adjustment in food quantity and quality on the other hand leads to malnutrition especially in infants and susceptibility to diseases. Though the last two strategies do not have negative impacts on the family as such, these methods depend on uncontrollable external influences and therefore only relevant as a supplement to other strategies.

Furthermore, activities such as school feeding programs have been used to meet the immediate food needs and help children return to school and establish normal life in post disaster situations. Also studies have shown that international food aid has a vital role in humanitarian assistance programs to save lives in the wake of disasters where there are problems of food availability (DFID, 2004). In spite of the contributions of food aid, research has also shown that most food assistance arrives late or insufficient in quantity and food only becomes available on the peak of mortalities.

Disaster response should involve development of a food safety contingency and response plans. It also includes forward identification and management of necessary human resources such as

establishing a core of emergency personnel (JICA, 2007). In Uganda however, lack of skilled personnel and financial resources still impede the effective response to these disasters. Furthermore lack of equipment's, poor roads and collapsed bridges, corruption and machinery to help in response of disaster still exists (UHP 2011).

#### **2.4.5 Household Food Security**

In developing countries, three out every four people live in the rural areas and depend on agriculture as their major source of food security and livelihoods. As of May 2006, about 850 million people in the world are undernourished. There are marked hot spots marked by widespread and persistent food insecurity especially those in protracted crisis. Worldwide, a total of 39 countries have been listed as experiencing serious food emergency and require external support for dealing with critical food crisis. There are 25 countries in Africa, 11 in Asia and near east, 2 in Latin America and 1 in Europe.

Household food security is very paramount in building disaster resilient communities. Most food insecure household often resort to poor coping mechanism that further lead to vulnerability to disasters such as environmentally harmful practices, selling productive assets and distress migration. Families that are food insecure also use detrimental strategies such as reducing food quality and consumption, reducing expenditure on health care and education, withdrawing children from school which further limits their ability to build and diversify their livelihood and results in lower future income generation and delays in disaster recovery (Vakis, 2006). Internationally, plans are under way to make food security a human right. The implementation of such a policy remains debatable especially in developing countries without proper institutional framework and policies.

The majority of food insecure people live in fragile areas that are prone to natural hazards and are least able to cope with shocks. Exposure to high levels of disaster risk and the lack of

capacity to cope up with the risk exacerbated by other factors such as poor income generation opportunities and access to markets trap poor households in a cycle of food insecurity and poverty which quickly converts to food crises when a disaster strikes (WFP, 2011).

FAO, (2011) identifies the following as the major threat to food and nutrition security globally: Natural hazards (drought, floods Tsunamis', Hurricanes/Typhoons, Earthquakes, volcanic eruptions and landslides; Trans boundary plant pest and diseases e.g. locust, wheat rust; Trans boundary animal diseases e.g. African swine fever, foot and mouth disease rift valley fever etc; Fish diseases; Wild fires; Environmental conditions such as land degradation, desertification and water scarcity; Climate change with increase in frequency and intensity of weather related hazards; Volatility in agricultural commodity markets and soaring food prices and Protracted emergencies

#### **2.4. Summary of Literature Review**

According to the United Nations International Strategy for Disaster Reduction (UNISDR), disaster risk reduction is: “the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.” (FAO, 2013)

Hazards in Africa are often due to disruptive climatic events, particularly severe droughts, floods and/or cyclones. Each of these events led to substantial devastation with regard to lives and livelihoods, and both also have significant impacts on the region's economic development. Climate change is a major concern in this regard, as extreme weather events are expected to increase and become more severe. During the last decades other crises have occurred, including man-made hazards, such as armed conflicts (i.e. DRC), political conflicts (i.e. Madagascar) in socio violence/conflicts (i.e. Zimbabwe). Biological factors, such as the spread of animal and

plant pests and diseases (brown streak and mosaic diseases of cassava, or foot-and-mouth disease that affects cattle) have also impacted the food, nutrition and livelihood security in the region. The impacts of such disasters include reduction of agriculture production, destruction of productive assets like agricultural equipment and facilities, as well as disrupting trade and market access. All these factors negatively impacts the farmers' income and their ability to adequately and safely feed their families (Concern, 2005)

DRR interventions aim to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, thereby minimizing vulnerabilities and disaster risks as well as facilitating an early recovery after the shock. Within the field of DRR, a further distinction can be made between 'structural' measures (physical and technical), which refer to engineering techniques that focus on hazard-resistance, and those that are 'non-structural' (diagnostic, policy and institutional), such as advocacy, knowledge and practices or agreements to reduce risks and impacts. In addition to being effective in terms of saving lives and livelihoods, DRR is also efficient and cost effective. It is calculated that for every dollar spent on DRR, between US\$2 and US\$4 are saved that would otherwise be spent on disaster relief and rehabilitation. (FAO, 2013)

DRR is a key concept for agriculture since the majority of the people vulnerable to natural hazards and disasters are the food insecure and the poor who derive their livelihoods from agriculture (WFP, 2011). When people and communities are well-prepared to respond to and recover from emerging threats or crises, the adverse impact on their lives and livelihoods can be reduced. At the community level, preparedness can be improved through the implementation of appropriate technologies and practices, as well as well-functioning early warning systems. Timely and effective disaster response requires leadership, coordination and awareness-raising at all levels, among both humanitarian and development actors. It also requires operational

capacities and technical know-how on DRR and management for agriculture and food and nutrition security

The goal of any DRR for food and nutrition security program is to enhance the resilience of livelihoods against threats and emergencies to ensure the Food Nutrition Security of vulnerable farmers, fishers, herders, foresters and other at risk groups (FAO, 2013). Appropriate agricultural prevention and mitigation measures include a range of technologies, practices and approaches that help to increase the resilience of rural communities and to prevent and mitigate the impact of future disasters. In this regard, it is important to support capacity development, strategic partnerships and policy development, taking into account that technologies and practices for DRR are always location and context-specific, and are dependent on local factors.

Monitoring emerging and existing threats, such as natural hazards, transboundary plant and animal pests and diseases, food safety hazards and economic crises (such as price volatility) is crucial to build resilient livelihoods. Improved monitoring, data collection and analysis will help small-scale farmers and other relevant stakeholders to take rapid decisions after an early warning. Capacity building is important to assure that the data is accurately collected and reliable, for early warning and forecasting, but also to monitor and analyze the various hazards that impact livelihoods (CRED, 2007)

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the research design, study population, sampling procedures, data collection methods and procedures for data analysis and management of information that was gathered in the field. The chapter also describes how validity and reliability of the instruments were measured

#### **3.2. Research Design**

The study employed cross sectional study design. A cross sectional study design helps to answer research questions of interest through collection of data to make inference about a population of interest at one point in time (Mugenda and Mugenda, 2003). It can also be used to investigate multiple exposure and multiple outputs and is easier to conduct other than individual-based studies because no follow up is required. A one -shot study design also enables the researcher to have a critical analysis and evaluation of the subject under study and is very appropriate where resources are limited (Sekaran, 2003). The study assessed the effectiveness of disaster risk reduction interventions in promoting household food security in Palam Sub County, Katakwi district. The study used qualitative study techniques to determine the relationship between the variables through interviews.

#### **3.3. Study Population**

Mugenda and Mugenda (2003) define population as a complete set of individuals, cases or objects with some common observable characteristics. According to the District Planner Katakwi (2013), Palam Sub County has a population of 2,114 households. The study population consisted of all the 2,114 households in this sub county. For purpose of getting in depth information about the study, five sub county technical staffs, five members of the district

disaster committee, twelve NGO staffs involved in disaster risk management were interviewed using an interview guide.

### **3.4. Determination of Sample Size**

The study used purposive sampling techniques for key informants like technical staff, disaster management committee members and NGO staffs involved in disaster risk management. This is because such categories of people are expected to be knowledgeable about disaster risk intervention in the area of study. This is in line with Kakooza, (1996) who advises that “purposive sampling ensures that significant sub groups of the population are represented in the sample”. The study used simple random sampling to select the households who participated in the study. This is because most of the people in the area to some extent were affected by disasters over this period of time. A sample frame for households in the sub county was developed and each household given a unique number. These numbers were written on small pieces of papers folded and mixed together, and then one paper was selected one at a time without replacement until all the required sample number was got.

The sample size depends on factors such as number of variables for the study, type of research design, method of data analysis, and size of accessible population (Mugenda and Mugenda, 1999). Based on the table adopted from Amin (2005), the sample size was determined by use of mathematical tables (Morgan and Krejcie, 1970). Using the table, the study population of 2114 households in Palam Sub County generates a sample size of 175 households. The table below summarizes the different categories of stakeholders, their numbers and the type of sampling to be used in the study.

**Table 1: Summary of Study Population**

S/n	Population Category	Population Size	Sample Size	Method of Sample Selection
1	Households in the sub county	2114	175	Simple random sampling
2	NGO staffs involved in risk reduction	12	12	Purposive sampling
3	Sub county Technical staff disaster committee members	5	5	Purposive sampling
4	District technical staff in the disaster management committee	5	5	Purposive sampling
	<b>Total</b>	<b>2136</b>	<b>197</b>	

**Source: Primary Data**

### **3.5. Data Collection Methods**

The study used primary data collected from different respondents. Interviews were conducted to obtain information from technical staff in the district, disaster committee members and NGO staffs involved in disaster management. Questionnaire surveys were used to collect information from different households involved in the study by research assistants.

#### **3.5.1 Questionnaire Survey**

A questionnaire is a self-report instrument used for gathering information about variables of interest in an investigation (Amin, 2005). This was administered by competent research assistants who distributed and collected the questionnaires. This allowed for timely receipt of questionnaires and avoided consultation among respondents which could have led to bias. According to Amin (2005), questionnaires are less expensive compared to other methods.

### **3.5.2 Interviews**

Data was collected using face to face interviews of Key informants. This method was used to compliment and triangulate the information gathered using questionnaires. It also allowed the researcher to obtain accurate information (Mugenda and Mugenda, 1999). Interviews were conducted at an agreed time and according to the interview schedule (Mugenda and Mugenda, 2003). The interviewer asked Specific and concise questions that were answered by key informants and recorded in a data book. To allow for natural conversation, the questions were sequenced in a logical manner and only question relating to the variables in study were asked. (Barifaijo *et al*, 2010).

### **3.6. Data Collection Instruments**

#### **3.6.1 Questionnaire**

Self-administered questionnaires were used in the collection of data from households in Palam Sub County. It had a Likert scale with a five category continuum of strongly agree, agree, not sure, disagree and strongly disagree. The questionnaire was designed and sectioned according to the dimensions of the variables under study. Closed ended questions were developed because they allow respondents make quick decisions; in addition, they allowed the researcher to code information easily for subsequent analysis and this narrowed the error gap while analyzing data (Sekaran, 2003). Questionnaires were preferred for this category of respondents because they could be answered by many people in a short time and information collected in a questionnaire is easy to analyze (Amin, 2005).

#### **3.6.2 Interview Guide**

The researcher used an interview guide to generate data from key informants such as members of the disaster committees, technical staff and staffs in NGOs. The interview Guide is important because it provides in-depth data which may not be possible to obtain using self-

administered questionnaires (Kakoza, 1996). Open ended questions were used since it permits free responses which were recorded in the respondents own words. Simple structured questions were designed to make it easier for the respondents to understand the questions in the interview guide. In designing the interview guide, the researcher used simple vocabulary and avoided vagueness and ambiguity for proper comprehension by respondents. (Barifaijo et al, 2010). The questions were arranged in a logical manner and all leading questions were avoided in the interview guide because it presupposes conditions. Interviews were conducted at an agreed time and according to the interview schedule (Mugenda and Mugenda, 2003).

### **3.7. Validity and Reliability**

#### **3.7.1 Validity of Results**

The validity of instruments is defined as the degree to which the results obtained from analysis actually represents the phenomenon under study. Validity was obtained through the test –retest procedures for questionnaires and interview guide. In order to ensure validity of instruments to produce accurate results and measure what is supposed to be measured, the drafted questionnaires was given to my supervisor and three study peers who critically assessed the questions. Their responses helped to inform the researcher on the relevance of particular questions. Based on the result of their ratings, the researcher computed the content validity index for the questionnaires and interview guide using the formula provided by Amin (2005: pg. 48). The CVI for the questionnaire were 0.83, while for the interview guide were 0.85 respectively. The instruments were considered appropriate for the study since their validity were above the minimum acceptable value of 0.7 recommended by Amin (2005). The formula used for the calculation of the CVI was:

$$CVI = \frac{\text{Number of Item rated as relevant}}{\text{Total number of items in the questionnaire/Interview guide}}$$

Total number of items in the questionnaire/Interview guide

The statistical range of validity index should be within the range of  $> 0.5 < 1$ , (Amin, 2005).

Questions rated not relevant were either modified or discarded from the list by the researcher.

### 3.7.2 Reliability

Reliability of an instrument is the measure of the ability of the research instrument to yield consistent results (Saunders *et al.*, 2007). Mugenda and Mugenda (1999) assert that random errors that affect reliability of instruments of data collection cannot be completely eliminated regardless of the procedures used in the study. The reliability of the research tools was estimated using coefficient alpha developed by Cronbach in 1949 (Amin, 2005). A reliability of coefficient of 0.7 and above implied a high degree of reliability in the instruments used.

**Table 2: Reliability Indices for the Respective Sections of the Questionnaire**

Variable	Description	Content	Cronbach alpha	Number of items
<b>Dependent</b>	Food security	Food security	0.871	9
<b>Independent</b>	Disaster risk management	Disaster mitigation	0.854	21
		Disaster preparedness	0.859	23
		Disaster response	0.813	18

The researcher computed the reliability for multi-item opinion questions using SPSS computer software. The items were tested using Cronbach alpha and it gave reliability figures which were 0.871 for food security, 0.854 for disaster mitigation, 0.859 for disaster preparedness and 0.813 for disaster response which alpha values are above the recommended reliability of 0.7. Therefore the, the questionnaire was reliable for the study.

### **3.8. Procedure of Data Collection**

An introductory letter was obtained from Uganda management institute. The letter requested for permission from the relevant people to allow the study to proceed. Each respondent was given the introductory letter and the purpose and benefit of the study was explained to respondents before the interviews began so as to win their support. Enough information on the variables was also given to raise the interest of informants and to enable them to judge whether they would like to participate or not. (Barifaijo et al, 2010). For purposes of this study, two research assistants were trained on the research study and questionnaire. In order to have reliable data, the interviewers were consistent in the way they asked questions, provided prompts and interacted with the respondents. The interviewers were not only consistent from respondents to respondents but also questionnaire administration was consistent from one interviewer to the next.

### **3.9. Data Analysis**

#### **3.9.1 Quantitative Data Analysis**

Quantitative data from questionnaires were centrally sorted and edited by the researcher and research assistants. The data was categorized according to the variables measuring the concept in the study. A data sheet was established in which raw data was later processed using SPSS statistical package. Use of this package helped to summarize the coded data into frequency tables and percentages for easy interpretation. Descriptive statistics was used in data analysis to determine the mean and standard deviation for the interval scaled independent and dependent variables under study. Correlation analysis was used to establish the relationship between dependent and independent variables. Pearson's correlation coefficient was obtained for the variables under study. Pearson's correlation coefficient is appropriate for interval and ratio based scaled variables (Sekaran, 2003). This analysis showed the direction and strength of the relationship and the value of the coefficient varied between +1 and -1 (Barifaijo *et al*, 2010).

The research also used regression analysis to explain some of the variance in the variables under study.

### **3.9.2 Qualitative Data Analysis**

Qualitative data was collected from key informants using an interview guide and edited on a daily basis. Data that was collected using an interview guide were grouped into themes, categories and patterns to provide meaning. Different passages of the text were identified and labels applied to them to indicate that they are examples of some thematic idea. This labelling or coding process enabled the researcher to quickly retrieve and collect together all the text and other data that was associated with some thematic idea and they were examined together and different cases were compared in that respect.(Barifaijo *et al*, 2010) Content analysis or language used (discourse analysis) was used in the process of analyzing the data. In this analysis, the researcher looked at pattern of speech like how they talked about the subject and related it to the study variables. Content analysis is a systematic description of behavior asking Who, What, where and how questions within formulated systematic rules to limit the effects of analysis bias (Krippendorff, 1980 cited in Stemler, 2001).

## CHAPTER FOUR

### PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

#### 4.1 Introduction

The study set out to assess the effectiveness of disaster risk reduction strategies in promoting household food security in Palam Sub County. The presentation of results is guided by the specific objectives and hypotheses of the study. The first section presents the response rates. The second section presents the background information of the respondents. The third section presents descriptive and inferential statistical results along the three study objectives.

#### 4.2 Response Rates

**Table 3: Response Rates**

Category of Respondents	Target Sample	Actual Response	Percentage
Households in the sub county	175	175	100
NGO staffs involved in risk reduction	12	10	83
Sub county Technical staff disaster committee members	5	5	5
District technical staff in the disaster management committee	5	5	5
<b>Total</b>	<b>197</b>	<b>195</b>	<b>99%</b>

According to Table 3 above, the overall response rate was 99%. With a high response rate of 99%, the researcher feels confident that the findings of the study are representative of the actual population and can be generalized to the other households and officials who did not participate in the study as suggested by Sekaran (2003).

### 4.3 Background Information

Table 4 below presents the demographic information of the respondents to the survey questionnaire.

**Table 4: Demographic Characteristics of the Respondents**

Characteristics	Category	Frequency	Percentage
<b>Gender</b>	Male	138	78.9
	Female	37	21.1
	<b>Total</b>	<b>175</b>	<b>100.0</b>
<b>Age Category of the Respondents</b>	15-20	1	.6
	21-30	29	16.6
	31-40	45	25.7
	41-50	81	46.3
	51-60	15	8.6
	60+	4	2.3
	<b>Total</b>	<b>175</b>	<b>100.0</b>
<b>Education Level</b>	Primary	81	46.3
	Secondary	76	43.4
	Diploma	11	6.3
	Degree	5	2.9
	Post Graduate Education	2	1.1
<b>Total</b>	<b>175</b>	<b>100.0</b>	
<b>Household Size</b>	Less than 3	13	7.4
	3-5 Members	76	43.4
	6-9 Members	59	33.7
	10+	27	15.4
	<b>Total</b>	<b>175</b>	<b>100.0</b>
<b>Most Common Disaster</b>	Floods	60	34.3
	Crop Pests and Diseases	77	44.0
	Animal Diseases	15	8.6
	Conflicts	12	6.9
	Wild Fires	11	6.3
<b>Total</b>	<b>175</b>	<b>100.0</b>	

Source: Primary Data

#### **4.3.1 Gender of Respondents**

Results from Table 4 above show that the majority of the respondents were male 78.9% while the minority 21.1% were female. The result means that more male participated in the research. This higher percentage of males could be attributed to the fact that most household in the community are headed by men who are responsible for all the activities in the household.

#### **4.3.2 Age Category of the Respondents**

Table 4 above shows that the greatest percentage (46.3%) of the respondents fell in the age group 41-50 years old, followed by those in the age group 31-40 years (25.7%), then those in the age group 21-30 years (16.6%), then those in the age group 51-60 years (8.6%), then those in the age group of 60 years and above (2.3%) and finally those in the age group 20 years and below. These findings indicate that the majority of household heads in this sub county is in the age group of 31-50 years. This implies that the majority of the respondents were mature enough and their opinions were rich enough to explain disaster management and household food security in the period of study.

#### **4.3.3 Education Level of Respondents**

As seen in table 4 above, a number of respondents attained a primary and secondary level of education, a few attained diplomas and above. The percentages of educational attainment were: 46.3%, 43.4%, 6.3%, 2.9% and 1.1%, respect of; primary, secondary, diploma, degree and postgraduate qualification. The educational level of the respondents reflects a rural setting with the majority of the population below secondary school education. This therefore calls for proper sensitization of the community if they are to understand the concept of disaster management.

#### **4.3.4 Household Size of Respondents**

Most of the households that participated in the research had a household size of 3-5 members (43.4%), followed by households with 6-9 members (33.7%), then those with household members above 10 (15.4) and finally those with members less than 3 (7.4%). Since most of the respondents were in the age bracket of 30- 50 years, this is the period where reproduction is very common. The reluctance to use contraceptives in this sub county could also explain the high household size.

#### **4.3.5 Most Common Disasters**

Results show that the most common disaster in Palam sub county was crop pest and disease (44%) followed by floods (34.3%), animal diseases at 6.8% and conflict and wild fires were at approximately 6%. This means that Palam sub county is at a high risk of food insecurity as the community relies on agriculture for their livelihood. Floods also affect crops in the gardens and destroy infrastructures such as roads, houses and render household food insecure. Floods affect both access to food and availability of food in the households.

#### **4.4 Descriptive statistics, Correlation and Quantitative Data**

This section analyses and interprets the findings on the independent variable namely; disaster mitigation, disaster preparedness and disaster emergency response. The section also presents the descriptive statistics on the dependent variable of household food security.

##### **4.4.1 Effectiveness of Mitigation on Household Food Security**

One of the objectives of the study was to establish the effectiveness of disaster risk mitigation in promoting household food security in Palam Sub County. To achieve this objective, a number of questions were posed to tap the respondent perceptions and opinion regarding disaster mitigation in Palam Sub County with the aim of establishing its effectiveness in promoting household food security in the area.

**Table 5: Respondents Opinion on Physical and Structural Mitigation Works**

Statement/Variables	S.A	A	N	D	S.D	Mean	Std. Dev
The roads to the market are properly constructed	1 6%	4 2.2%	0 0	70 38.9%	105 58.3%	1.4743	.67651
The household has a strong and well-constructed house safe from disasters	0 0%	1 0%	0 0%	179 99.4%	0 0%	2.0114	.15119
The community has a structure in controlling livestock disease outbreak like dips, crushes	2 1.1%	2 1.1%	0 0%	143 73.9%	43 23.9%	1.8229	.59456
The community has structures to contain flooding like dams or trenches to direct water	1 0.6%	0 0%	0 0%	159 83.3%	29 16.1%	1.8514	.44293
The household has planted trees to mitigate climate change and act as wind breaks	1 0.6%	1 0.6%	0 0%	147 81.7%	31 17.2%	1.8571	.47603
Animal houses are safe from floods and other hazards	3 1.7%	0 0%	0 0%	148 82.2%	29 16.1%	1.8857	.55561

**Source: Primary Data**

According to the results in Table 5, above, the respondents noted that the roads to the markets were not properly constructed (mean=1.5, SD=0.7). This means that Palam sub county lacks a proper road network which can facilitate transportation of farmer's produce to the market. Poor road networks are likely to negatively affect people's incomes. Poor incomes may lead to more poverty and poverty may worsen the food security situation in the Sub County during when disaster strikes.

The respondents indicated that their households did not have well-constructed houses that were safe from disaster (mean=2.0, SD=0.2). This means that the community members in Palam Sub County do not have strong houses that can keep them safe when disaster strikes. Poor housing conditions are likely to lead to homelessness in case disasters destroy houses. Homeless people are likely to be food insecure because they cannot engage in economic activities like agriculture which is the source of food for peasant communities in rural Uganda.

When asked if the community has a structure for controlling livestock disease outbreak like dips, crushes, the community members disagreed (mean=1.8, SD=0.6). This means that the community in Palam Sub County does not have structures for controlling outbreak of livestock diseases. Livestock disease is likely to result into increased food insecurity since livestock are a source of food for the community. Secondly, the community in Palam depends on oxen to cultivate. With a high death rate of livestock, farming is likely to be negatively affected resulting into poor food security.

The respondents disagreed with the statement that the community has structures like dams or trenches to contain flooding (mean=1.9, SD=0.4). This means that the community does not have structures in place to control flooding. This implies that in case of flooding, people's crops are likely to be washed away by floods during the rainy season and subsequent famine during dry seasons. This is a threat to food security in the sub county.

When asked whether the household has planted trees to mitigate climate change and act as wind breaks, the respondents disagreed (mean=1.9, SD=0.5). This means that the community has not embraced tree planting as a measure for mitigating climate change. This implies that the community is prone to disasters that are associated with strong winds that destroy crops. Crop destruction by strong winds is likely to result into famine and the resultant food insecurity.

The respondents noted that the animal houses are not safe from floods and other hazards (mean=1.8, SD=0.6). This indicates that animal houses in Palam Sub County are prone to flood related hazards and disasters. When animals are killed by floods, the community is likely to suffer from famine since animals are a source of food for the community and are used to plough gardens.

**Table 6: Availability of Economic Incentives**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
You are able to acquire loans to improve your asset base	0 0%	1 0.6%	0 0%	113 62.8%	66 36.7%	1.6343	.51748
You are doing business to improve on the household assets	1 0.6%	3 1.7%	0 0%	146 81.1%	30 16.7%	1.8800	.52785
You are participating in a savings and credit organization	1 0.6%	3 1.7%	0 0%	175 97.2%	1 0.6%	2.0514	.34355
There are opportunities to get money in the community	1 0.6%	2 1.1%	0 0%	148 82.2	29 16.1	1.8743	.49847

*Source: Primary Data*

The respondents noted that they were not able to acquire loans in order to improve their asset base (mean=1.6, SD=0.5). This means that the community members in the sub county do not have access to credit facilities. Without access to credit facilities, the community members are not able to start business. This may result into reduced asset base, poverty and resultant food insecurity.

When asked whether they were doing business to improve household assets, the respondents disagreed (mean=1.9, SD=0.5). This means that the community members are not engaging in economic activities. Without engaging in income generating activities, the community members are likely to suffer from high rates of poverty and subsequent food insecurity since they tend to lack the ability to buy food when disaster strikes.

The respondents to the study revealed that they were not participating in any savings and credit organization (mean=1.9, SD=0.5). This indicates that the community members are not saving. Without being able to save, the community members cannot invest and engage in income generating activities hence resulting into high levels of poverty. The community members will also not be in position to buy food during disaster due to limited incomes. This is likely to worsen the food security situation in the community.

It was revealed by the respondents that there were no opportunities to get money in the community (mean=1.9, SD=0.5). This means that the community members do not have opportunities for getting money. Without money people cannot purchase food during periods of scarcity hence they are likely to suffer from the challenge of food insecurity.

**Table 7: Awareness Creation, Training and Education**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
There has been training of the community on disaster risk and their management	0 0%	2 1.1%	0 0%	142 78.9%	36 20%	1.8229	.46429
Household/community is aware of measures on disaster risks and their management	0 0%	1 0.6%	0 0%	149 82.8%	30 16.7%	1.8457	.40708
Household/community is aware and trained about disasters	0 0%	1 0.6%	0 0%	143 79.4%	36 20%	1.8057	.43809
You are aware of the measures of mitigating or controlling or mitigating disaster in your area	0 0%	2 1.1%	0 0%	112 62.2%	66 36.7%	1.6514	.54529
Training on disaster has helped improve food security in my community/household	0 0%	1 0.6%	0 0%	175 97.2%	4 2.2%	1.9886	.21412
There is available information on the area prone to disaster e.g. floods, drought, disease in your area	1 0.6%	2 1.1	0 0%	107 59.4%	70 38.9%	1.6457	.60664

*Source: Primary Data*

It was established that there has been no training of the community on disasters and their management (mean=1.8, SD=0.5). The household/community is not aware of measures on disaster risks and their management (mean=1.8, SD=0.4). The community members are not aware of the measures of mitigating or controlling or disaster in their area (mean=1.7, SD=0.5) and there is no available information on the areas prone to disaster e.g. floods, drought, disease in your area (mean=1.6, SD=0.6). The above findings point to the fact that the community

members are not equipped with knowledge about disasters and disaster management. When the community lacks adequate knowledge of disaster management, they will do little to mitigate the impact of these disasters. As such they are more likely to have property and gardens destroyed by disaster hence resulting into food insecurity.

**Table 8: Land use Planning**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
The community is involved/consulted on disaster risk reduction strategies by the organizations involved in disaster mitigation	4 2.2%	175 97.2%	0 0%	0 0%	1 0.6%	1.9943	.27328
The homestead is far away from the area affected by floods	67 37.2%	112 62.2%	0 0%	1 0.6%	0 0%	1.6343	.51748
Land is available for proper planning and usage	4 2.2%	175 97.2%	0 0%	0 0%	1 0.6%	1.9943	.27328
Crops are grown in flood free area	66 36.7%	110 61.1%	0 0%	3 1.7%	1 0.6%	1.6800	.62551
The household has means of storing water for use in the dry season	4 2.2%	175 97.2%	0 0%	1 0.6%	0 0%	1.9771	.14988
Households can store pasture in the dry season	65 36.1%	110 61.1%	0 0%	2 1.1%	3 1.7%	1.7086	.69538

*Source: Primary Data*

The respondents reported that the community was not involved/consulted on disaster risk reduction strategies by the organizations involved in disaster mitigation (mean=2.0, SD=0.3). This is a pointer towards lack of community involvement and participation in disaster mitigation. When the community members are not involved in disaster mitigation, they are likely to be dependent on outside organizations to manage disasters. The community members will not have the capacity to manage disaster on their own and are therefore likely to be highly hard hit by disasters and to be helpless in the face of disasters. Such a situation may come with

the resultant effects of increased food insecurity since in the face of hard hitting disasters; people in the community are less likely to engage in agricultural activities.

When asked if their household were far away from areas that were affected by disaster, the community members disagreed (mean=1.6, SD=0.5). This means that in Palam Sub County, households are at a high risk of suffering from disasters. When a large section of a peasant community is at a risk of disasters, the chances of food insecurity are likely to be high because the community members' gardens are all likely to be equally affected by disasters. As a result of this people may find it to acquire food from the neighbors in the event that disaster strikes.

The respondents indicated that land is not available for proper planning and usage (mean=2.0, SD=0.3). This indicates that the community members in Palam Sub County are faced with a challenge of land scarcity. In the rural areas land is a source of livelihood for the community since it is an important factor in agricultural production. Without access to land, people cannot engage in agricultural activities and without agriculture, there will be no food, hence the resultant food insecurity.

The respondents noted that crops are not grown in flood free areas (mean=1.7, SD=0.6). This means that the crops grown in the sub county are at risk of being destroyed by floods. Destruction of crops by floods leads to food scarcity and famine and subsequent food insecurity.

It was reported by the respondents that the households do not have means of storing water for use in the dry season (mean=2.0, SD=0.1). This means that the households in the community are not in position to harvest rain water and they therefore suffer from water scarcity during drought seasons. Since water facilitates farming, the farmers agricultural produce are likely to be destroyed during periods of drought. This results into food insecurity for the households.

The respondents revealed that households in the community cannot store water during the dry season (mean=1.7, SD=0.7). This means that the community members are faced with the challenge of scarce water during periods of drought. This is likely to result into destruction of crops and death of animals and the resultant food security.

#### 4.4.1.1 Testing Hypothesis One: Disaster Mitigation and Household Food Security in Palam Sub County

In order to determine the influence of disaster mitigation on household food security in Palam Sub County, correlation and regression analysis were conducted and the results summarized in Tables 9 and 10.

**Table 9: The Effect of Disaster Mitigation on Household Food Security**

		Correlations	
		Disaster Risk Reduction	House hold food security
Disaster Risk Reduction	Pearson Correlation	1	-0.727**
	Sig. (2-tailed)		.000
	N	175	175
House hold food security	Pearson Correlation	-0.727**	1
	Sig. (2-tailed)	.000	
	N	175	175

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Primary data**

The results in Table 9 above indicate that disaster risk reduction and household food security are positively significantly related ( $r=-0.727$ ,  $p<0.05$ ). Thus the hypothesis that disaster mitigation would have a significant influence on household food security in Palam Sub County is accepted. The results mean that the more efficient the disaster mitigation strategies, the more

the food security. This practically implies that the inefficiencies in disaster risk reduction strategies negatively affect food security in Palam Sub County.

**Table 10: Regression Results Showing the Effectiveness of Disaster Mitigation in Promoting Household Food Security in Palam Sub County.**

R square=0.393, F= 154.227, P=0.000		
	Standardized Coefficients	Sig.
	Beta	
Disaster Mitigation	0.627	0.000

**Source: Primary Data**

According to the results summarized in table 10 above, the coefficient of determination  $r^2$  for disaster mitigation is equal to 0.393. This means that 39.3% of the variation of household food security is explained by disaster mitigation.

The table also shows that disaster mitigation significantly affect the performance of household food security ( $F=154.227$ ,  $P=0.000$ ). This means that disaster mitigation is a significant determinant of household food security in Palam Sub County

The standardized beta coefficient of ( $\beta=0.625$ ,  $p<0.05$ ) shows that disaster mitigation is significantly positively related to household food security. The result suggest that disaster mitigation has a positive significant influence on household food security in Palam Subcounty.this practically implies that household food security in Palam sub county improves with better mitigation strategies.

#### **4.4.2 Disaster Preparedness and Household Food Security in Palam Sub County**

The second objective of the study was to examine the effectiveness of disaster preparedness in promoting household food security in Palam subcounty. The responses are summarized in tables 10, 11, 12 and 13. This objective was analyzed by using descriptive statistics namely mean and the standard deviation.

**Table 11: Respondents Opinion on Early Warning and Communication**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
There is good weather forecast information in the sub county	0 0%	0 0%	32 17.8	148 82.2	0 0%	2.1829	.38766
The household can get information about different disasters when needed	2 1.1%	2 1.1%	1 0.6%	107 59.4 %	68 37.8%	1.6743	.62714
There is someone responsible for giving information on disasters in the community	0 0%	0 0%	12 6.7%	167 92.8 %	1 0.6%	2.0686	.25345
Disaster information are reliable and accurate in the community	1 0.6%	32 17.8%	37 20.6%	8 4.4%	102 56.7%	2.0057	1.25715
The household has a means of detecting common disasters before they happen	0 0%	1 0.6%	3 1.7%	143 79.4 %	33 18.3%	2.0629	.67086

*Source: Primary Data*

It was revealed by the respondents that there is no good weather forecast information in the Sub County (mean=2.2, SD=0.4). The results mean that the community members in Palam Sub County do not have access to weather forecast information. Without access to this information, the community cannot be able to effectively plan for their agricultural activities. As such, they are likely to be caught unaware by changes in weather patterns hence affecting food security in the sub county.

When asked whether the household can get information about different disasters when needed, the respondents disagreed (mean=1.7, SD=0.7). The finding is a pointer towards lack of

adequate information about disasters by the households in the sub county. Lack of information about disasters is likely to affect agricultural activities in such a way that farmers may not have the adequate knowledge to mitigate the impact of disasters on their activities. As such they may be caught unawares by disasters which destroy crops hence resulting into food insecurity.

The respondents to the study reported that in the sub county, there was no one responsible for giving information on disasters in the community (mean=2.1, SD=0.3). This means that the Palam Sub County does not have a Disaster Information Officer. This implies that the community members do not have access to a reliable officer who can inform them about disasters and how to mitigate them in order to avert disaster related food insecurity.

It was reported by the respondents to the survey questionnaire that disaster information is not reliable and accurate (mean=2.0, SD=1.3). This means that the households in Palam Sub County do not have access to reliable and accurate disaster information. Lack of reliable and accurate disaster information may result into lack of proper measures by the community to avert disaster related food security in such a way that the community will not be in position to plan and mitigate the impact of disasters on their crop yields.

The respondents noted that their households did not have a means of detecting common disasters before they happen (mean=2.1, SD=1.7). This indicates that households in Palam Sub County do not have means of detecting disasters before they happen and are therefore prone to being hard hit by disaster related food insecurity due to lack of early warning signs.

**Table 12: Monitoring and Forecasting**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
There is monitoring of disasters by various stakeholders in your community	0 0%	38 21.1%	69 38.3%	37 20.6%	36 20%	2.6171	1.04317
There is a reliable system in place for tracking disasters and reporting	1 0.6%	1 0.6%	0 0%	115 63.9%	63 35%	1.6686	.54021
There is a system in place to monitor crop and livestock performance in the community	2 1.1%	1 0.6%	32 17.8%	143 79.4%	2 1.1%	2.2286	.50774

*Source: Primary data*

The respondents disagreed with the statement that there is monitoring of disasters by various stakeholders in your community (mean=2.6, SD=1.0). The results indicate that there is lack of proper monitoring of disasters by stakeholders in the community. This was confirmed by one of the key informants, who asserted that,

*There is lack of effective early warning systems in the community and lack of human, financial and technical resources to monitor disasters. Failure to effectively monitor disasters has exposed the community to the dangers of disaster related food insecurity since the community has not put in place measures to mitigate disasters which may destroy crops and livestock.*

It was reported by the respondents that there is no reliable system in place for tracking disasters and reporting (mean=1.7, SD=0.5). This means that in Palam Sub County, there is no reliable system for tracking and reporting disasters. Lack of an effective disaster tracking and reporting

system is likely to lead to disaster related food insecurity due to lack of information on how to mitigate the effect of disaster on crop yields.

When asked if there was a system in place to monitor crop and livestock performance in the community, the respondents responded in the negative (mean=2.2, SD=0.5). This means that in Palam Sub County, there is no system to monitor crop and livestock performance. Lack of a system to monitor livestock performance is likely to result into poor yields and resultant food insecurity in the sub county.

**Table 13: Contingency Planning**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
The household has resources in place set aside to help in disaster times	0 0%	36 20%	0 0%	102 59.4%	37 20.6%	2.2000	1.00000
The family stores food for use in disaster times	1 0.6	1 0.6	0 0%	173 96.1%	5 2.8%	2.0057	.31252
The family saves money for purchase of food in times of disasters	1 0.6%	0 0%	36 20%	111 61.7%	32 17.8%	2.0400	.66402
The community has food stores to assist when disaster strikes	0 0%	0 0%	4 2.2%	139 77.2%	37 20.6%	1.82	.443
Animals have emergency grazing fields in case of drought and floods in the community	6 3.3%	3 1.7%	0 0%	170 94.4%	1 0.6%	2.1371	.60033

**Source: Primary Data**

As can be seen in Table 12, the respondents noted that the households do not have resources in place set aside to help in disaster times (mean=2.2, SD=1.0). This indicates that the households in Palam Sub County do not have adequate resources to use in case disaster strikes. Lack of

resources to use in case of disaster is likely to worsen the food security situation as the households cannot purchase food from elsewhere due to lack of money.

The respondents disagreed with the statement that the household stores food for use in disaster times (mean=2.0, SD=0.3). This means that households in Palam Sub County do not store food to use when disaster strikes. Failure to store food to use during times when disaster strikes may result into food insecurity.

The respondents noted that the households do not save money for purchase of food in times of disasters (mean=2.0, SD=0.7). This is an indicator that the households in Palam Sub County do not save financial resources for use during disaster. Without money, the households cannot buy food, hence worsening the food security situation.

When asked whether animals have emergency grazing fields in case of drought and floods in the community, most of the respondents answered in the negative (mean=2.1, SD=0.6). This means that in Palam Sub County, there are no emergency grazing fields for animals in case of natural disasters. This is likely to lead to the death of livestock and the resultant food insecurity which follows the death of animals which are a source of food to the community and are also used for cultivation.

**Table 14: Shelter Facility Emergency Planning**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
You have facilities to keep your food in emergency situations	0 0%	0 0%	30 16.7%	113 62.8%	37 20.6%	1.9657	.61492
Your house is a safe place to live in when a disaster occurs	0 0%	3 1.7%	1 0.6%	144 80%	32 17.8%	1.8514	.48028

The household has other places to live in in times of disasters	0 0%	0 0%	0 0%	114 63.3%	66 36.7%	1.6229	.48606
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**Source: Primary Data**

The respondents noted that they did not have facilities to keep their food in emergency situations (mean=2.0, SD=0.6). This means that the households in Palam Sub County do not have facilities for keeping food in emergency situations. Lack of food storage facilities is likely to cause food insecurity during emergency situations due to food scarcity.

The respondents reported that their houses were not safe to live in when disaster occurs (mean=1.9, SD=0.5). This indicates that the community members in Palam Sub County do not have safe houses to live in in case disaster occurs. This is likely to make them homeless and lead to internal displacement with the resultant food insecurity that comes with internal displacement.

The respondents indicated that they did not have other places to live in in times of disasters (mean=1.6, SD=0.5). This indicates that the community members have no alternative shelter in case disaster strikes. This is likely to lead to internal displacement and the resultant food insecurity which comes with internal displacement.

**4.4.2.1 Testing Hypothesis Two: Disaster Preparedness and Household Food Security in Palam Sub County**

In order to examine the effectiveness of disaster preparedness in promoting household food security in Palam Sub county, Correlation and regression analysis were conducted. The results are summarized in Tables 14 and 15.

**Table 15: The Effect of Disaster Preparedness on Household Food Security**

**Correlations**

		Disaster Preparedness	House hold food security
Disaster Preparedness	Pearson Correlation	1	.708**
	Sig. (2-tailed)		.000
	N	175	175
House hold food security	Pearson Correlation	.708**	1
	Sig. (2-tailed)	.000	
	N	175	175

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Source: Primary Data*

The results in Table 13, indicate that disaster preparedness and household food security are positively significantly related ( $r=0.727$ ,  $p<0.000$ ). Thus, hypothesis two that stated that disaster preparedness would have a significant influence on household food security is accepted. The results mean that the more efficient the disaster preparedness strategies, the more the food security. This practically implies that the inefficiencies in disaster preparedness strategies negatively affect household food security in Palam Sub County.

In order to determine the effect of disaster preparedness strategies on household food security, regression analysis was conducted. The results are summarized in Table 14 below.

**Table 16: Regression Results Showing the Effectiveness of Disaster Preparedness in Promoting Household Food Security in Palam Sub County.**

R square=0.325, F=105.601, P=0.000		
	Standardized Coefficients	Sig.
	Beta	
Disaster Preparedness	0.708	0.000

**Source: Primary Data**

According to the results in the summarized table 15 above, the coefficient of determination  $r^2$  for disaster preparedness is equal to 0.325. This means the overall variance in household food security explained by disaster preparedness is 32.5%.

The table also shows that disaster response significantly affect the performance of household food security (F=105.601, P=0.000). This means that disaster response is a significant determinant of household food security in Palam Sub County

The standardized beta coefficient of ( $\beta=0.708$ ,  $p<0.05$ ) means that disaster preparedness is significantly positively related with household food security in Palam Sub County. This means that disaster preparedness has a significant influence on household food security in Palam Sub County. This practically implies that household food security improves with disaster preparedness.

**4.4.3 The Effectiveness of Disaster Response in Enhancing Household Food Security in Palam Sub County**

The third objective was to determine the effectiveness of disaster response in enhancing household food security in Palam Sub County. The respondents were asked to respond to a

number of statements regarding disaster response. The responses are summarized in tables 16, 17 and 18. This objective was analyzed using the descriptive statistics namely mean and the standard deviation. The mean portrays the average response on a statement and the standard deviation portrays the extent to which the scores deviate from the mean.

**Table 17: Respondents Opinion on Humanitarian Assistance**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
You have relatives who gives you food in period of disasters	2 1.1%	31 17.2%	32 17.8%	115 63.9%	0 0%	2.5600	.81339
There are NGOs to give you food in disaster times	0 0%	0 0%	0 0%	177 98.3%	3 1.7%	4.6000	.00000
Government gives food in disaster times	0 0%	1 0.6%	0	108 60%	71 39.4%	4.0171	.52165

**Source: Primary Data**

The respondents disagreed with the statement that they have relatives who give them food in periods of disaster (mean=2.6, SD=0.8). This means that the households in the Sub County cannot depend on relatives for food during periods of disasters. This lack of assistance from relatives is likely to worsen the food security situation in the sub county.

The respondents agreed that there are NGOs that give them food in times of disaster (mean=4.0, SD=0.0). This means that the community members depend on NGOs for food during times of disaster.

When asked if government gives food to the community in times of disaster, the respondents answered in the affirmative (mean=4.4, SD=0.5). This indicates that the government provides food to the victims of natural disaster.

However, this is in disagreement with one of the key informants who pointed out in a statement that;

*The distribution of food by government during times of disaster is both erratic and inadequate and it is therefore not reliable. Besides, distribution of food to the victims has been politicized with those who do not support the current National Resistance Movement reporting perceived discrimination.*

**Table 18: Mobilization of Emergency Resources**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
The community can get support easily in disaster times	0 0%	0 0%	2 1.1%	148 82.2%	30 16.7%	1.8286	.37796
You sell assets to buy food in times of disasters	2 1.1%	1 0.6%	2 1.1%	142 78.9%	33 18.3%	4.8686	.53593
The household can easily get credit in times of disasters	2 1.1%	0 0%	37 20.6%	139 77.2%	2 1.1%	2.2400	.50241
The government gives loans in case of disasters	0 0%	0 0%	37 20.6%	75 41.7%	68 37.8%	1.8229	.75623
NGOs give financial services in times of disaster	4 2.2%	1 0.6%	37 20.6%	100 55.6%	38 21.1%	2.0857	.79407
The community saves money for use in disaster times	1 0.6%	0 0%	0 0%	178 98.9%	1 0.6%	2.0171	.22678
There are financial institutions you can get money from when faced with disaster	2 1.1%	0 0%	37 20.6%	70 38.9%	71 39.4%	3.8514	.82398
You acquire seeds after disasters easily	1 0.6%	0 0%	0 0%	136 75.6%	43 23.9%	1.7886	.48647

**Source: Primary Data**

The respondents noted that the community cannot get support easily in disaster times (mean=1.8, SD=0.8). The results suggest that the households in Palam Sub County cannot easily get support during times when disaster strikes. Failure to get support in terms of food is likely to worsen the food security situation in the sub county.

The respondents agreed that they sell assets like land, livestock and household items to get money for buying food during disaster (mean=4.9, SD=0.5). This means that the households in Palam Sub County cope with disaster by selling assets. Selling assets to buy food may worsen the poverty situation and in the long run cause more food insecurity due to depletion of resources.

When asked if the households can easily get credit in times of crisis, the respondents answered in the negative (mean=2.2, SD=0.5). This means that the households in Palam do not have access to credit services and facilities during periods of disaster. Lack of credit is likely to lead to poverty and resultant food insecurity.

The respondents noted that the government does not give loans in case of disaster (mean=1.8, SD=0.8). This means that the government does not give financial aid to the victims of disaster. Lack of government financial aid is likely to result into poverty and worsen the food security situation in the sub county.

The respondents noted that NGOs do not give financial services in times of disaster (mean=1.9, SD=0.8). This means that the households in Palam Sub County do not receive any financial aid from the NGOs operating in the area. This was confirmed by a key informant who noted that

*“The only form of aid that is given by the NGOs is in kind for example food and clothes but not money”. Failure to support disaster victims financially may lead to poverty which may result into worsened food security*

The respondents noted that there are financial institutions they can get money from when faced with disaster (mean=3.9, SD=0.8). This means that the community has access to financial institutions that can give access to credit during times of disaster. However, key informants reported that *the loans given by the financial institutions attract high interest rates and*

*impoverish peasants more than they empower them.* The key informants also reported that the community members do not have security to acquire loans from the financial institutions.

The respondents noted that it was not easy to acquire seeds after disaster (mean=1.8, SD=0.5).

This means that the households in the community cannot easily acquire seeds for cultivation after disaster strikes. This is likely to lead to increased food insecurity among the households.

**Table19: Clear up and Restoration of Emergency Services**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
Roads to the market are maintained after disaster e.g. floods	0 0%	4 2.2%	35 19.4%	64 35.6%	77 40.8%	1.8057	.82836
Medical workers are available after a disaster happens	2 1.1%	0 0%	0 0%	107 59.4%	71 39.4%	1.6457	.60664
Markets are available for purchase of food in disaster times	2 1.1%	0 0%	38 21.1%	102 56.7%	38 21.1%	2.0333	.72389
There are financial institutions in place to help in case of disasters	0 0%	0 0%	0 0%	101 56.1%	79 43.9%	3.5600	.49781
Early maturing crops are provided to help in food security disaster times	0 0%	1 0.6%	68 37.8%	41 22.8%	70 38.9%	2.0229	.89027

**Source: Primary Data**

The respondents reported that the roads to the market are not maintained after disasters (mean=1.8, SD=0.8). This means that the roads in the sub county are not maintained after disaster. This is likely to affect transportation of farmer produce to the market. Lack of access to markets is likely to result into reduced income, poverty and subsequent food insecurity.

The respondents to the study reported that medical workers are not available after disaster happens (mean=1.6, SD=0.6). This means that the community lacks access to medical care

after floods. Lack of access to medical care is likely to affect the health of the community members and lead to subsequent food insecurity since unhealthy people cannot engage in productive activities like agriculture.

The respondents noted that there are financial institutions to provide help in case of disasters (mean=3.7, SD=0.5). The results indicate that households have access to financial institutions that provide access to financial help after disasters. However, one of the key informants stated that;

*The loans given by the financial institutions attract high interest rates and impoverish peasants more than they empower them. More so the community members do not have security to acquire loans from the financial institutions.*

The respondents disagreed with the statement that early maturing crops are provided to help in mitigating the impact of disaster on food security (mean=2.0, SD=0.9). This means that households in Palam Sub County are not provided with fast maturing crops. This is likely to worsen the food security situation in the sub county.

#### **4.4.3.1 Testing Hypothesis Three: Disaster Response and Household Food Security in Palam Sub County**

In order to determine the effectiveness of disaster response in enhancing household food security in Palam Sub County, correlation and regression analysis were conducted. The results are summarized in tables 19 and 20 below

**Table 20: The Effect of Disaster Response Strategies on Household Food Security**

		Correlations	
		Disaster Response	House hold food security
Disaster Response	Pearson Correlation	1	.187

	Sig. (2-tailed)		.000
	N	175	175
House hold food security	Pearson Correlation	187	1
	Sig. (2-tailed)	.000	
	N	175	175

The results in Table 20, indicate that disaster response and household food security are positively significantly related ( $r=0.727$ ,  $p<0.05$ ). Thus, hypothesis three which stated that disaster response would have a significant influence on household food security is accepted. The results mean that the more efficient the disaster response strategies, the more the household food security. This practically implies that the inefficiencies in disaster response strategies negatively affect household food security in Palam Sub County.

**Table 21: Regression Results Showing the Effectiveness of Disaster Response in Promoting Household Food Security in Palam Sub County.**

R square=0.315, F= 106.962, P=0.000		
	Standardized Coefficients	Sig.
	Beta	
Disaster Response	0.680	0.000

**Source: Primary Data**

According to the results summarized in table 21 above, the coefficient of determination  $r^2$  for disaster response is equal to 0.315. This means that 31.5% of the variation of household food security is explained by disaster response.

The table also shows that disaster response significantly affect the performance of household food security ( $F=106.962$ ,  $P=0.000$ ). This means that disaster response is a significant determinant of household food security in Palam Sub County

The standardized beta coefficient of ( $\beta=0.680$ ,  $p<0.05$ ) shows that disaster response is significantly positively related to household food security. The results suggest that disaster response has a positive significant influence on household food security in Palam Sub County. This practically implies that household food security in Palam Sub County improves with better response strategies.

## FOOD SECURITY

**Table 22: Food Security.**

Statement/Variables	S.A	A	N	D.A	S.D	Mean	Std. Dev
We eat less to preserve food for the next day in disaster times	39 21.7%	138 76.7%	0 0%	1 0.6%	2 1.1%	4.2229	.53342
Some of the children are malnourished when disaster strikes	113 62.8%	67 37.2%	0 0%	0 0%	0 0%	4.3771	.48606
There is enough food to eat according to our wish even in disaster times	76 42.2%	72 40%	0 0%	32 17.8%	0 0%	1.9543	1.0711 3
We beg or borrow food to survive	111 61.7%	67 37.2%	0 0%	0 0%	2 1.1%	3.4229	.61918
There is money but no market to buy food	111 61.7%	66 36.7%	0 0%	3 1.7%	0 0%	3.3771	.48606
Food is only available for a short period of time	72 40%	30 16.7%	0 0%	74 40.6%	0 0%	4.0229	.38279
The household is able to eat food during disasters	36 20%	73 40.6%	0 0%	66 36.7%	0 0%	1.3486	1.1922 6

*Source: Primary Data*

The respondents agreed with the statement that they eat less in order to preserve food for the next day (mean=4.2, SD=0.5). This means that the households eat less than the required quantity of food. This is a pointer towards food insecurity in the Sub County.

The respondents noted that children are malnourished when disaster strikes (mean=4.3, SD=0.5). This indicates that children in the households suffer from malnutrition during periods of disaster. This implies that disasters in the area have an effect on food security and the consumption of nutritious foods.

When asked if there is enough food to eat according to their wish even in disaster times, the respondents disagreed (mean=2.0, SD=1.0). This means that the community does not have

access to adequate food during disasters. This is likely to lead to deficiency diseases in the community.

The respondents noted that they beg or borrow food to survive during disasters (mean=3.4, SD=0.6). This means that the households in the community lack access to food during periods of disasters and as such, they resort to begging and borrowing food.

The respondents agreed noted that the households have money, but lack the food to buy (mean=3.4, SD=0.5). This indicates that the communities do not have access to food. Lack of food accessibility is likely to worsen the food security situation in the community.

The respondents noted that while food was available, it was available for only a short time (mean=4.0, SD=0.4). This is a pointer towards lack of food availability in the community after disasters. Lack of food availability is likely to lead famine and associated challenges like malnutrition and death.

It was revealed by the respondents that the households are not able to eat food after disasters (mean=1.3, SD=1.2). This means that the community members are not able to consume food after disasters. This is a pointer towards food insecurity. Lack of food is likely to lead famine and associated challenges like malnutrition and death.

## **CHAPTER FIVE**

### **SUMMARY, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the discussion of results, draws conclusions from the research findings and gives recommendations based on the findings of the study. Discussions are presented systematically in line with the objectives of the study which include: The effectiveness of Disaster Mitigation in promoting Household food security, the effectiveness of Disaster Preparedness in promoting household food security and the effectiveness of Disaster Emergency Response in enhancing household food security in Palam Sub County.

#### **5.2 Summary of Study Findings**

The study established a number findings, the summary of the findings are outlined here under;

##### **5.2.1 Objective One: The Effectiveness of Disaster Mitigation Strategies in Promoting Household Food Security:**

Disaster mitigation was studied by asking 21 questions with responses measured on a Likert scale. The correlation between disaster mitigation and household food security was positive and significant since Pearson's Correlation coefficient  $r = 0.727$  was high and the p value ( $p=0.000$ ) was less than the p critical ( $p_c=0.050$ ) suggesting a high positive relationship between the two variables. The researcher therefore accepted the relationship as statistically significant. This implies that when disaster mitigation is not attended to, then household food security also reduces. Similarly, an increase in disaster mitigation translates into an improvement in household food security

### **5.2.2 Objective Two: The Effectiveness of Disaster Preparedness in Promoting Household Food Security**

Disaster preparedness was studied by asking the respondents 18 questions with responses measured on a Likert scale. Findings indicate that disaster preparedness has a high positive relationship with food security. The correlation relationship between disaster preparedness and household food security was positive and significant since Pearson's Correlation Coefficient  $r = 0.727$  was high and p value ( $p=0.000$ ) was less than the p critical ( $p_c=0.001$ ), suggesting a high positive relationship between the two variables. From the regression analysis, the amount by which change in disaster preparedness brings change in household food security was found to be 0.325 ( $R^2 = 0.325$ ). This means that disaster preparedness affects household food security by 32.5%. The researcher therefore accepted the relationship as statistically significant. This implies that a decrease in disaster preparedness leads to food insecurity and an increase in disaster preparedness translates into an improvement in household food security.

### **Objective Three: The Effectiveness of Disaster Emergency Response in Enhancing Household Food Security**

Disaster emergency response was studied by asking 22 questions with responses measured on a Likert scale. The study findings showed that there was a positive relationship between disaster emergency response and household food security. The disaster emergency response strategies such as humanitarian assistance, damage assessment, mobilization of emergency resources, clean up and restoration of services and transfer influenced household food security. Disaster emergency response had a positive significant relationship with food security given by Pearson's  $r=0.187$  and significance of 0.000. Furthermore, the study accepted the stated hypothesis that disaster emergency responses enhance household food security in Palam Sub County and vice versa.

### 5.3 Discussion of Findings

#### 5.3.1 Objective One: The Effectiveness of Disaster Mitigation Strategies in Promoting Household Food Security.

The study findings showed that there is a positively significant relationship between disaster mitigation and household food security in Palam Sub County. The research also revealed that disaster risk mitigation is still low in the sub county. This was revealed by respondents that there was poor infrastructural mitigation works in the sub county with poor market infrastructures, houses and livestock infrastructures. This agrees with Stoke, (2007) in his evaluation of disaster risk mitigation who noted that there are few examples of good practices related to vulnerability reduction in most communities. This could be due government policy and priority with little funds directed towards disaster mitigation works. In the qualitative analysis, a member of the disaster committee indicated that;

*Corruption especially in the procurement of contractors in the maintenance of roads and markets has resulted in poor infrastructures in the district.*

The poor infrastructures like market and road collapse when disaster strike affecting the access component of food security. In a study by Schipper, (2008) he noted that there tends to be a disproportionate emphasis on relief and recovery process that prioritize a return to normalcy rather than focusing on the conditions that cause risk and vulnerability in developing countries. In many cases, these “normal “conditions are directly or indirectly contributing to risk and vulnerability.

The research noted that there was little community awareness, training and education in disaster mitigation strategies in the sub county. Indeed, this is in agreement with an African Union report, (2008) on disaster risk mitigation in sub-Saharan Africa stating that there was lack of awareness and education on disaster mitigation and calls for better identification,

assessment and awareness of disaster risks, which will require efforts from both the disaster risk reduction community and climate scientists. Public awareness and education for disaster is one the most important components of any mitigation program (Mileti *et al*, 2004). It seeks to turn available human knowledge into specific local action to reduce risk, build asset base and create resilience. Lack of awareness and education leads to poor disaster coping strategies, vulnerability and results in food insecurity. Communication about disasters needs to be made accessible in order to engage vulnerable people without compromising scientific credibility so as to improve household food security.

The study also noted that the community was not involved in disaster mitigation planning and that households still live in disaster prone areas. This makes the community vulnerable to disasters. Adger *et al*, 2006 in their study noted that engagement at the community level is underpinned by a reframing of vulnerable people not as passive victims but as capable of preventing disasters and adapting to climate change within their own communities. Bottom-up approaches promote locally-appropriate measures, empower people to change their own lives, and encourage greater ownership of disaster risk reduction and adaptation actions. Communications have been highlighted as extremely important, which suggests an emphasis on presenting knowledge in a community's own language, through innovative media, and in understandable non-scientific terms.

### **5.3.2 Objective Two: The Effectiveness of Disaster Preparedness in Promoting Household Food Security**

The second objective of the study was to establish the relationship between disaster preparedness and household food security in Palam Sub County. Findings of the study established that there was a positive and significant relationship between the two variables; disaster preparedness explained 32.5% of the household food security in Palam Sub County.

Disaster preparedness had a substantial effect on household food security in Palam Sub County.

This means that 77.5% of the household food security is explained by other factors.

The study indicated that Early warning and communication, monitoring and forecasting, contingency planning, shelter facility emergency planning were still very low in the sub county. This is in agreement with FAO, (2013) that pointed out that disaster preparedness is poor in developing countries with very little attention paid to monitoring and forecasting, contingency planning and lack of information on disasters. In the qualitative data analysis, one staff from an NGO noted that data on disasters are usually unreliable and over exaggerated by the community leaders for their personal benefit. Statistical baselines are essential to monitor the level of food and nutrition insecurity, both acute and chronic, based on accurate and reliable data. Multi-hazard risk analysis and mapping are also important to understand which areas are vulnerable to specific types of hazards and risks, including gender disaggregated data and analysis, to evaluate and monitor people's coping capacity to design future interventions and inform policy (Stoke, 2007). Because of poor disaster preparedness, there is no timely and accurate meteorological data to mitigate the impact of disasters, allowing farmers to take poor decisions in terms of early or late planting, type of crops or varieties to cultivate, among others. This leads to chronic food insecurity in the community. Capacity building is needed to facilitate data collection, monitoring and analysis, as well as to disseminate this information for decision-making.

However, a case study by the government of Mozambique showed that issuing of timely alerts help people to improve on their preparedness. The government also made farmers funds available through established contingency plans and mechanisms to initiate response activities. As a result of a good early warning system and the activation of contingency and response plans, the impact of these floods, even if devastating for material goods, was relatively small in terms of the number of people who died (FAO, 2013).

According to W.F.P, (2011) Report, working closely with communities, organizations can build the resilience of communities through cost effective measures such as building cereal banks, and improving land management techniques. Provision of climate information and early warning can help farmers make appropriate decisions and help improve food security

### **5.3.3 Objective Three: The Effectiveness of Disaster Emergency Response in Enhancing Household Food Security**

One of the objectives of the study was to determine the effectiveness of disaster emergency response in promoting household food security.

When asked if government gives food to the community in times of disaster, the respondents answered in the affirmative meaning that government and NGOs provide food in disaster times. This agrees with the UHP, (2012) that alluded that the government and various stakeholders had given humanitarian assistance to households affected by floods in eastern Uganda. However, this practice is not sustainable in itself since such hand outs are not enough to ensure food security. This practice also encourages laziness in the community since they will not concentrate on improving their resilience to natural disaster. In a study by Adger et al 2006, they recommended that disaster communities should focus beyond humanitarian relief and rehabilitation activities towards preventing and reducing the risk of disasters.

While NGOs play an important role in averting the food insecurity situation, overdependence on food handouts from NGOs is likely to result into food insecurity in the long run as the households may become reluctant to cultivate their own food with the hope that the NGOs will provide. This was confirmed during key informant interviews when one respondent reported that

*“Over dependence on NGOs has made the community members lazy and they do not want to grow crops thinking that the NGOs will always provide for them”.*

The study findings reveal that the government gave very little humanitarian assistance in times of disaster. This was also in agreement with qualitative findings from the sub county. The district carried out damage assessment whenever a disaster occurred so as to determine the extent of damage and respond appropriately. However, in the qualitative analysis, the District production coordinator katakwi stated that;

*The data collected on disaster are usually unreliable and do not reflect the extent of damage because everyone will want to get humanitarian Aid.*

#### **5.4 Conclusions**

Conclusions of the study were primarily based on research findings. The study was guided by the following research questions; how effective is disaster mitigation in promoting household food security in Palam Sub County? Does disaster preparedness promote household food security in Palam Sub County? How effective is disaster emergency response in enhancing household security in Palam Sub County? The study revealed that all variables, disaster mitigation, disaster preparedness and emergency planning can contribute to household food security. However, disaster mitigation and emergency response programs were ineffective in promoting household food security in Palam Sub County. The findings from the interviews also revealed that the various stakeholders involved in disaster risk reduction were not performing to expectation of the community. The conclusion was reached given the correlation analysis and observations made in chapter four of this study. Below are the conclusions made under each specific objective in the study.

##### **5.4.1 Disaster Mitigation and Household Food Security in Palam Sub County**

In Palam Sub County there are very low levels of implementation of disaster risk mitigation practices. This is caused by lack information and lack of commitment by various stakeholders in mitigating disasters. The study noted that most household lived in weak buildings that can

collapse during flooding. It was also noted that the critical roads in the area were poor and could easily be washed away during flooding. This means that many families can lose their property during disaster leading to food insecurity and hunger when a disaster strikes.

#### **5.4.2 Disaster Preparedness and Household Food Security in Palam Sub County**

The study concludes that disaster preparedness is still very low in the sub county with most households unable to get information on weather and that most household did not have access to accurate information. The study also noted that there was poor monitoring and forecasting of disaster. This means disasters always took households by surprise hence a higher impact on the community. The research also found out that shelter facility emergency planning was not done. This means that most affected households did not have ways to keep the food in emergency situation

#### **5.4.3 Disaster Emergency Response and Household Food Security in Palam Sub County**

This study concludes that disaster emergency response significantly affect household food security. When disaster emergency response is enhanced, household food security in Palam Sub County is also enhanced

The study also concludes that there is poor mobilization of resources during disaster in Palam Sub County with the community lacking financial credit from the government, NGO and financial institutions. This has been attributed to lack of security for credit and a low community asset base. The study finding also reveal that restoration and clear up when hazards strike is very slow with most roads, markets and other infrastructure not repaired for a long period of time. This limits access to food hence accelerating the magnitude of food insecurity in disaster times.

The research also found out that humanitarian assistance in disaster times is too low. There is little support from government, NGOs and relatives with most households suffering from hunger and malnutrition when there is disaster.

## **5.5 Recommendations**

Basing on the study findings and conclusions, the following recommendations based on objectives do emerge:

### **5.5.1 Disaster Mitigation and Household Food Security in Palam Sub County**

The study recommends that the district allocates resources to build the capacity of disaster committees in Sub County and parish since most of them lacked knowledge and are redundant due to poor funding. The district should also focus on training the community on various disasters in their communities and provide practical skills in mitigation of disasters. It should raise awareness of disaster risks and the impact of climate change among the local population through radio broadcasts, local meetings, newspapers and partnerships with community organizations and NGOs.

Also flood or dry spell resistant crop varieties should be introduced to households so that in events when weather is predicted to be rainy or sunny, then households can be advised on which crops to plant. This needs close corroboration with the Uganda metrological center to tell the predicted weather patterns

### **5.5.2 Disaster Preparedness and Household Food Security in Palam Sub County**

The study recommends that the government improves infrastructures such as roads, building cereal banks for storage of food and construction of valley dams to store water in dry seasons. The district should also promote irrigations during dry spells as well as modern farming techniques that protect the environment.

Extensive research has to be undertaken on improved seed varieties, short cycle varieties, drought resistant varieties, disease and pest resistant varieties, and flood or saline tolerant varieties, which have been released by research institutions and private seed companies.

Prepare contingency plans at different levels (community, partners, and government) that identify vulnerable people and list response options for food security.

In hazard prone areas, the government should plan and construct agricultural infrastructures (e.g. warehouses, seed and grain storages, animal shelters, gene banks, irrigation schemes, pumping stations, markets, slaughterhouses) need to take into account good construction practices in order to reduce the risk of severe damage done by climate related hazards, such as cyclones, heavy rainfall or floods.

### **5.5.3 Disaster Emergency Response and Household Food Security in Palam Sub County**

The district should carry out contingency planning for disaster response in the district. The government should demarcate areas that are less prone to disaster in the district and build structures that can be used by household when a disaster strikes. The community should also be encouraged to join village saving and associations schemes that can help them access money in case of disasters.

Stakeholders should ensure that post-emergency livelihoods rehabilitation programs consider changed economic and climactic realities (e.g. promotion of seeds and/or livestock appropriate to changing weather conditions, fisheries restocking taking into consideration new water levels, flows, and conditions).

Civil society organizations should support disaster prone communities to develop their own organizations, through which they can represent themselves and their priorities in order to create a food secure community.

### **5.6 Limitations of the Study**

The study faced problems of bias and response error. This was due to the potential respondents who refused to answer questions. The respondents were guaranteed that the information given was for academic purposes only. Further the researcher avoided non response error by keen follow up on the selected respondents.

Furthermore, the research was conducted in only one Sub County in the district. Other sub counties were not involved in the study due to cost implications.

The study also used interviews and questionnaires as methods for data collection and other methods like observation, document review and focus group discussions were not employed. These methods can therefore be incorporated in further studies to help understand disaster risk management and food security.

### **5.7 Contributions of the Study**

The results of this study reveal that disaster mitigation, preparedness and emergency response were all significantly linked to food security in Palam Sub County. The research found that households do not store food or save any money in anticipation of disaster. This can lead to humanitarian crisis and therefore calls for urgent interventions in the development food reservoirs in the communities. This study has therefore added to the body of knowledge as it emphasized the need to dedicate resources to the dimensions of disaster, preparedness, mitigation and disaster response. In order to expect better performance in food security as a result of improved disaster risk management strategies.

This study will also contribute to policy changes in DRR and food security. It will be a reference point to various stakeholders and policy makers especially in regard to improving disaster risk management and household food security.

### **5.8 Areas Recommended for Future Research**

The study concentrated on only three dimensions of the independent variable. Other dimensions of DRR can be studied further.

The geographical scope of this study was only limited to Palam Sub county. Other sub counties and districts can also be studied for purposes of comparison as well as in depth understanding of household food security trends.

Since disasters, food security and climate are closely interrelated, studies can be carried to determine the relationship between these concepts since most participants had interest in the understanding the effect of climate change on household food security,

Another area for further research is the role various stakeholders in disaster risk management and food security. These will help the various stakeholders understand their roles in disaster management since most of the stakeholders didn't understand their role clearly. Furthermore, this will help in identifying the weaknesses in disaster risk management and help in strengthening its positive attributes.

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## APPENDICES

### APPENDIX I

#### QUESTIONNAIRE FOR RESPONDENTS IN THE STUDY ON THE CONTRIBUTION OF DRR ON HOUSEHOLD FOOD SECURITY IN PALAM SUBCOUNTY

##### Dear Respondents,

This questionnaire seeks to solicit information for a Master's Degree in Management on the topic: Assessing the Effectiveness of Disaster Risk Reduction Strategies in Promoting Household food security in Palam Sub County.

You have been identified as one of the respondents due to the unique information you have about the topic. All the information obtained will be treated with maximum confidentiality and only used for the intended academic purpose. You do not need to disclose your name. Thank you in advance.

##### SECTION A: RESPONDENTS BIO-DATA

Kindly **tick** the option that applies to you

1. Sex classification (a) 15-20  (b) 21-30 (c) 31-40 (d) 41-50 (e) 51-60 (f) 60+
2. Age classification (a) Male (b) Female
3. Education level (a) primary (b) secondary (c) diploma (d) Degree (e) masters (F) others specify
4. Average household size (a) less than 3 (b) 3-5 members (c) 6-9 (d) above 9
5. Tick the most common disasters affecting food security in your household (a) Drought (b) floods (c) crop pest and Diseases (D) Animal diseases (e) conflicts (f) wild fires (g) Name others

**SECTION B: DISASTER RISK REDUCTION**

To what extent do you agree or disagree with the following statements concerning disaster risk reduction in Palam Sub County? Please tick the relevant box to indicate the opinion you agree with using the scale below.

**(1)Strongly Agree (2) Agree (3) Not Sure (4) Disagree (5) Strongly Disagree**

<b>RISK MITIGATION (physical and structural mitigation works, economic incentives, awareness creation training and education land Use planning)</b>						
<b>Physical and structural mitigation works</b>		<b>SCALE</b>				
		1	2	3	4	5
1	The roads to the markets are properly constructed to help when a hazard befalls					
2	The Household has a strong and well-constructed house safe from disasters					
3	Community has structures to help in controlling livestock disease outbreak like dips, crushes					
4	Community has structures to contain flooding like dams or trenches to direct water					
5	Household has structures to prevent flooding of gardens					
6	Household has planted trees to mitigate climate change and act as wind breaks					
7	Animal houses are safe from floods and other hazards					

<b>Availability of economic incentives</b>						
8	You are able to acquire loans to improve on your asset base					
9	You are doing business to improve on the household assets					
10	You are participating in a savings and credit organization					
11	There are opportunities to get money in the community					
<b>Awareness creation, training and education</b>						
12	There has been training of the community on disaster risk and their management					
13	Household/community is aware and trained about disasters					
14	You are aware of the measures of mitigating or controlling disaster in your area.					
15	Training on disaster has helped improve food security in my community/household					
16	There is available information on the areas prone to disaster (disaster maps) e.g. floods, drought, disease in your area.					
17	The community is involved/consulted on disaster risk reduction strategies by the organizations involved in disaster mitigation					
<b>Land use planning</b>						

17	Homestead is far away from land affected by floods					
18	Land is available for proper planning and usage					
19	Crops are grown in flood free areas					
20	The household has means of storing water for use in dry season					
21	Household can store pasture for use in dry season					

**DISASTER PREPAREDNESS (Early warning and communication, monitoring and forecasting, contingency planning, shelter facility emergency planning)**

Early warning and communication		SCALE				
		1	2	3	4	5
1	There is good weather forecast information in Palam sub county					
2	The household can get information about different disasters when needed					
3	There is someone responsible for giving information on disasters in the community					
4	Disaster information are reliable and accurate in the community					
5	Community has means of informing people in times of disaster					
6	Family has a means of detecting common disasters before it happens					
<b>Monitoring and forecasting</b>						

7	There is monitoring of disaster by various stakeholders in your community					
8	There is a reliable system in place for tracking disasters and reporting					
9	There is a system in place to monitor crop and livestock performance in the community					
<b>Contingency planning</b>						
10	The household has resources set aside to help in disaster times					
11	The community has resources set aside in case of emergency					
12	Family stores food for use in disaster times					
13	Family save money for purchase of food in times of hazards					
14	The community has food stores to assist when a disaster strikes					
15	Animals have emergency grazing fields in case of drought and floods in the community					
<b>Shelter Facility Emergency Planning</b>						
16	You have facilities to keep your food in emergency situations e.g. raised animal houses and food stores					
17	Your house is a safe place to live in when a hazard occurs					
18	Household has other places to live in times of disasters					

**DISASTER RESPONSE (Humanitarian assistance, damage assessment, mobilization of emergency resources, clear up and restoration of emergency services)**

<b>Humanitarian assistance contributes to household food security in the following ways</b>		<b>SCALE</b>				
		1	2	3	4	5
1	You have relative who give you food in period of disasters					
2	There are NGO to give you food in case of disasters					
3	The community can give you food in disaster times					
4	Government gives food to the community when hazards strike					
5	Friends always assist you when there is need					
<b>Damage assessment</b>						
6	It is easy to determine the extent of damage when a disaster strikes					
7	Damage assessment is done very fast when a disaster strikes					
8	Assessment of damage has helped in improving getting support in your household					
9	Household is able to asses and quantify damage to the household					
<b>Mobilization of emergency resources</b>						
10	The community can get support easily in disaster times					

11	You sell assets (e.g. animals) to buy food in times of disasters					
12	The household can easily get credit in case of a disaster					
13	Government gives loans in case of disasters					
14	NGOs give financial services in disaster times					
15	The community saves money for use in disaster times					
16	There are financial institutions you can get money from when faced with disaster					
17	You can acquire seeds after disasters easily					
<b>Clear up and restoration of emergency services</b>						
18	Roads to market are put in place after disasters e.g. floods					
19	Medical workers are available after a disaster happens					
20	Markets are available for purchase of food items					
21	There are financial institutions in place to help in case of disasters					
22	Early maturing crops are provided to help in food security in disaster times					

### HOUSEHOLD FOOD SECURITY

Disaster risk management contribute to household food security in the following ways		SCALE				
		1	2	3	4	5
1	We eat less to preserve food for the next day in disaster times( Floods, Drought)					
2	Some of our children are malnourished when disasters strike					
3	There is enough food to eat according to our wish even in disaster times					
4	We beg or borrow food to survive					
5	We have enough food to eat but not the kind of food we want.					
6	There is money but no market to buy food					
7	Food is available in the community but lack money to buy					
8	Food is only available for a short period of time					
9	You are not able to eat food during disasters even when its available					

## **APPENDIX II:**

### **INTERVIEW GUIDE FOR FACE TO FACE INTERVIEW WITH KEY STAKEHOLDERS IN DRR IN KATAKWI DISTRICT**

The purpose of this interview is to gather information for a study leading to the award of Masters in Management Studies of Uganda Management Institute.

The topic of study is assessing the Effectiveness of Disaster Risk Reduction Strategies in promoting Household Food Security in Palam Sub County. Since you are a key stakeholder and highly knowledgeable about the field of study, your input will undoubtedly contribute to the success of this study. All information given in this questionnaire will be treated with utmost confidentiality and used for only the purpose intended. You do not need to disclose your name.

#### **OPINION OF RESPONDENTS**

1. What is your occupation / employment?
2. What is your comment on DRR in Katakwi District and Palam sub county in particular
3. List the most common disasters in Palam sub county
4. Which DRR strategies do you have in place
5. How do you think disaster risk reduction can help improve household food security
6. Do you have a risk management plan?
7. Which disaster mitigation measures do you have in place and explain how it has contributed to food security in Palam
8. What disaster preparedness measures are you implementing to help in case of a disaster and how has it contributed to food security
9. Which response strategies do you employ to reduce disaster effects

10. To what extent does disaster response contribute to household food security in Palam sub county
11. What measures do you apply to determine damage and how effective are they?
12. Describe the key activities done in your organization to tackle disasters.
13. What are the key challenges to DRR in Palam sub county
14. What is the contribution of DRR to household food security in Palam sub county