FOOD SECURITY SITUATION IN THE CHIAWA AREA OF THE ZAMBEZI RIVER BASIN KAFUE DISTRICT ZAMBIA

By

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Being a dissertation submitted to The University of Zambia in partial fulfillment of the requirements for the award of a Degree in Master of Science in Environment and Natural Resources Management.

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DECLARATION

This dissertation in its form has never been submitted to the University of Zambia or any other institution of higher learning for any award. This is a product of my research which I undertook between August 2014 and March 2015. All other sources of information in this study are fully acknowledged and referenced.

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CERTIFICATE OF APPROVAL

This dissertation by Judah Edwin Peteli is approved as a partial fulfilment of the requirements for the award of a Master of Science degree in Environment and Natural Resources Management of the University of Zambia.

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DEDICATION

This dissertation is dedicated to my wife Chongo and our lovely children Faith, Barack, Natasha and Joshua for their invaluable support throughout the busy schedule of the study period. I love you all. I further dedicate this work to my parents Mr. and Mrs. Peteli to whom I forever remain indebted for their love, support and mentorship from which I sprung. I love you.

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ACRONYMS

FAO	Food and Agriculture Organization
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
USDA	United States Department of Agriculture
WFP	World Food Programme
ZVAC	Zambia Vulnerability Assessment Committee

ABSTRACT

National food security is very important and most governments have put in place mechanisms through which to achieve it. In recent years, the household has become the primary focus when it comes to issues of food security. In Zambia, food insecurity has been affecting thousands of households in many districts. The government has in the last few years supported food insecure communities through food aid. In Kafue District, beneficiary communities include Chanyanya, Chiawa, Kabweza and Mungu. Chiawa has been supported with relief food for the last seven years including during the 2009/2010 farming season, when Zambia received good rainfall and recorded a historic bumper harvest. However, not much was known about the problem of food insecurity dynamics in Chiawa and so, there was knowledge gap. This study therefore aimed to explore the food insecurity situation and in turn help fill the gap by examining the food insecurity problem, factors that influenced it as well as the buoyancy of households towards food insecurity.

The study covered four villages and these were namely Chiawa, Chisakila, Gotagota and Kabwadu. The study targeted 120 households from the four villages. Each village was taken as a cluster and each village register used as a sampling frame. Data was collected using a questionnaire that was divided into three sections. The first section collected data on household food insecurity, the second section collected data on factors that influenced household food insecurity and the last section on the resilience of households to food insecurity. These data sets were analyzed using frequency tables, descriptive statistics and cross tabulations. The other data was collected through focused group discussions on three thematic areas namely, crops cultivated and the season they were grown, commonly used coping strategies and perceived severity of food insecurity among households. These data were analyzed within the said thematic areas using the simple 1 – 4 Likert scale and weighting factors based on the perceived severity of food insecurity among households.

Study results revealed that there was a problem of food insecurity in Chiawa affecting 19.4 percent of the respondents most severely, 60.2 percent moderately while 20.4 percent were least affected. The study identified five factors that influenced household food insecurity namely level of household income, assets households owned, types of livelihood sources households engaged, level of education attained and age of household heads. Furthermore, the study showed that there was lack of resilience to food insecurity among households in Chiawa as none of the households remained food secure throughout the year.

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CHAPTER ONE: INTRODUCTION

1.1 Study Background

National food security is very important and most governments have put in place mechanisms through which to achieve it. In the last few decades, many developing countries in Africa have faced the challenge of food insecurity and this has been one of the major development problems. Food insecurity has its greatest impact on individual households in that it can undermine the health, productivity and the very survival of those affected. Historically, food security referred to the overall global, regional, national, or sub-national food supply and shortfalls in supply compared to food requirements. Overtime, disparities in the sufficiency of food accessed by various groups have been observed and as such, the term "food security" has been applied more recently mostly at a local household or individual level (Foster 1992). It has been broadened beyond notions of food supply to include elements of access (Sen 1981), vulnerability (Watts and Bohle 1993), and sustainability (Chambers 1989). Maxwell (1996) identified three main shifts in food security paradigms from global to national and household levels. The household has therefore become the primary unit of focus on issues of food security. Bentley and Pelto (1991) stated that, a household is the logical social unit through which to measure food security. According to the Zambia Vulnerability Assessment Committee, ZVAC (2013), a household is a group of people who could be from the same family or not but live, cook and eat together.

Gillespie and Haddad (2001: 40) argue that “food security is concerned with access to food as a precondition, and not merely production of food or availability of food without appropriate means to acquire it”. They add that, if food is in the fields or in the markets, but families cannot afford to acquire it then, they are food insecure. Thus a household is food secure if it can “reliably gain access to food in sufficient quantity and quality for all household members to enjoy a healthy and active life” (Gillespie and Haddad, 2001, 40). They further state that undertaking analysis of food security at the household level allows for the determination of how much actual access households have to the available food, the causes of household food insecurity and actions that should be taken when and where, in order to reduce household food insecurity.

There are two categories of food insecurity namely chronic and transitory food insecurity. Chronic food insecurity refers to a long-term or persistent inability to meet minimum food consumption requirements while transitory food insecurity refers to a short-term or temporal inability to meet minimum food consumption requirements (WFP, 2009). Transitory food insecurity is caused by a number of factors and can culminate into chronic food insecurity if the underlying factors persist. Transitory food insecurity could be caused by seasonal changes when certain resources become unavailable thereby making food scarce (WFP, 2009). Understanding the distinction between the different causes of the two food insecurity scenarios is imperative as either scenario would require its own specific interventions. From the foregoing, it is clear that household food security is basically about a household having adequate access to sufficient food in a given year.

In Zambia, food insecurity has been affecting hundreds of thousands of households in various locations differently and worst hit have been rural farming communities who practice rain fed agriculture and those settled in drought prone areas where agricultural food production is poor. The government of Zambia in the last few years has supported thousands of households in various communities through the provision of relief food. This has been due to high food insecurity situations that the beneficiary households have been facing (ZVAC, 2012). Some of the communities that have been supported with relief food by the government are located in the following districts Chongwe, Gwembe, Kafue, Kazungula, Luangwa, Mazabuka and Siavonga among others (ZVAC, 2012). In Luangwa District beneficiary communities included Chiyendeyende and Mphuka among others while in Siavonga District they included Mambova, Matinangala and Manchanhwa. For Gwembe District, some of the beneficiary communities included Chipepo, Khole, Chisanga, Bbondo and Munyumbwe. In Kafue District, communities that received relief food were Chanyanya, Chiawa, Kabweza and Mungu.

Chiawa has been receiving relief food for many years without any indication of the problem of food insecurity coming to an end. Between 2008 and 2014, Chiawa received relief food during this period. Even during the 2009/2010 agricultural season, when Zambia received good rainfall and recorded a historic bumper harvest, a greater part of Chiawa area still received relief food (Sitko et al., 2011).

1.2 Problem Statement

In Chiawa, there is a likelihood that sustained provision of food aid by the government could weaken the productive capacity of the people as they may become less productive but more reliant on food aid whose supply is unsustainable and to some extent unpredictable. In addition, not much is known about the nature of the food security challenges in Chiawa. This study was thus an attempt to fill this knowledge gap.

1.3 The Aim of the Study

The aim of this study was to assess the food security situation among households in Chiawa.

1.4 Research Objectives

The following were the research objectives of this study:

1. To determine whether or not there was a problem of food insecurity among households in Chiawa.
2. To identify factors that influenced food insecurity among households in Chiawa.
3. To examine the resilience of households to food insecurity in Chiawa.

1.5 Research Questions

The following were the key research questions in this study:

1. Is there a problem of food insecurity among households in Chiawa?
2. What factors influence food insecurity among households in Chiawa?
3. Is there resilience to food insecurity among households in Chiawa?

1.6 Significance of the Study

Chiawa area has in the recent past been known as a hunger stricken area where government supported people with food aid. There had been no study carried out on the food insecurity situation in the area. There was a knowledge gap in the context of the food insecurity dynamics which gap this study attempted to fill. The findings of this study enhanced the understanding of food security and its absence in Chiawa area. The factors that influenced food insecurity among households, as well as the lack of buoyancy among households towards food insecurity are laid bare. The study outcome provide useful information that could be used in addressing the problem of food insecurity among households. The study also contributes to available literature on food security, which literature could be a useful source of information to policy makers, the general public and researchers.

1.7 Organization of the Report

This report is organized in six chapters. Chapter One presents the background to the study and highlights the problem statement. It also outlines the aim, research objectives, key research questions, and the significance of the study. Chapter Two presents the relevant literature that was reviewed. Chapter Three is about the study area. It brings out a brief description of the study area in terms of the location, the climate and vegetation as well as the soils and terrain of the study area. Chapter Four presents the methodology of the study. The Chapter highlights the design of the study, methods and procedures of collecting research data and the type of data that were collected. The Chapter further presents data analysis methods that were employed in this study. Chapter Five presents the research findings and discusses them in light of the research objectives. Chapter Six presents the conclusion and recommendations of the study by giving an overall picture of the food security situation in Chiawa. The Chapter ends with recommendations based on the findings of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This Chapter reviews relevant literature regarding food security. It starts by reviewing various definitions of food security and adopts one definition for purposes of this work. The two types of food insecurity at household level namely transitory and chronic food insecurity are explored. Methods of assessing food security at household level are reviewed before exploring the factors that influence household food security. The chapter ends with a review of various approaches to measuring the resilience to food insecurity among household.

2.2 Definition of Food Security

Many scholars define ‘‘food security’’ differently. Ballenger and Zeno (1990) define food security at three levels namely global, national and individual. Ballenger and Zeno (1990) defined global food security as a requirement that a sufficient quantity of food be present to feed the world’s people. National food security is defined as an acceptable likelihood that food available for consumption within the country is at least equal to biological needs throughout the year. Individual food security is defined as an acceptable likelihood that each person’s income, broadly interpreted is sufficient to satisfy all food needs. These definitions are broad and vague, and they leave out the intermediate groups such as sub-national and household food security.

According to the Food and Agriculture Organization, FAO, (1996) food security is when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. From this definition, FAO (1996) identifies and describes four main dimensions of food security namely *availability*, *accessibility*, *utilization* and *stability*. In the context of this definition, food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade. Food access can be through trade, barter, collection of wild foods and community support networks. It can also be received as a gift or even through theft. Access to food is influenced by market factors and the price of food as well as an individual’s purchasing power, which is related to employment and livelihood opportunities. Utilization is understood as the way the body makes the most of various nutrients in the food and is influenced to a large extent by people’s health status. The food

stability dimension refers to the consistency with which food availability, food access and food utilization over time cannot be affected negatively by natural, social, economic or political factors. The stability dimension was added to the other three at the 2009 World Food Summit on food security (FAO, 2009).

To its 1996 definition, FAO (2006) adds that, a household is considered food-secure when its occupants do not live in hunger or fear of starvation. FAO (2006) further states that food security is a measure of resilience to future disruptions or unavailability of critical food supply due to various risk factors including droughts, shipping disruptions, fuel shortages, economic instability, wars, among others. Aiga and Dhur (2006) of World Food Program (WFP) commented on the FAO (1996) definition of food security and argue that, the definition is not very helpful in measuring the proportion of food-insecure households because it does not include clear thresholds, and because it conflates different levels (individual, household, country and international). Hence, the results of food security measurement may vary according to who conducts each assessment. The United States Department of Agriculture, USDA, (2008) defines food security for a household as access by all members at all times to enough food for an active, healthy life. In the context of this definition USDA (2008) states that, food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

For purposes of this work, the definition by USDA (2008) was adopted but leaving out the nutrition part. While the aspects of nutrition and food value are important and inherent to the subject of food security, they were beyond the scope of this work. It would have been too ambitious to try and address the nutrition and dietary aspects of food security in the context of FAO (1996) and USDA (2008) definition of food security.

2.2.1 Food Insecurity

Food insecurity is the absence of food security. There are two categories of food insecurity, transitory and chronic food insecurity. FAO (2008) defines transitory food insecurity as when there is a sudden drop in the ability to produce or access enough food to maintain a good nutritional status, and chronic food insecurity as when people are unable to meet their minimum food requirements over a sustained period of time. FAO (2008) further states that

transitory food insecurity is primarily caused by short-term shocks and fluctuations in food availability and access, including year-to-year variations in domestic food production, food prices and household incomes while, chronic food insecurity is often the result of extended periods of poverty, lack of assets and inadequate access to productive or financial resources.

The World Food Programme (WFP) (2009) defines transitory food insecurity as a short-term or temporal inability to meet minimum food consumption requirements and, chronic food insecurity as a long-term or persistent inability to meet minimum food consumption requirements. WFP (2009) adds that, as a rule of thumb, short periods of food insecurity related to sporadic crises can be considered transitory while food insecurity lasting for at least six months of the year can be considered chronic. WFP (2009) further states that, while transitory food insecurity may require shorter-term interventions that address immediate and underlying causes, chronic food insecurity calls for interventions that address underlying and basic causes of food insecurity that last for several years. WFP (2009) points out that tackling basic causes of food insecurity is critical in preventing repeated transitory food insecurity, which may lead to chronic food insecurity. The distinction between different causes is useful, as the two forms of food insecurity require different response measures.

The International Fund for Agricultural Development (IFAD) (2002) explains that crop failure, seasonal scarcities, temporary illness or unemployment among the productive members of a household or perhaps an emergency need for large cash expenditure leading to a sudden reduction of a household's access to food to below the nutritionally adequate level and is known as *Transitory Household Food Insecurity*. IFAD (2002) describes *Chronic Household Food Insecurity* as when a household is persistently unable to meet the food requirements of its members over a long period marked by continuous, temporary blips of good and bad moments. IFAD (2002) postulates that at household level, transitory food insecurity concerns shocks that briefly push the level of food consumption of a household below the requirements while, chronic food insecurity is a trend in food consumption that involves an inability by a household to meet food requirements over a long period. Therefore, a household could be considered to be food secure if it has protection against both transitory and chronic food insecurity.

For purposes of this study, the threshold proposed by WFP (2009) that food insecurity lasting for at least six months and above in a year can be considered chronic, while short periods of food insecurity related to sporadic crises can be considered transitory was adopted.

2.3 Assessing Household Food Security

According to FAO (1996), there are four dimensions of food security namely availability, accessibility, utilization and stability. The first two dimensions are concerned with the acquisition of food. Food availability and stability of its' access is critical to the achievement of household food security. Therefore, understanding factors that influence or limit food availability and the options that households have for accessing food is critical (Maxwell and Frankenberger, 1993).

There are different ways of assessing and measuring household food security and most methods center on food availability and food access aspects of the four food security dimensions. Webb et al., (2006) states that development analysts and practitioners have spent many years seeking ways to measure the ''access'' dimension of food security, with only varying degrees of success and that, proxy measures are commonly used. These may be centered on agricultural productivity and food storage, food consumption levels and on children's nutritional status. According to Maxwell (1995) collecting data for a complete analysis of household food security can be a virtually impossible task especially where household composition is variable. He states that where adult members of a household have strong incentives not to reveal to each other the extent of their individual earning power or assets, or where responsibility for production and/or purchase of food is shared, or where subsistence production is harvested piecemeal and is neither measured nor recorded, data collection and hence food security can be very difficult to ascertain. To get around this difficulty, Maxwell (1995) suggests two methods which have been widely used both of which are based on measuring food consumption. The first approach is to estimate gross household food production and purchases over a period of time, then estimate the growth and or depletion of food stocks held over that period of time. The assumption employed is that all the food that has come into the household's possession and "disappeared" has been consumed.

The second method is to undertake 24-hour recalls of food consumption for individual members of a household, and analyze each type of food mentioned for caloric content. While this method results in more reliable consumption data, it has a number of drawbacks like memory lapses, observer bias, respondent fatigue, short and unrepresentative recall periods, high data collection costs thereby limiting its' use to relatively small samples (Maxwell, 1995). The former method is most often utilized by economists; and the latter by nutritionists. Both of these methods result in consumption figures but neither provides a full assessment of food security, because neither measures the vulnerability aspect (Maxwell, 1995). For both methods, Babu et al., (1994) state that conversion of gross household food consumption into calories, and dividing the calories by the number of adult equivalents in the household and the number of days in the recall period results in a concise figure for average calories consumed per adult per day. This is then compared with an estimate of caloric requirements. For analytical purposes a household that provides 80 percent or more is considered to be food secure. Both methods mostly capture the food sufficiency aspect of food security and as such, neither has been accepted as a "standard" for analyzing household food security.

There is another approach called the indicator method which focuses on the use of coping strategies for dealing with insufficiency of food at the household level. The coping strategies are actually direct indicators and they include short-term dietary changes, rationing consumption, altering household composition, altering intra-household food distribution, depletion of stores, use of credit for consumption, increased reliance on wild food, short-term labor migration, short-term alterations in crop and livestock production patterns, selling of assets and distress migration (Frankenberger, 1992, Frankenberger and Coyle, 1993). Where these indicators are observed in a particular household, they point to the existence of the problem of food insecurity. These indicators are coping strategies which households tend to employ when food security is compromised.

2.3.1 Household Coping Strategies

In the context of household food security, coping strategies refer to actions that food insecure households engage in order to regain access to food. There are different definitions of coping strategies by different scholars. Devereux (2001) defines coping strategies as a response to adverse events or shocks. The definition by Devereux (2001) is general and events and shocks could refer to food insecurity or any other situation that deprives people

of their usual access to a good or service. Snel and Staring (2001) define coping strategies as all the strategically selected acts that individuals and households in a poor socio-economic position use to restrict their expense or earn some extra income to enable them to pay for the basic necessities (food, clothing, shelter) and not fall too far below their society's level of welfare. The definition by Snel and Staring (2001) captures a broader notion of coping strategies in which is implied that households engage coping strategies consciously often after having assessed alternative plans of action. Ellis (2000) defines coping strategies as the methods used by households to survive when confronted with unanticipated livelihood failure. Livelihood in the context of the definition by Ellis (2000) refers to all activities that any household carries out for them to acquire basic human needs such as food, clothing and shelter. This definition is not different from that by Snel and Staring (2001) except that the one by Snel and Staring is broader.

Maxwell et al., (2003) state that strategies pursued by households differ, within the household and between households. Due to varying degrees of wealth among households, different coping behaviours are adopted by households at different poverty levels. However, some coping strategies are common to all households although the extent to which such strategies enable a household to remain afloat depend on the assets at their disposal (Devereux, 2001). Above all, the general tendency is that the lower the household asset status, the more likely the household would engage in erosive responses such as selling of productive assets such as farm implements (Hoddinott, 2004). In view of the foregoing, it could be said that, engaging in coping strategies is an attempt by food insecure households to become resilient to the shock of food insecurity. Because they tend to be engaged during the times of food insufficiency, coping strategies could and are used as a means of assessing the level of food security at household level. Due to the difficulties of acquiring valid and reliable figures from other food security assessment methods over time, an indicator method (based on coping strategies) captures the short-term food sufficiency element of food security at the household level. This approach is used to quantify the determinants and impacts of a long-term adaptive strategy (Maxwell 1995). Maxwell (1995) identified six food based short-term coping strategies and these are (1) eating less preferred food (2) limiting meal portion size (3) borrowing food or money to buy food (4) maternal buffering (5) skipping meals and (6) skip eating for whole day. Maxwell (1995) developed a simple frequency scale in such a way that, the higher the number on the scale, the less frequently a strategy is used, thereby indicating a higher level of food security.

In this study, the indicator method was adopted and used to assess the household food security situation in the study area. This is because the indicator approach was simple, easy to understand and use and also because all indicators were evident in the study area making use of the method appropriate. Furthermore, the method is less costly and would take less time compared to other methods.

2.4 Factors Affecting Household Food Security

There are a number of factors that affect food security at household level. Studies of households that suffer food insecurity across different countries have consistently found that it is closely related to limited household resources, low disposable income and poor socioeconomic status (Cook and Frank, 2008; Rush and Rusk, 2009). Furthermore, household food insecurity increased with increase in age of household head particularly when the household head reached 61years old and beyond while it was least among household heads of age ranging from 21 to 30 years. This was one of the findings by Omonona et al., (2007) in their study of food security among Nigerian urban households. This finding agrees with the findings of the Canadian Community Health Survey (2008), which were that, households headed by older individuals (65 years old and above) were more likely to suffer food insecurity compared to those headed by younger people. Omonona et al. (2007) also found that household food insecurity was gender sensitive and was higher among female headed households. Omonona et al. (2007) further state that household food insecurity increases with size of a household as the dependence ratio increases. They further found that an increase in household income reduced household food insecurity incidences. Similarly, the Canadian Community Health Survey (2008), found that households with lone parents were likely to be more food insecure than those with two.

The study findings of Omonona et al., (2007) are not different from those by Nganga (2013), in her study of women's experiences in food security in Kenya. Nganga (2013) found that culture very strongly disadvantaged women in land ownership yet land ownership played a critical role in food production especially in rural communities where own production is the only sure way to food security because there are very few if any, employment opportunities. Cultural barriers make it difficult for women to access education and as such there is inadequate family planning knowledge leading to large families that become difficult to feed (Nganga, 2013), as such the less educated the household head is, the more vulnerable such a household would be to food insecurity.

IFAD (2002) explains that food insecurity at household level can be seen as a combination of two distinct problems: a problem of acquirement and a problem of utilization. IFAD (2002) explains that acquirement refers to the ability of a household and its members to obtain enough food through production, exchange or transfer. IFAD (2002) further explains that, acquirement is only one aspect of food security or insecurity. A household that has the capacity to acquire all the food it needs may not always have the ability to utilize that capacity to the fullest. As such, a household can be said to be food secure only if it is secure in terms of both acquirement and utilization. IFAD (2002) further classifies the food security difficulties into two areas, that of level and that of shock and consequently subdivides these into problems of acquirement and utilization to come up with a four dimensional characterization of food security or insecurity. These four dimensions are (1) the ability to improve and maintain the level of acquirement (2) the ability to cope with shocks to acquirement (3) the ability to improve and maintain the level of utilization and (4) the ability to cope with shocks to utilization.

For purposes of this work, the focus was on the acquirement aspect as the aspect of utilization is beyond the scope of this work. Frankenberger (2000), states that one critical dimension of household food security is the availability of food in the area for the household to obtain and that regional food shortages influence household food availability.

Following Sen's (1981) entitlement theory, IFAD (2002) describes the first two determinants of the level of food acquirement as being the endowment set and entitlement mapping. The *Endowment Set* consists of all the resources a household owns or over which it has sufficient rights, whether legal or conventional. These resources can be both tangible and intangible. Tangible resources include resources such as land, animals, machinery, water resources, trees, forests, and communally owned resources. Intangible resources may include household labor, power and the rights attached to membership in a community. Using these resources, a household can acquire food either directly through production or indirectly through exchange and transfer. As such, the richer the endowment set the better the access to food. *Entitlement Mapping* refers to the rate at which the resources of the endowment set can be converted into food. There are three components of the entitlement mapping: *production component* which consists of various input-output ratios or production functions, *the exchange component* made up of the rates of exchange involved in trading and *the transfer component* which consists of remittances and gifts.

IFAD (2002) explains that the endowment set and entitlement mapping together determine a household's ability to acquire food. IFAD (2002) notes that a large body of evidence suggests that the greater the degree of control exercised by women over household income the greater the proportion of income spent on food and the better the household's food acquirement ability. Shocks to acquisition of household food can come from several sources including natural calamities such as drought or flood which could cause crop failure. Others may include unemployment, high food prices, human-animal conflict (where animals feed on or destroy crops), political conflicts and wars.

An important extension of the entitlement theory is provided by Swift (1989), as he focuses on the role of investments, stores and social claims in determining household vulnerability to famine. Swift (1989) assumes that when households are able to generate a surplus over and above their basic food requirements, the excess resources are diverted into assets (investments, stores and social claims) which can be drawn upon when a household faces a crisis. In Swift's model, potential support from the community is an asset which households can use as a buffer against entitlement failure. The endowment set and entitlement mapping influence the ability of a household to acquire food. In this study therefore, the endowment set and entitlement mapping were employed in the analysis of household food security.

2.5 Resilience of Households to Food Insecurity

Resilience is a relatively new concept in the livelihoods and food security sector. Different scholars and practitioners define resilience differently although most definitions project a common phenomenon which is that of the ability of a system to withstand stress. Frankenberger et., al (2012) define resilience as the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses such as earthquakes, drought or violent conflict without compromising their long-term prospects. Humanitarian Policy Group (2011) defines resilience as the capacity of people or systems to cope with stress and shocks by anticipating, preparing, responding and recovering from them.

Resilience, according to the United Nations International Strategy for Disaster Reduction (UNISDR) (2005), is the capacity of a system, community or society exposed to hazards to adapt by resisting or changing in order to reach and maintain an acceptable level of

functioning and structure. The Intergovernmental Panel on Climate Change (IPCC) (2013) defines resilience as the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and or functioning, the capacity for self-organization and the capacity to adapt to stress and change. Adger (2000) describes resilience as the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change.

All these definitions relate to ecology, climate and community and none directly relates to food security. Some scholars, practitioners and international organizations such as FAO have proposed applying the resilience concept to food security issues, to complement the Early Warning System approach (Alinovi et al., 2008; Folke et al. 1998; Folke et al., 2002; Hemrich and Alinovi 2004). Further, Alinovi et al., (2008) add that, while the Early Warning System approach seeks to predict crisis, the resilience framework seeks to assess the current strength of a food system, and hence its ability to withstand shocks should they occur. In the context of food security, Alinovi et al., (2008) define resilience as the ability of the household to keep with a certain level of well-being (food security) by withstanding shocks and stresses, depending on the options available to the household to make a living and its ability to handle risks. Ciani and Romano (2013) define household resilience to food insecurity as the ability of a household to keep with a certain level of well-being (i.e. being food secure) by withstanding shocks and stresses, and reorganizing while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks. They add that household resilience to food insecurity depends on the options available to the household to make a living and its ability to handle risks. FAO (2008) defines resilience as the ability of a household to keep with a certain level of well-being (i.e. being food secure) by withstanding shocks and stresses. This depends on available livelihood options and how well households are able to handle risks. This definition implicitly considers both actions that reduce the risk of households becoming food insecure *(ex-ante)*, and actions that help households to cope after a crisis occurs *(ex-post)*. According to Ciani and Romano (2013) households and individuals have assets, such as labor, human capital, physical capital, social capital, public and common goods at their disposal to make a living. These assets are used to generate income in various forms, including earnings and returns on assets, sale of assets, transfers and remittances. Households actively build up assets, not just physical capital but also social or human capital, as an alternative to spending. These assets contribute to the wellbeing of households and their members in terms of being food

secure. The level and utilization of these assets determine how resilient a given household would be to food insecurity caused by a crisis or a shock. The more assets a household owns, the more resilient to food insecurity such a household is likely to be. Ciani and Romano (2013) argue that, there are very few studies that have tried to quantitatively assess household's resilience to food insecurity. The main problem with a quantitative approach to resilience measurement is that resilience is not directly observable. There is therefore insufficient literature and methodologies on the quantitative measurement of household resilience to food insecurity. Ciani and Romano (2013) however, used the quantitative approach in their study of household resilience to food insecurity in the study in Nicaragua. Their results show that small landowners and agricultural wage workers were less resilient to food insecurity compared to other livelihood groups on account of inability to diversify crop production, food and income sources.

Alinovi (2008) identified six indicators of household resilience to food insecurity and these are (1) access to income and food (2) ownership of assets such as land and livestock (3) access to social safety nets such as food assistance and social security (4) access to basic services such as water, health care, electricity, etc. (5) adaptive capacity in terms of education and diversity of income and food sources and (6) stability of all these factors over time. The factors identified by Alinovi (2008) are related to the postulation of Sen's (1981) entitlement and endowment theory although it does not make mention of the adaptive capacity in terms of education.

In this work, the assessment of the resilience of households to food insecurity was based on the parameters highlighted in the definition of food security by FAO (1996) and the definition of resilience of household to food insecurity by Alinovi et al., (2008). Households that did not have access to sufficient food at all times using own resources were not considered resilient to food insecurity as well as those that did not use own resources to withstand the effects of food insecurity.

In this study, the assessment of the resilience of households to food insecurity was approached from the length of period households engaged coping mechanisms and also the types of coping strategies they employed. Engaging in coping strategies was in itself an indication of the types of resilience mechanisms that people employed in an effort to remain food secure. However, the length of coping coupled with the kinds of coping activities pointed to whether or not a particular household was resilient to food insecurity.

2.6 Household Food Security Conceptual Framework

The Household Food Security Conceptual Framework was adapted and modified from the food security conceptual framework by Riely et al., (1999). While the framework by Riely et al., (1999) focuses on the four dimensions of food security namely availability, access, utilization and stability, the modified framework focused on three dimensions excluding utilization. The utilization dimension is a huge subject on its own and was left out in this study because it required expertise in nutrition and health both of which were beyond the author's ability to handle. Furthermore, the research focused on food availability and food accessibility and the stability of both availability and accessibility in a given year. Figure 2.1 presents the modified conceptual framework highlighting the three dimensions of food security and how they relate to each other through various media and the factors at play. This framework aided data analysis in this research.

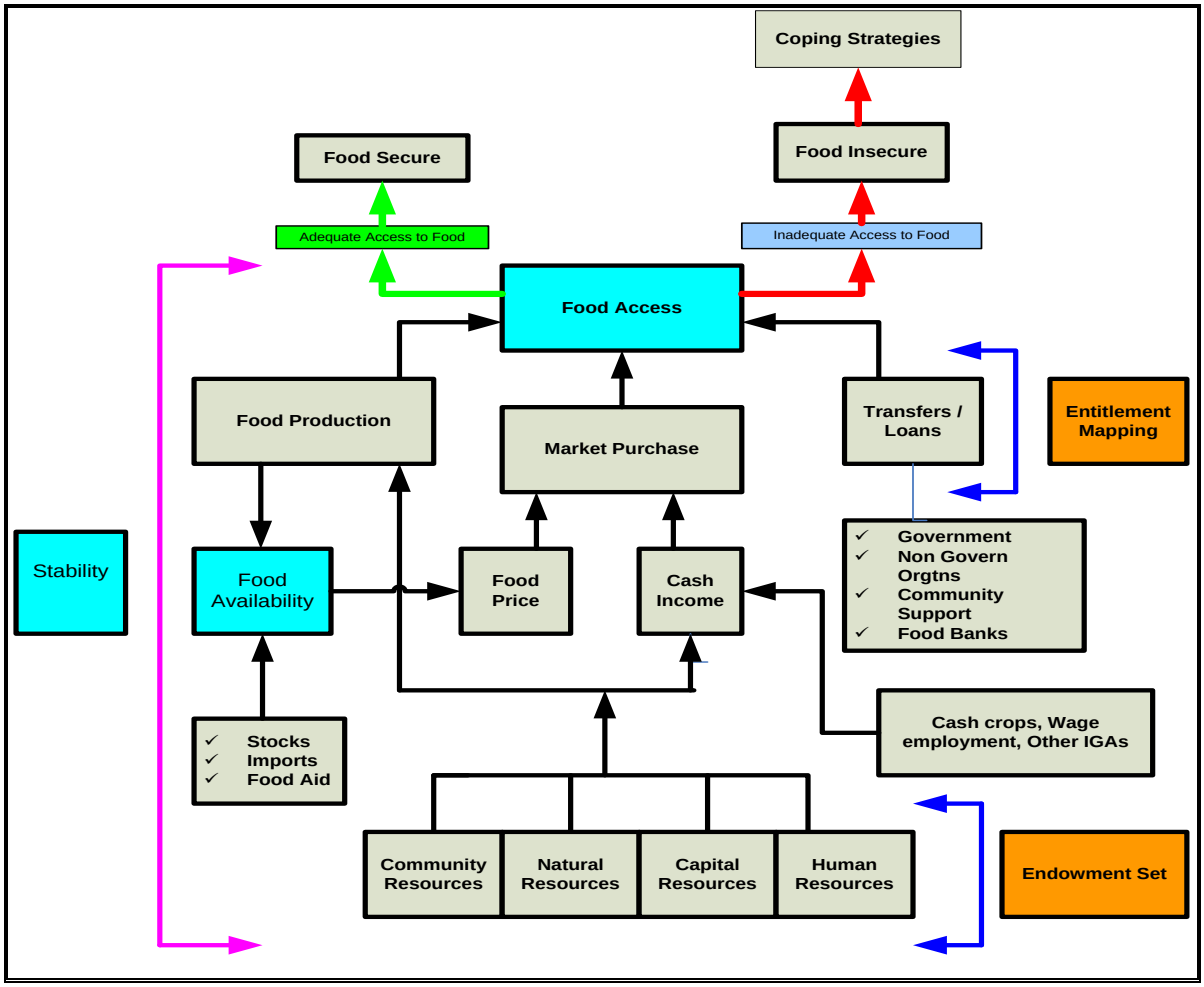

Figure 2.1: Household Food Security Conceptual Framework
Source: Adapted from Riely et al., (1999)

2.6.1 Food Availability

Figure 2.1 demonstrates that food availability is a function of the combination of various factors which include domestic food production, food stocks, commercial food imports, food aid and the underlying determinants of each of these factors. It shows that food availability is different from food access and that food availability enhances food access.

2.6.2 Food Access

Food access is influenced by the aggregate availability of food through the latter's impact on supplies in the market and, therefore, on market prices. Figure 2.1 illustrates that food access is further determined by the ability of households to obtain food from their own production and stocks, from the market, and from other sources such as food aid and transfers from the government and other well-wishers. These factors are, in turn, determined by the resource endowments of the household. Resource endowments define the set of productive activities a household can pursue to meet its' income and food security objectives. The household *endowment set* consists four broad categories namely community resources, natural resources, capital resources and human resources. These have an impact on food security by influencing the entitlement mapping. The endowment set refers to assets such as land, animals, productive tools and equipment, rental buildings, community networks, political affiliations or other which people can use to gain access to food. The resource endowments can be used to produce food while others can be converted into money that can be used to purchase food (Sen 1981). Endowments can either be inherited or acquired. It therefore follows that the more resource endowments a household has, the more entitlement mapping options it would have and the less likely that such a household would face food insecurity.

The framework also illustrates that households' access to food is determined by entitlement mapping which is the ability of households to obtain food from their own production and stocks, from the market, and from other sources such as transfers, remittances and loans. Entitlement mapping is about how much food households actually have access to from their own production, income, gathering of wild foods, community support (claims), assets and migration. Household entitlement mapping is in turn determined by the level of resource endowments which define productive assets and activities upon which households depend to meet their income and food security objectives (Riely et al., 1999).

The framework further shows from the top side that, adequate access to food culminates into food secure households and inadequate access to food results in food insecurity. Food insecure households engage in coping strategies aimed at improving food access. Food insecure households engage in different coping strategies. Coping strategies are aimed at enhancing access to available food, which often times is insufficiently achieved. Therefore, in this framework, engaging coping strategies indicated the existence of food insecurity.

2.6.3 Stability

This refers to the consistency of food availability and its access in a given area in a given year. Where food availability and food access are sufficiently stable during a given year, food security becomes apparent. The period of access to food defined stability in this study. Longer periods of access to food in a year enhanced food security and shorter periods of access to food signified food insufficiency and later on food insecurity.

2.7 Summary of Literature Reviewed

Food security is when all people at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food insecurity is the absence of food security. There are two categories of food insecurity, transitory and chronic food insecurity. The World Food Programme, WFP, (2009) defines transitory food insecurity as a short-term or temporal inability to meet minimum food consumption requirements and, chronic food insecurity as a long-term or persistent inability to meet minimum food consumption requirements. WFP (2009) adds that, as a rule of thumb, short periods of food insecurity related to sporadic crises can be considered transitory while food insecurity lasting for at least six months can be considered chronic.

There are different ways of assessing household food security. Frankenberger (1992), Frankenberger and Coyle (1993) suggest the indicator method which focuses on the use of coping strategies for dealing with a household's food insufficiency. According to Frankenberger (1992), Frankenberger and Coyle (1993), coping strategies are direct indicators and they include short-term dietary changes, altering household composition, altering intra-household food distribution and selling of assets among others. Where these indicators are observed, they point to the existence of the problem of food insecurity.

There are a number of factors that affect food insecurity at household level. Cook and Frank

(2008), state that food insecurity is closely related to limited household resources, low disposable income and poor socioeconomic status. The Canadian Community Health Survey (2008), found that households headed by older individuals (65 years old and above) were more likely to suffer food insecurity compared to those headed by younger people. Omonona et al. (2007) found that an increase in household income reduced household food insecurity incidences. Nganga (2013) states that cultural barriers make it difficult for women to access education and as such there is inadequate family planning knowledge leading to large families that become difficult to feed. From this perspective, it is clear that there are diverse factors that influence household food insecurity.

A household's resilience to food insecurity is about its ability to remain food secure throughout the year despite the shocks and stresses it may face. Ciani and Romano (2013) state that household resilience to food insecurity depends on the options available to the household to make a living and its ability to handle risks. The options include assets a household owns, its sources of livelihood among others. Therefore the more options a household has the less likely such a household would suffer food insecurity.

Alinovi (2008), identified six indicators of resilience to food insecurity and these are (1) access to income and food (2) ownership of assets such as land and livestock (3) access to social safety nets such as food assistance (4) access to basic services such as water, health care, electricity, etc. (5) adaptive capacity in terms of education and diversity of income and food sources and (6) stability of all these factors over time. The factors identified by Alinovi (2008) are related to the postulation of Sen's (1981) entitlement and endowment theory although it does not make mention of the adaptive capacity in terms of education.

Chiawa area received food aid from the government for many years yet, not much was known about the problem of food insecurity in Chiawa whether it was transitory or chronic. It was therefore imperative that the nature of food insecurity is established using the indicator method of measuring household food security as postulated by Frankenberger (1992). Furthermore, the factors that influenced household food insecurity as identified by Alinovi (2008) will be examined. Finally the resilience of households to food insecurity will be examined based on the ability of households to remain food secure throughout the year by withstanding shocks and stresses as stated by FAO (2008).

CHAPTER THREE: DESCRIPTION OF THE STUDY AREA

3.1 Introduction

This Chapter describes the study area in terms of the location, climate and vegetation, soils and terrain as well as common socio-economic activities. The locations of the study area in Kafue District as well as the location of the four villages covered in the study are presented on maps.

3.2 Location of the Study Area

This research was conducted in Chiawa area in Kafue District in Lusaka Province of Zambia. Chiawa is located between longitude 29 ^{o} and 30 ^{o} east and between latitude 14 ^{o} and 16^{o} south of the equator. Figure 3.1 presents the location of map of the study area, Chiawa. Chiawa is situated about 100km south of Kafue Central Business District. The study area is bordered by the Kafue River to the west, the Zambezi River to the south and lower Zambezi National Park to the north and east. Chiawa is actually part of the game management area for Lower Zambezi National Park.

3.3 Climate and Vegetation

Chiawa is situated in Agro-ecological Region I characterized by low rainfall which fluctuates around 700mm annually. Chiawa is situated in the dry tropics falling in the rain-shadow region of the Zambezi River Basin of the Gwembe Valley. During the decade 2004 to 2014, the maximum rainfall received was 750mm recorded in the year 2009 while the rest of the years recorded maximum rainfall fluctuating between 580mm and 700mm. Rainfall in Chiawa is characterized by poor distribution and is often unpredictable. Temperatures are high with minimum and maximum ranging between 19^{o} and 35^{o} respectively. The area is dominated by drought tolerant shrubby vegetation interspaced with thorny grass and bushes

The study covered four (04) villages in Chiawa area and these were namely Chiawa, Chisakila, Gotagota and Kabwadu. The location of these villages is presented in figure 3.2.

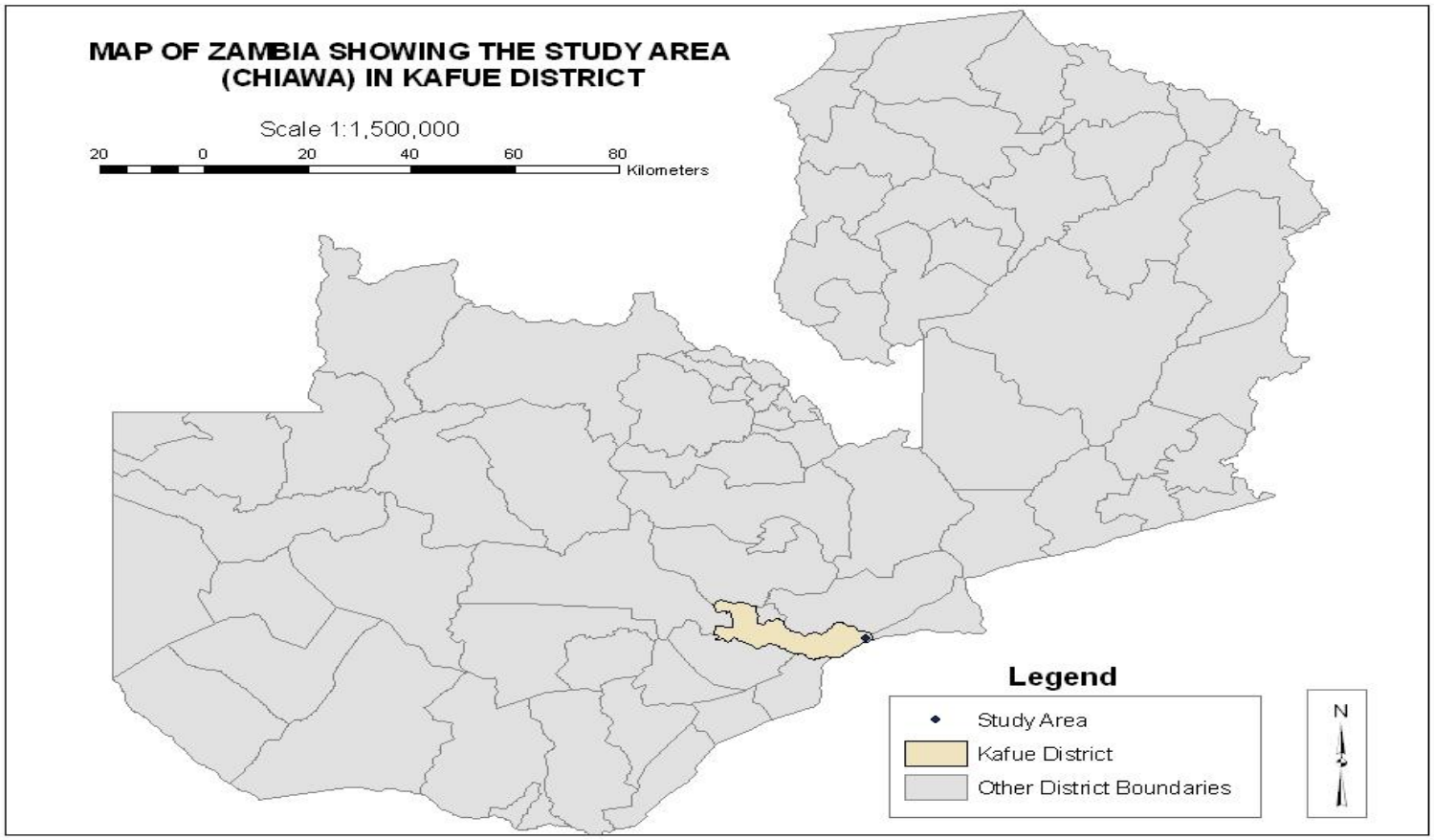

Figure 3.1: Location Map for Chiawa Area in Kafue District

Source: Field data, 2015

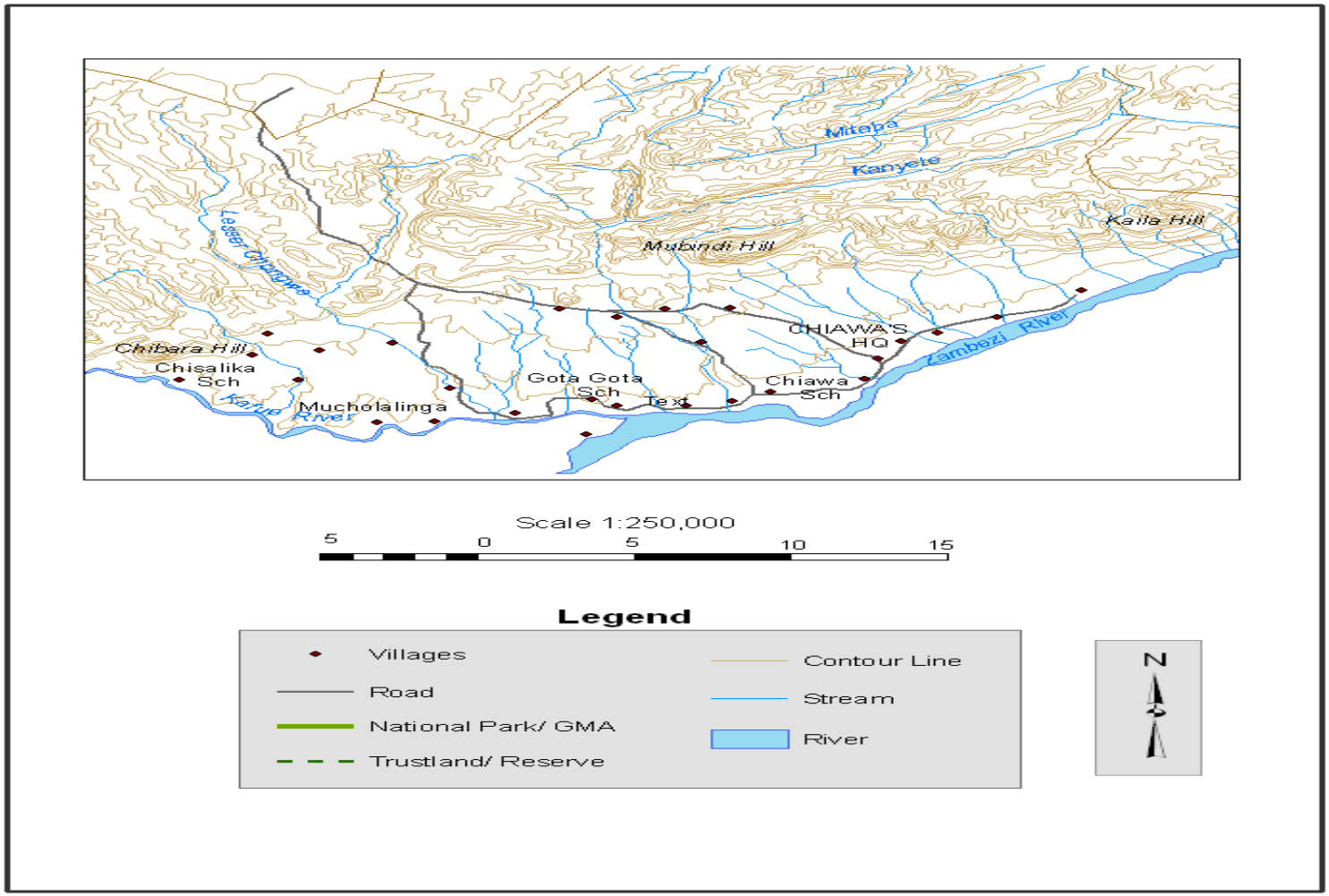

Figure 3.2: Location Map for Chiawa, Chisakila, Gotagota and Kabwadu Villages

Source: Field data, 2015

3.4 Soils and Terrain

This Agro-ecological Region generally has poor soils for agricultural purposes and is the most vulnerable to drought induced crop failures. The terrain is generally mountainous with many gullies due to erosion and streams dry up during the dry season. The area is also prone to annual flooding resulting from the overflowing of the Kafue and Zambezi Rivers starting from the confluence and beyond. The flooding of the two rivers is as a result of rainfall in other areas that drains into the two rivers. Sometimes the area is flooded when the Kariba dam flood gates located on the Zambezi River about 12km west before the confluence with the Kafue River.

3.5 Population and Social Services

Chiawa had a population of 5,882 constituted from 1,132 households (CSO, 2010). The area had a number of primary schools adequate for the school going populations although some schools were quiet distant from the settlements. Chiawa had one Health Centre which provided basic health care services to the people. The health center was located near Chiawa Secondary School. Within Chiawa, there were three commercial farms that provided employment to a few local people. The commercial farms employed only a handful on permanent basis as well as piece works at certain times of the year when farm labour was intensive. In terms of access to water, the two rivers, Kafue and Zambezi provided fairly clean water to the Chiawa communities and in addition, there were boreholes at nearly every school which local easily accessed for water. As such access to fairly clean water was good.

3.6 Social Economic Activities

Residents of Chiawa obtained their livelihoods from various economic activities. These included charcoal and livestock production, petty and cross border trading, piece works, fishing and farming. Cross border trade took place mainly at the border crossing between Zambia and Zimbabwe at Chirundu just a few kilometers from the study area. Some local people imported some goods from Zimbabwe and sold them in both Chirundu and Chiawa while others exported some goods to Zimbabwe. Petty and cross border trading was a common livelihood source mainly carried out by young men and women.

Crop and livestock production were common livelihood activities among the people of Chiawa. The production of agricultural crops such as maize, sorghum, sweet potatoes,

beans and groundnuts was seasonal as it was rain fed except for vegetable production which was manually irrigated in the gardens along the banks of both the Kafue and Zambezi Rivers. However, the production of agricultural crops was at a very low scale mainly due to the low rainfall the area received coupled with high temperatures that did not favor crop production. Despite the low agricultural crop productivity in the area, majority of the people still practiced subsistence agriculture during the period November to April when rains were received in the area. Vegetable production was also at a small scale as this was a new livelihood source in the area and only a handful of the local people had diversified into. Vegetable production was yet to grow especially that there was plenty irrigation water from the two big rivers, the land was fertile and there was high demand for vegetables at the nearby Chirundu border.

Livestock was a common feature in Chiawa for a considerable proportion of households in that it worked as a source of quick source of income. It was almost a norm for every household to own livestock and the common animals reared were cattle, goats, sheep, pigs, chickens, turks and ducks. It was however notable that the populations of the various livestock animas were very small. Livestock provided protein in the deity of the people as well as quick cash when they were sold. Charcoal production was another source of livelihood for only a handful of households mainly because it was very labor intensive. Much of the charcoal produced was transported and sold in Chirundu to the affluent as local people relied on firewood for domestic energy.

The presence of two big rivers in the area sparked an anticipation of widespread fishing activities in the area but this was not to be so as only a handful of the local people engaged in fishing as a means of livelihood. Historically the people of Chiawa were hunters and not fishermen. However, the culture had diversified but only to agriculture, livestock rearing and trading and only to a very small extent fishing.

CHAPTER FOUR: METHODOLOGY

4.1 Introduction

This chapter presents the methods that were used to collect research data and how the data was analyzed. The Chapter starts by describing the sampling frame and sample size used, and then outlines the methods and procedures on how data and information relevant to the study were gathered. The Chapter ends by outlining the data analysis approaches that were employed to ensure the data collected was adequately manipulated to address the research objectives.

4.2 Sampling Frame and Sample Size

Chiawa ward consists of four (04) large villages which the study targeted and covered. The four villages are Chiawa, Gotagota, Kabwadu and Chisakila. These villages acted as clusters from which households were going to be sampled. Chiawa has a total population of 5,882 and 1,132 households (CSO, 2010). The distribution of households by village or cluster was Gotagota 490, Chiawa 285, Kabwadu218 and Chisakila 139. The village registers kept by each village headman were used as sampling frames. From the household population, the study targeted a sample size of 120. Based on the household population and the method for determining sample size developed by Bless and Achola (1990), a households' sample size of 278 was arrived at. However, of the 1,132 households only about 150 were reachable at the time as some settlements were very far without motorable roads for ease of accessibility while others were unreachable due to damaged crossing points. Based on the 150 accessible households, a new sample of 108 was arrived assigned but raised to 120 for purposes of having even a more representative sample.

To realize the 120 sample target, proportions were calculated to come up with sub-samples for each of the four clusters (villages). This therefore meant that the larger the household population a cluster had the larger the number of households were sampled. Based on the proportions, the sample targets for the four clusters were as follows: Chiawa 30, Chisakila 15, Gotagota 52 and Kabwadu 23 respectively. Furthermore, the study adopted simple random sampling when selecting individual households from each of the four clusters. This was due to the sporadic nature of the settlements in the area.

4.3 Data Collection

A total 98 households were covered from the four villages as follows: Chiawa 26, Chisakila 11, Gotagota 44 and Kabwadu17. The targeted 120 households was not achieved as some respondents were absent while some refused to answer all the questions and this led to some questionnaires being dropped on grounds of incomplete data capture. Household data was collected with the help of a questionnaire which was divided into three sections *(see Appendix I)*. Each of the three sections collected data relating to one of the three study objectives. The first section collected data on socio-economic characteristics of the respondents and household food insecurity, the second section collected data relating to factors that influenced food insecurity among households while the third section collected data on the resilience of households to food insecurity. Some questions were applicable to more than one section.

In addition to the households data collected, more data was collected from two focused group discussions with 19 key informants. The first focused group discussion was held in Gotagota where 12 key informants attended while the second was held in Chiawa with 7 key informants in attendance. The key informants were selected by the community themselves and they included teachers, agricultural extension workers, community health workers, and members of Community Welfare Assistance Committees formed by the Department of Social Welfare under the Ministry of Community Development and Social Services. The focused group discussions were guided by a separate questionnaire *(Appendix II)*. The focused group discussions collected data on the shared views of the people of Chiawa on crop production and season crops were grown, food insecurity, the periods of food insufficiency and its severity on households, common coping mechanisms used, the government supported relief food distribution and their usual livelihood sources.

4.4 Data Analysis

To analyze the data collected, frequency tables as well as descriptive statistics and a five point Likert scale were employed. The analysis was broken down into three sections each addressing a particular specific objective as follows:

4.4.1 Assessing Household Food Insecurity

The indicator method was used based on six (06) selected household coping strategy indicators which were found to be commonly used by households during times of food

insufficiency. The six (06) indicators were identified and agreed upon during the focused group discussions and these were as follows:

1= Eating less preferred food
2 = Limiting meal portion size
3 = Borrowing food or money to buy food
4 = Maternal buffering
5 = Skipping meals and
6 = Skipping eating for whole days

The coping strategy approach was premised on the assumption that engaging in any coping strategy indicated the existence of food insecurity in a given household. The prevalence of each indicator was measured using a simple 1 – 4 frequency scale as follows:

1 = Never (zero times per week)
2 = rarely (once per week)
3 = sometimes (2-5 times per week) and
4 = frequently (almost every day)

The resultant frequency for each coping strategy was then subjected to frequency weighting factors based on the length of period of food insufficiency. The weighted sums reflected the frequency at which a given household relied on a particular coping strategy in a given year. The minimum and maximum achievable weighted frequency scores per respondent were 6 and 24 respectively. The lower the weighted frequency scores the less frequent and the shorter the period a given household engaged coping strategies. The weighted frequency scores were then categorized into three groups based on the coping period. Table 3.1 presents the categorization of the frequency weighting factors, weighted frequency scores and the period households engaged in coping strategies.

Table 3.1: Weighting Factors Weighted Frequency Scores and Coping Period by Coping Period

Categories	Weighting Factors	Weighted Frequency Scores	Coping Period
1	1	6 to 12	1 – 3 months
2	2	13 to 18	4 – 5 months
3	3	19 to 24	6 months and more

Source: Field data, 2015

To estimate the severity of household food insecurity, the weighted frequency scores generated from Table 3.1 were further subjected to another weighting based on the perceived severity of each coping strategy by respondents and verified with key informants. Table 3.2 presents severity weighting of each of the six (06) coping strategies identified.

Table 3.2: Coping Strategy Severity Weighting

S/N	Coping Strategy	Severity Weight
1	Rely on less preferred and less expensive foods	1
2	Limit meal portion size	2
3	Borrow food or money to buy food	2
4	Maternal buffering	2
5	Skipping meals	2
6	Skip eating for whole day	3

Source: Field data, 2015

As can be seen from Table 3.2, the first coping strategy was least severe compared to others and was therefore given a weighting of 1. Strategies 2 to 5 were considered to be more severe than the first and equal in severity hence were all given a weighting of 2. The last coping strategy was considered to be the most severe of all and was hence allocated a weighting of 3. From the coping strategy severity weighting, the minimum and maximum scores attainable were 12 and 48 respectively. Like frequency weighting, the lower the score, the less severe the food insecurity. The severity of coping strategies were categorized into three classes based on the severity weighting scores obtained with minimum and maximum scores being 12 and 48 respectively as shown in Table 3.3.

Table 3.3: Categorization of Coping Strategy Weighted Severity Score

Category	Weighted Severity Score	Severity Level
1	12 to 24	Least Severe
2	25 to 36	Moderately Severe
3	37 to 48	Most Severe

Source: Field data, 2015

The indicator method was used to address the first objective which was to determine whether or not there was a problem of food insecurity among households in Chiawa.

4.4.2 Identification of Factors Influencing Household Food Insecurity

To identify factors that influenced household food insecurity, a number of items were listed and examined to check their prevalence during the different periods households engaged coping strategies. The listed items that were examined were as follows:

1. Sex of household head
2. Age of household head
3. Size of the households
4. Education level of household head
5. Household income
6. Household asset levels
7. Household food sources
8. Access to productive land
9. Human-animal conflict
10. Rainfall pattern in the last five years
11. Number of years household lived in the area

These items were compiled during focused group discussions as well as the considerations of various aspects for each of the items. These coupled with the trends in the data collected, the following were the aspects considered for the listed items. The size of household was divided into two categories of those that had 1 to 6 members, put under category 1 and those households with more than 6 members under category 2. For the education of household head, this was put into four categories of (1) no formal education (2) primary education (3) secondary education and (4) tertiary education. Income was under three groups (1) 0 to K1, 000.00 (2) K1, 100.00 to K2, 000.00 and (3) K2, 100.00 and above. This was because the monthly cost of a food basket was estimated at K1,883.28 in 2015 because I considered Kafue to be more or less equal to Monze (cost of food basket was at K2, 179.28) and Chiawa to Mongu (cost of food basket was at (K1,883.28), Chiawa being a quiet rural area. Household assets categories were three as shown in Table 3.4:

Table 3.4: Asset Ownership of Respondents

Categories	Asset Types Owned
Category I – Low	1. Pole mad and grass roofed house
	2. Land owned 0 – 5ha
	3. Own farming implements
	4. Own chickens, ducks, turkeys
Category II - Average	1. Burnt bricks house
	2. Land owned 6 – 10ha
	3. Own farming implements
	4. Own chickens, ducks, turkeys
	5. Own goats, sheep
	6. Own a radio
	7. Own a bicycle
Category III – Above Average	1. Permanent house
	2. Land owned 11ha and above
	3. Own farming implements
	4. Own chickens, ducks, turkeys
	5. Own goats, sheep
	6. Own a radio
	7. Own a bicycle
	8. Own Cattle

Source: Field data, 2015

Many livelihoods were identified but the study focused on major ones in the area and these were as follows:

1. Farming (crop production and animal livestock raring)
2. Fishing
3. Trading
4. Charcoal production

Access to productive land was based on the extent of the land owned and this was categorized into three groups and these were as follows:

1. 0 to 5ha owned
2. 6 to 10ha owned
3. 11ha and above

For the human-animal conflict, it was in terms of whether or not a particular household experienced human-animal conflict and there were two categories of yes and no. Regarding rainfall in the last five years, the response categories were three and they included (1) same (2) better and (3) worse. The length of period in years, a household had live in the area was considered as well. This was in three groups as well and these were (1) 6months to 3 years

(2) 4 to 5 years and (3) 6 years and above. Those who had lived in the area for less than 6 months were excluded from the study as it was considered that they were not part of the community for long enough a period for them to possess useful data for the study. The prevalence of each of the eleven (11) items described was observed across the three coping periods which were as follows:

1. 1 to 3 months
2. 4 to 5 months and
3. 6 months and above

4.4.3 Resilience of Households to Food Insecurity

The assessment of the resilience of households to food insecurity was anchored on the understanding that resilience of a household to food insecurity is the capacity of a household to withstand shocks of food insecurity without compromising its food security. Therefore, the assessment of the resilience was based on the definition of food security by FAO (1996) and the definition of resilience of households to food insecurity by Alinovi et al., (2008). FAO (1996) defines food security as "when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Alinovi et al., (2008) define resilience of a household to food insecurity as the ability of a household to keep with a certain level of wellbeing (being food secure) by withstanding shocks of food insecurity using own resources. Based on the two definitions, resilience to food insecurity was measured based on three selected parameters, two from the definition of food security by FAO (1996) and the third one from the definition of resilience of households to food insecurity by Alinovi et al. (1996). The three selected parameters were as follows:

1. Access to sufficient food
2. Access to food at all times (throughout the year)
3. Remaining food secure using own resources throughout the year.

The three items were selected as they were understood to be sufficient for use to assess the resilience of households because they were more related to food acquisition. Acquiring food was of more primary importance to food security than and before knowing how safe and nutritious the acquired food was. Therefore, a household was considered to be resilient to food insecurity if it withstood the food insecurity shocks by remaining food secure the

whole year. This is because resilience to food insecurity in this study was taken to be synonymous to being food secure. Households that did not have access to sufficient and preferred food were not considered to be resilient to food insecurity. Therefore, households that altered their feeding patterns by resorting to eating less preferred food, reducing meal size, skipping meals and maternal buffering as means to cope with food insufficiency were not taken to be resilient because they were not food secure. This is because altering food consumption patterns had overarching implications on the health on the affected households which in turn compromised their productivity. Furthermore, households that depended on external support to remain food secure (not using own resources) were also considered not to be resilient to food insecurity.

CHAPTER FIVE: PRESENTATION OF RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents the research findings and their discussion. It starts by giving an overview of socio-economic characteristics of respondents followed by household food security situation and coping strategies and factors at play and lastly the resilience of households to food insecurity.

5.2 Socio-economic Characteristics of the Respondents

The average size of households in the study area was found to be 6 with the largest household having 20 members and the smallest 2. Table 5.1 presents the distribution of the respondents by age and sex.

Table 5.1: Respondents Age Distribution by Sex

Respondents Age Groups	≤ 25 Yrs.	26-35 Yrs.	36-45 Yrs.	46-55 Yrs.	≥56 Yrs.	Total N = 98
Male	2.0%	10.2%	9.20%	22.4%	2.0%	45.9%
Female	4.1%	11.2%	17.3%	13.3%	8.2%	54.1%
Overall Total	6.1%	21.4%	26.5%	35.7%	10.2%	100.0%

Source: Field data, 2015

The average age for the respondents was 41years. In general, the age distribution in Table 5.1 shows that respondents that were 35 years old or less accounted for 27.5 percent of the sample and were categorized as youths. Overall, the age distribution shows that 89.8 percent of the respondents were within the productive age group ranging from 25 years to 55 years old and only 10.2 percent of the sample was above the productive age as they were 56 years old and above. With majority of the household heads being in the productive age categories, the community in Chiawa was expected to be productive and self-sufficient in terms of household food security.

5.2.1 Level of Education of the Respondents

In terms of education, the study revealed that respondents had attained various levels. The distribution of the said various education levels by sex of the respondents were as presented in Table 5.2.

Table 5.2: Education of Respondents by Sex

Education Attained	No Formal Education	Primary Education	Secondary Education	Tertiary Education	Total N = 98
Male	0.0%	10.2%	26.5%	9.2%	45.9%
Female	3.1%	29.6%	15.3%	6.1%	54.1%
Overall Total	3.1%	39.8%	41.8%	15.3%	100.0%

Source: Field data, 2015

With regards to the education level attained by the respondents, the trend portrayed was that majority of the respondents went up to secondary level beyond which fewer people progressed to tertiary education. Table 5.2 further highlights there were generally low education levels attained by the heads of the households in the study area. This is seen from the small proportion of the respondents who had attained tertiary education.

The study results showed that all the respondents had land held under customary tenure and that none of them actually had title to the land. The access to land varied widely in terms of the size of land accessed. All the respondents had access to traditional land issued by chief Chiawa through village headmen. The study further revealed that 91.8 percent of the respondents owned agricultural production tools while 75 percent of them owned livestock.

5.2.2 Households Food and Income Sources

In terms of livelihood sources, the study results showed that there were three main sources of household food in Chiawa and these were farming (crops and livestock), fishing, and buying from the market. The distribution of these food sources by sex of the household head was as shown in Table 5.3.

Table 5.3: Distribution of Three Main Food Sources by Sex of Respondent

Gender of Household Head	Farming (crops/livestock) n = 64	Cash Markets n = 20	Subsistence Fishing n = 14	Overall Total [N=98]
Male	29.6%	7.1%	9.2%	45.9%
Female	35.7%	13.3%	5.1%	54.1%
Overall Total	65.3%	20.4%	14.3%	100%

Source: Field data, 2015

It is evident from Table 5.3 that, majority of respondents (65.3 percent) depended on farming (crops and livestock) as their main source of food. This was followed by 20.4 percent who obtained their household food through buying from the markets within the

community mostly cash markets although barter system also existed. It must be mentioned that although these markets were functional, there were no structures or designated places for trading, people traded even within their neighborhoods in that they were able to exchange both through barter system and through money as a medium of exchange. Table 5.3 further shows that the third food source was subsistence fishing which was engaged in by 14.3 percent of the respondents. These food sources were supplemented by gathering of wild foods such as wild roots (locally called *usala*), hunting of small wild animals (such as rodents) and some edible wild insects (such as grasshoppers) however, these did not form reliable alternatives.

In terms of household incomes, the study results showed five common sources and these were charcoal production, livestock selling, trading and piece works. Other income sources included handcrafts, stone crushing and beer brewing but these were not as important. However, stone crushing had become important at the time due to the demand for crushed stone by contractors that were building the Lusaka to Chirundu road through Chiawa. This was, however, a temporary income source for the 21.4 percent of the respondents who had ventured into it as it was going to end upon completion of the road construction project. The distribution of the five (05) main household income sources by sex of the household head and total percentage for each of the five income sources is presented in Figure 5.1.

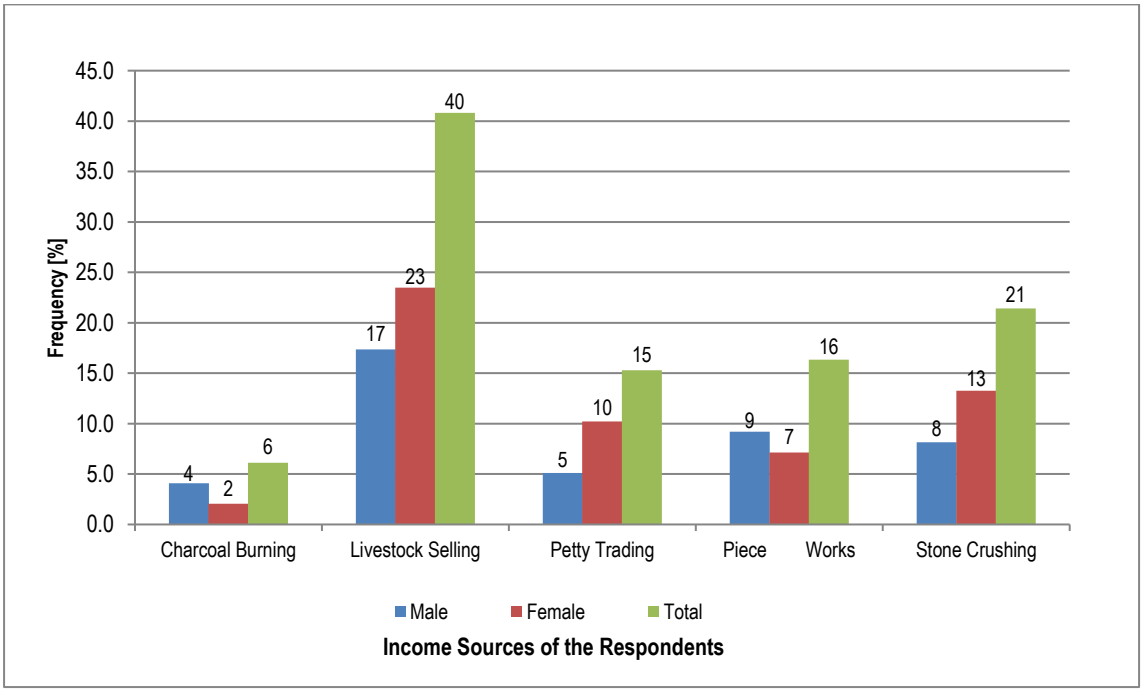

Figure 5.1: Five Main Sources of Household Income by Sex of Household Head
Source: Field data, 2015

It is evident from Figure 5.1 that the most important household income source for the majority of the respondents was livestock selling at 40.8 percent of the respondents. This was followed by piece works which stood at 16.3 percent, trading at 15.3 percent and then charcoal production at 6.1 percent for the lowest proportion of the respondents. It was, however, interesting to note from the study results that stone crushing which was a none traditional income source was engaged in by 21.4 percent of the respondents, way above the usual piece works, trading and charcoal production. This was because at the time, government was constructing a tarred road from Lusaka to Chirundu passing through Chiaa area. As a way of empowering the local communities, government had advised the road contractors to purchase hand crushed stones for the road works from the people of Chiawa. Consequently, stone crushing boomed as a short term, quick source of household income for many households (21.4 percent) in the area.

In general, higher proportions of the female respondents obtained their income from livestock selling, trading and stone crushing than their male counterparts. As seen from Figure 5.1, no single respondent obtained income from sale of agricultural crop production. This was indicative of the fact that Chiawa was already a deficit area in terms of agricultural crop production and as such no crop sales from own production were recorded as a source of income.

It was expected that fishing was going to be one of the major sources of food due to the presence of two big rivers namely Kafue and Zambezi whose confluence was also within the area. Agricultural crop production was very low in the area mainly due to low rainfall the area received, around 600mm, whose distribution was also poor. It was however revealed in this study that, majority of the respondents (65.3 percent) engaged in rain fed agricultural crop production as a main source of food yet they did not produce enough for either own consumption or for income generation through sales. It was therefore expected that irrigated agricultural crop production was going to be another major source of food and income for the people of Chiawa but this was not the case either. As seen from the presentation of five (05) main household income sources in Figure 5.1, crop production was not even one of the main sources of income yet, the area had plenty of water resources that could have been used for irrigated crop production for income generation. It was therefore clear from the study results that the availability of a lot of water in the area was not taken advantage of by the local people to enhance their livelihoods, which could have

been done through either fishing or irrigated crop production especially that the area suffered perpetual poor rainfall and droughts. Fishing was only engaged in by 14.3 percent of the respondents as a source of food and not income in that it was practiced at a very small subsistent level. This finding was somewhat indicative of the possibility of the effect of over reliance on food aid (provided by the government) by the people of Chiawa thereby neglecting their own productive capacities.

On the contrary, there were three farmers that practiced irrigated crop production successfully and had become commercial farmers growing mostly bananas which were sold in the bordering town of Chirundu, Kafue central business district and Lusaka. These were the farmers who provided the piece works that the many local people sought to earn income during the peak hunger periods. As the study results show, majority of the respondents (around 70 percent) had fields that could easily be irrigated because most of the fields were situated within the range of 20m to about 300m from the banks of both the Kafue and Zambezi Rivers.

With the knowledge of climate in Chiawa, it was further expected that trading was going to be one of the main sources of income. This is because the area is along the international border between Zambia and Zimbabwe and trading was big business in the neighboring Chirundu district and Chiawa people bought most of their goods from Chirundu town. The study findings revealed that only 15.3 percent of the respondents engaged in trading as a main source of household income.

Historically, the native people of Chiawa were known to be hunters however, none of the respondents indicated obtaining income through hunting despite the area being in a game management area of lower Zambezi National Park. Furthermore, government over the last few years had been providing relief food to the Chiawa community and the allocations of relief food have been increasing each year. For instance, in 2011 the allocation of relief food was 100MT, in the year 2012 it was 120MT and in 2014, 160MT was received (ZVAC, 2014). Going by the relief food allocation trend, chances were that the consistent and increased allocation of relief food could weaken the productive capacity of the local people thereby making them become more dependent on (free) relief food.

The study results established that many households in Chiawa did not engage in some income generating activities such as fishing and livestock rearing despite the area having plenty of water in the two big rivers. While the rivers had plenty of fish, fishing was not a traditional livelihood source as such only a handful of the people were found to engage in it. Livestock rearing required water availability for animal survival however, water availability in the area was not taken advantage of, to boost livestock production despite the climate and terrain favoring it.

Cross border trade was the main stay of many people at Chirundu as the area is located on along the international border between Zambia and Zimbabwe. Chirundu was only a few kilometers from Chiawa and there was a good motorable road between Chiawa and Chirundu. A lot of people bought goods from Zimbabwe and sold them in Zambia while others exported goods to Zimbabwe. However, it was found that in Chiawa, very few households were involved in cross border trade. The study showed that the non-involvement of the people of Chiawa in cross border trade was mainly as a result of lack of access to capital for investment.

Despite study results revealing that majority of the respondents (89.8 percent) were in their productive age categories ranging from 26 to 55years old, they did not produce enough food or income for their households.

5.3 Household Food Insecurity Indicators

The study results revealed that there were six (06) commonly used coping strategies in Chiawa namely (1) relying on less preferred and less expensive food (2) limiting meal portion size (3) borrowing food or money to buy food (4) maternal buffering, where mothers sacrifice a meal for children to eat (5) skipping some meals (6) skipping eating the whole day. Engaging in coping strategies was indicative of the existence of the food insecurity problem among households. Due to the varying degrees of wealth among households, different coping behaviors were engaged in at varied levels and periods of time based on the severity of the food insecurity situation. However, some coping strategies were common to all households but the extent to which households depended on such strategies was influenced by the asset levels at their disposal. Table 5.4 shows the weighted coping strategy frequency scores and the coping period of the respondents.

Table 5.4: Weighted Coping Strategy Frequency Score

Category	Frequency Score	Coping Period	Food Insecurity Type	No. of Households	Percent [%]
1	6 to 12	0 – 3 months	Transitory	20	20.4
2	13 to 18	4 – 5 months	Transitory	59	60.2
3	19 to 24	6 months plus	Chronic	19	19.4
Total				**98**	**100**

Source: Field data, 2015

According to the results of the study presented in Table 5.4, the lower the frequency score the shorter the coping period and the less the effect of the food insecurity for a given household. The food insecurity for such a household was categorized as being transitory. This scenario applied to households that fell in categories 1 and 2 whose weighted coping strategy frequency scores ranged from 6 to 18. Category 3 classified as chronic because the coping period was longer than 6 months. This is in line with the categorization of household food insecurity by WFP (2009) that, food insecurity lasting for at least six months and above in a given year is considered to be chronic food insecurity while shorter periods of food insecurity are considered transitory.

The study revealed that the number of coping strategies used by a particular household was highly influenced by the level of assets a particular household had at its disposal. The study results further showed that, households with more assets engaged in many different coping strategies than those with fewer assets. Table 5.5 shows weighted food insecurity severity scores of the respondents, food access periods, severity ranking and type of food insecurity.

Table 5.5: Weighted Food Insecurity Severity Score

Category	Weighted Severity Score	Food Access Period	Severity Ranking	Food Insecurity Type	Percent [%]
1	12 to 24	9 – 12 months	Least severe	Transitory	(22) 22.4%
2	25 to 36	6 – 8 months	Moderately Severe	Transitory	(63) 64.3%
3	37 to 48	5 months or less	Most severe	Chronic	(13) 13.3%
Total				**98**	**100.0%**

Source: Field data, 2015

Table 5.5 presents the net effect of the weighted coping strategy frequency score, the length of coping period and the rate at which households engaged coping strategies. Category 1 households were considered to have been least affected in terms of food insecurity. This is because category 1 households only engaged in coping strategies for periods ranging from 1 to 3 months (from November to February) in a given year and was accordingly deemed to fall under the transitory food insecurity type. Under this category, households had up to

six coping strategies which they rarely engaged in at an average rate of once per week. Table 5.5 further shows that majority of respondents (64.3 percent) suffered moderately the severe impact of the problem of food insecurity and experienced transitory food insecurity. This group on average engaged five coping strategies which they used at an average rate of 2 to 5 times per week. This category of the respondents coped for periods ranging from 4 to 5 months (between October and April) in a year. The third and last category was the group with weighted severity scores ranging from 37 to 48. This group had access to food for 5 months or less and had the longest coping period of 7 months or more in a given year. This was the most severely affected category and engaged an average of 4 coping strategies almost every day throughout the coping period. This category was therefore classified under chronic food insecurity owing primarily to the long period of relying on coping strategies.

According to IFAD (2002) engaging in any form of coping strategy (s) is an indication of the presence of food insecurity. Study results showed that households in the study area engaged six common coping strategies which in itself was an indication of the existence of the problem of food insecurity among households. The high number of coping strategies coupled with the long coping periods and the high frequency at which coping strategies were engaged particularly for categories 2 and 3 in Table 5.5, with a combined total of 77.6 percent of the respondents, further demonstrated the reality of the problem of food insecurity among households in Chiawa. Households engaged coping mechanisms at a high frequency and for a considerable period of time in attempts to be food secure.

The study revealed that Chiawa area had been supported by the government through the provision of food aid for many years. This further highlighted the existence of the challenges of food insecurity which most probably was a worsening problem among households in Chiawa. Among the underlying causes of the problem of food insecurity according to key informants was the lack of adequate access to income and capital. This prevented the members of the community from engaging in other livelihoods and income generating activities such as trading, fish farming and irrigated crop production as these required substantial startup capital. Despite the poor rainfall pattern the area receives, a good proportion of the respondents were subsistent farmers and they depended on rain fed agriculture crop production. The low and poorly distributed rainfall in the area compromised agricultural crop production and thus contributed to food insecurity in the

area. In light of the abundant water in the area and land that people had, irrigation farming had the potential to enhance crop production except that it required substantial investment capital which was beyond the reach of majority of the local farmers.

The finding that 86.7 percent of the respondents experienced transitory food insecurity while 13.3 percent experienced chronic food insecurity indicated that there was a problem of food insecurity in Chiawa. This finding answered the first study objective which was to assess the food security situation among households.

5.4 Identification of Factors Influencing Household Food Insecurity

In terms of factors that influenced food insecurity among households in the study area, five factors were identified to have more significant influence. The five factors were observed to vary consistently between the coping periods and this confirmed that they impacted on household food security situation. The five factors were household income, household asset level, livelihood source, education level attained by the head of the household and age of the household head. Table 5.6 presents the findings on the five factors.

Table 5.6: Factors that Influenced Food Insecurity among Households

Identified Factors	Categories	Coping Period			Item Total
		0-3 Months	4-5 Months	6 Months +	
Households Income Levels	Low (0-1,000)		3,1	18,4	21,5
	Medium (1,100-2,000)		61,2		61,2
	High (2,100 +)	17,3			17,3
Total		**17,3**	**64,3**	**18,4**	**100**
Households Asset levels	Low		3,1	17,3	20,4
	Average	3,1	60,2		63,3
	Above Average	14,3	2		16,3
Total		**17,4**	**65,3**	**17,3**	**100**
Household Livelihood Sources	Farming	7,1	33,7	4,1	44,9
	Fishing		10,2	10,2	20,4
	Trading	11,2	19,4		30,6
	Charcoal Burning			4,1	4,1
Total		**18,3**	**63,3**	**18,4**	**100**
Education of Household Head	No formal education	1,0		2,0	3,1
	Primary education	5,1	18,4	16,3	39,8
	Secondary education	4,1	35,7	2,0	41,8
	Tertiary education	6,1	7,1	2,0	15,3
Total		**16,3**	**61,2**	**22,4**	**100,0**
Age of Household Head	16-25years		4,1	2,0	6,1
	26-40years	7,1	28,6	6,1	41,8
	41-55years	10,2	27,6	4,1	41,9
	56years and above		4,1	6,1	10,2
Total		**17,3**	**64,4**	**18,3**	**100,0**

Source: Field data, 2015

As presented in Table 5.6, household income had a more or less linear relationship with household food insecurity. The more the household income, the more secure the household and the shorter the coping period. Table 4.6 shows that 17.3 percent of the respondents had higher income levels and therefore less food insecure than the 21.5 percent with low income levels. This is seen from the shorter coping period for the higher income households as they engaged coping strategies for shorter periods of 0 to 3 months while the low income households coped for 6 months and above. However, 3.1 percent of the low income category coped for 4 to 5 months and this was attributed to the consistency in the flow of their income compared to the 18.4 percent whose income was low and its flow intermittent and remained food insecure for 6 months and above. It is clear from this study finding that in Chiawa ward, household income was one of the factors identified to influence food insecurity among households.

A similar observation is seen from the household asset levels where the more assets a household owned, the shorter the coping period and the less the assets a household owned the longer the coping period. This finding is consistent with household endowment theory by Sen (1981) in which he asserts that household assets played an important role in a household's access to food by influencing the entitlement mapping. Sen (1981) further states that endowments can be used to produce food while others can be converted into money that can be used to purchase food. Therefore it follows that the more resource endowments or assets a household owns, the more entitlement mapping options it will have and less likely to be food insecure. This finding shows that households' assets level was one of the factors that influenced food security among households in Chiawa ward.

Livelihood sources equally influenced household food insecurity. The study results show that households that obtained their livelihoods through farming formed 44.9 percent of the respondents and of this, only 7.1 percent coped for between 0 and 3 months. The long coping periods by majority of farming households was attributed to the low rainfall associated with the agro ecological region I where the study area is situated. In this agro-ecological region poor soils and high temperatures compromise crop production hence the area is prone to crop failure. By comparison, households that obtained their livelihoods through trading coped for shorter periods. This indicated that trading households were a little better than those engaged in fishing and charcoal burning. It is clear from Table 4.6 that none of the trading households coped for periods longer than 5 months as was the case

with households that had other livelihood sources. This result showed that different livelihood types households engaged influenced their food security situations.

In terms of education and household food security, the study revealed that the level of education attained by the head of a household influenced the food security situation of the household. The study revealed a trend where the higher the level of education attained, the shorter the coping period however, there were exceptional cases where this trend was opposite. For instance, one household head with no formal education coped for period between 0 and 3 months while some with tertiary education engaged coping strategies for periods ranging from 6 months and above. Despite such exceptional cases the general trend was that the level of education attained by the head of a household influenced the food security situation of the household. This result is similar to that by Nganga (2013) to some extent. Nganga (2013) in her study of women's experience in food security in Kenya found that the value of education among women was low as such there was inadequate family planning knowledge leading to large families that became difficult to feed. The similarity is that lack of knowledge as a result of low or lack of education influenced household food insecurity although for Chiawa the size of a household did not have any insignificant influence on food insecurity as the households were relatively. Therefore, education of the household heads in Chiawa was found to be one of the factors that influenced household food insecurity.

The age of the head of the household was the fifth factor that was identified to influence the food security of a household. The influence of age of the household on its food security was more of a normal distribution curve where, the younger the household head (16years to 25years old) the less food secure the household tended to be and engaged coping for longer periods. This changed as the household head got older to between 26years and 40years when they became stable and engaged coping systems for shorter periods of time. This trend continued until the age of 55. The study result shows that households headed by 56year olds and older became less food secure and engaged coping systems for longer periods of 6 months and beyond. This finding was similar with those of Omonona et al. (2007) in their study of household food security in Nigeria. They found that household food insecurity increased with age of the household head, especially when they attained 60 years and above. They also found that food security was least among younger household heads of ages ranging from 21 to 30 years. This study outcome indicates that the age of the

household head influenced food security among households in Chiawa and therefore, age of household head was identified as one of the factors that influenced food security among households in the study area.

In terms of the factors that influenced food insecurity among households in Chiawa ward, the study identified five (05) factors to have had significant influence and these were household income, household asset levels, and household livelihood types, level of education attained and age of the household head. This finding addresses the second research objective which aimed to identify factors that influenced food security among households in the study area, Chiawa ward.

5.5 Resilience of Households to Food Insecurity

In this study, the resilience of a household to food insecurity was taken to be synonymous with food security. Resilience to food insecurity was therefore assessed based of the definition of food security by FAO (1996) and the definition of resilience of a household to food insecurity by Alinovi et al., (2008). Households that had access to sufficient food at all times in a year were regarded as being resilient to food insecurity if they used their own resources to access the food. On the other hand, households that used own resources to acquire food but did not have access to sufficient food at all times in a year were not considered resilient to food insecurity.

The results of the study revealed that none of the respondents had access to sufficient food at all times in a year. The lack of access to sufficient food among households caused them to engage in various coping strategies in an effort to deal with the challenge of food insufficiency. In this study, four (04) main coping strategies that the people of Chiawa fail back on during periods of food scarcity were identified. Table 5.7 presents the four coping strategy types and the length of period households engaged in each of the strategies.

Table 5.7: Types of Coping Strategies by Coping Periods

Coping Strategy Types	Coping Period	Percent [%] N=98
1. Alter feeding patterns	0–3 months	42.9
2. Piece works	4–5 months	22.4
3. Selling assets	4–5 months	15.3
4. Food Sourcing	6months plus	19.4
Total		**100.00**

Source: Field data, 2015

Table 5.7 illustrates that majority of the respondents (42.9 percent) resorted to altering feeding patterns as a way of coping with food insufficiency for periods of up to 3 months. Some of the coping strategies engaged by households under this category included eating less preferred food, less expensive food and reducing meal portion sizes. These coping actions demonstrated that households in this group did not have access to or alternatives to sufficient and preferred foods. Engaging in these coping strategies, was no way they were going to achieve access to sufficient and preferred foods. So for the 3 months period, (between November and March) these households remained food insecure and as such were not resilient to food insecurity.

The study revealed that none of the respondents became food secure by engaging in coping strategies but to the contrary, some households lost their assets as they sold some, as a way of coping with food insufficiency. Table 5.7 further demonstrates that 15.3 percent of the respondents went into distress selling of assets in order to afford food. Hoddinott (2004) observes that, selling of assets as a way of coping with food insecurity is an erosive response that tends to impoverish the affected households. This is because selling assets would deprive affected households of their assets and plunge them into abject poverty. The distress selling of assets and its bitter impoverishing consequences were already being experienced by some of the respondents in this study. No household that were selling assets were expected to improve their food security situation because selling assets was transforming them into poverty stricken households that would degenerate them from transitory to chronically food insecure households. Distress selling of assets therefore demonstrated the lack of resilience to food insecurity among the affected households and exhibited their lack of capacity to use their assets to generate income or earn food.

Actual food sourcing was another strategy used to cope with the challenges of food insufficiency. While eating some of the wild fruits and roots was a normal practice in the area, this became rampant during the hunger peak period which is the period between October and March. Sometimes this group would turn to unusual wild fruits, roots and tubers as well as begging for food during times of critical food insufficiency. This group was hard hit by the problem of food insecurity and they usually sought government intervention through the provision of food aid. This is the group that had benefited from the government funded relief food program in Chiawa which had almost become an annual

program. During the period 2008 to 2014 government provided relief food annually and all the households in this group benefited. The households in this group did not have any endowments of economic value. The study further established that some of the households in this group previously owned were going to sell the assets if they had any, and some had assets in the past but had since sold them off.

According to DMMU Lusaka Regional Office, the allocation of relief food to Chiawa by the government had increased by over 50 percent from 50mt in 2011 to 130mt in 2014. The study revealed that an average of 74 percent of the respondents had benefited from the relief food provided by the government during the period 2008 to 2014. According to Alinovi et al., (2008) failure to remain food secure using own resources was an indication of the lack of resilience to food insecurity among the beneficiary households. This was evident in Chiawa as the people received external support in form of food aid which people did not work for but received free of charge.

The increase in the allocations of food aid to Chiawa by the government during the period 2011 to 2014 pointed to the possibility of a worsening problem of food insecurity in the area. It was observed in the study that, sustained provision of relief food could break the productive capacity of the people of Chiawa as they could become less productive and dependent on relief food.

Ciani and Romano (2013) state that households have assets such as labour, human capital, physical capital, social capital, public and common goods at their disposal to make a living. They add that households build up assets, not just physical but also social and human capital as alternatives to spending and that these contribute to the wellbeing of the household in terms of being food secure. They further state that the level and utilization of these assets determine how resilient a given household would be to food insecurity. It would therefore be very easy for a household that would have built up its assets over time to deal with food insecurity by utilizing those assets to gain sufficient access to food or sell some of the assets to earn income and purchase sufficient food. This was not the case among the respondent households in Chiawa.

The study established that there was lack of resilience to food insecurity among households in Chiawa in that they did not have access to sufficient food at all times in a given year.

Furthermore, households engaged various coping strategies in order to deal with the problem of food insecurity however, they remained food insecure. It was also established that households did not use own resources in their quest to gain access to sufficient food, they were supported by government through the provision of food aid whose allocations to the area had more than doubled over a period of four years. This further established the lack of resilience among the households to food insecurity as household could not cope with own resources without external support. This study result therefore addressed the third study objective which aimed to examine whether there was resilience to food insecurity among households.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion of the study and gives a summary of the study findings for each of the research objectives. The chapter ends with recommendations for addressing the food insecurity challenges the people of Chiawa face as well as pointing to other areas for further research.

6.2 Conclusion

The results of the study revealed that there was a problem of food insecurity in Chiawa and that it affected all the respondent households for different lengths of time. 20.4 percent of the respondents remained food insecure for up to 3 months during which period they engaged coping strategies. This was the least affected category of respondents followed by 60.2 percent who suffered food insufficiency for periods ranging from 4 to 5 months. This category was moderately affected by the problem of food insecurity. the most affected category consisted 19.4 percent if the respondents. This group had access to food for less than 6 months in a year and engaged coping mechanisms for at least 6 months in a year. Of the sampled households, 19.4 percent were categorized as chronically food insecure households because they coped for longer than 6 months. The other two categories totaling 80.6 percent were categorized under transitory food insecure households.

In terms of the severity of the problem of food insecurity among households, 22.4 percent were least severely affected followed by 64.3 percent who were moderately affected and lastly 13.3 percent that were most severely impacted by food insecurity. the food insecurity situation drove households to employ various coping measures which included eating less preferred foods, less expensive foods, limiting meal portion size, skipping meals maternal buffering, distress selling of assets, piece works, begging for food, resorting to eating unusual wild fruits roots and rubbers, borrowing food or money to buy food and appealing ton government for support through the provision of food aid. The study revealed that there was likelihood that some of the transitory food insecure households would degenerate and become chronically food insecure if the underlying factors remained unaddressed. This finding answered the first research objective which aimed to assess the food security situation among households in Chiawa.

The study results further demonstrated that food insecurity among households in Chiawa

was influenced by five main factors. These factors were household income levels, level of assets households owned, types of livelihoods households engaged, education level attained by the heads of households and age of household heads. The study revealed a prevalence of these factors across the periods households engaged coping strategies. Households with higher income were less affected by the challenges of food insecurity compared to those with less income. Equally, households that owned more assets were less affected by the problem of food insufficiency and they engaged coping mechanisms for shorter periods of time than households with low asset levels.

In terms of livelihood sources, trading households were the least affected by the problem of food insufficiency. None of these households engaged coping for more than 5 months yet 30.6 percent of the respondents obtained their livelihoods through trading. This was followed by farming households who formed 44.9 percent of the respondents although 4.1 percent engaged coping systems for longer than 6 months. Fishing households (20.4 percent of the respondents) were quiet hard hit by the hunger problem. These they only had access to sufficient food up to 3 months in a year and engaged in coping mechanisms for between 4 and 9 months with half coping for longer than 6 months. The study established that the types of livelihoods households engaged influenced their food insecurity. The level of education attained by the household heads played a significant role in the ability of the household to acquire sufficient food. The results of the study show that the higher the level of education attained by the household head, the shorter the period a household would remain food insecure. The study therefore established that education level attained by the household heads influenced the food security situation of households in Chiawa. Similarly, the food security of a household was influenced by the age of the household head. Younger household heads between 16 and 25 years old (6.1 Percent of the respondents) were less food secure than those headed by older household heads. These engaged coping for between 4 and 9 months in a given year. As for age category of 26 to 55 years old who formed 83.7 percent of the respondents, food insecurity was less severe of all. Of the 83.7 percent, only 10.2 percent engaged coping for 6 months and above the rest coped for up to 5 months and less. The food insecurity worsened among older household heads of 56 years (10.2 percent of the respondents) and above as all of these remained food insure for periods ranging from 4 to 9 months in a year.

This finding addressed the second study objective which aimed to identify factors that influenced food insecurity among households in Chiawa.

Having examined the resilience of households to food insecurity, the study results showed that none of the households was resilient to food insecurity in that households did not have access to sufficient food at all times in a year. This led them to engage coping strategies in an effort to deal with the problem of food insufficiency. Engaging in coping strategies as a response to food inadequacies was indicative of compromised food security situation among households showed that there was lack of resilience to food insecurity among households. The study furthermore showed that government had been supporting households in Chiawa by providing food aid for a long time. This further established the lack of resilience among the households to withstand the effects of food insecurity without external support.

6.3 Recommendations

1. There was need for the government through the Ministry of Agriculture to support the people of Chiawa with community irrigation schemes for crop production which would contribute to food availability and food security among households. This is because the area had plenty of water in both the Kafue and Zambezi Rivers whose confluence was within the area. The existence of three irrigated commercial farms within the area was evidence enough that irrigated crop production could thrive in the area as was the case for the three commercial farms.

2. The study revealed that the most affected households by food insecurity were those with low income and low asset levels, those with primary education and those that obtained their livelihoods through charcoal production. Therefore, there was need for the government through the Ministry of Community Development and Social Services, and the Ministry of Education to introduce and promote income generating activities among households in Chiawa, promote education for all and improve the social safety net services to take care of the old people.

3. With plenty water and fish available in the two big rivers within the area, government through the Ministry of Fisheries and Livestock could do well to support the people of Chiawa through the introduction of skills training in fish farming and supported

with startup capital. Fish farming if well harnessed could improve both the availability of fish for food and incomes from fish sales and this would contribute to food security in the area.

4. Since majority of the households obtained their income from selling livestock, further research could be carried out on the types of livestock that could thrive under the prevailing climatic conditions of Chiawa. Harnessing and developing the livestock industry could improve if not revolutionize food security in the area and among households.

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APPENDIX I

Household Questionnaire

Section A

Name of interviewer: …… Date of interview: ……..
Village Name: ……. Name of Respondent: ……
Sex of Respondent: ……. Age of Respondent: ……..
Education Attained: …… Size of Household: ……
Position of Respondent in the Household: ……..
How long has your household lived in this area? …….

1. What are the three (03) main sources of your household's food?
   i. ……
   ii. ……
   iii. ……
2. What is the annual average production of each of the three (03) main food sources?

	Food source	***Annual production (kg/Litres)***
i.	…….	…….
ii.	…….	…….
iii.	……	…….

3. What period of the year does your household derive food from each of the three (03) main food sources?

	Food source	***Period food provided***
i.	…….	…….
ii.	…….	…….-…
iii.	……	…….

4. Where do you derive your household food from during the months left out in question 3 above?
   i. ……
   ii. ……
   iii. ……
5. Do you face any challenges obtaining household food in the months left out in question 3 above?
   i. Yes
   ii. No
6. If yes to question 5 above, list any three challenges that you face.
   i. ……
   ii. ……
   iii. ……
7. What do you do to cope during the months left out in question 3 above? (Circle **only** one response that best fits your answer in the table below).

Table 1: Household strategies in times of food insufficiency (Coping Strategies)

	Your Response / Strategies	**Frequently** (almost daily)	**Sometimes** (2-5 times/week)	**Rarely** (1-2 times/week)	**Never** (0 times/week)
i.	Eating less preferred food	1	2	3	4
ii.	Limiting meal portion size	1	2	3	4
iii.	Borrowing food or money to buy food	1	2	3	4
iv.	Maternal buffering	1	2	3	4
v.	Skip meals	1	2	3	4
vi.	Skip eating for whole days	1	2	3	4

Source: Field data, 2015

8. From the table above, which strategies work out best for your household? ……..……
9. How many years has your household used the strategies stated in question 8 above? ……

Section B

10. What are the three (03) main sources of income for your household?
    i. ……
    ii. ……
    iii. ……
11. What is your annual average income from each of the three (03) income sources?

	Income source	***Annual average income***
i.	…….	…….
ii.	…….	…….
iii.	……	…….

12. What period of the year do you derive income from each of the (03) income sources?

	Income source	***Period of income in the year***
i.	…….	…….
ii.	…….	…….
iii.	……	…….

13. Does your household own land?
    i. Yes
    ii. No
14. If yes to question 15 above, what is the size of the land your household owns? (State the Ha)
15. How did your household acquire this land? (Circle your answer).
    i. Through inheritance
    ii. Bought it
    iii. Given by traditional leadership
    iv. Other (specify) ……
16. When did your household acquire this land? ……
17. Do you have title to this land?
    i. Yes
    ii. No
20. Does your household experience human-animal conflict?
    i. Yes
    ii. No
21. If yes to question 20, does the human-animal conflict affect your household's access to food?
    i. Yes
    ii. No

22. If yes to question 21 above, how long has your household been experiencing human-animal conflicts? (State the number of years or months) ……
23. How has human-animal conflict affected your household's access to food?
    i. Crop damage
    ii. Animal attack on family members
    iii. Other (specify) …….
24. Does your household own agricultural production tools and implements?
    i. Yes
    ii. No
25. If yes to question 24 above, what agricultural tools and implements does your household own?

Name of tool/equipment	***Number***
i. ……..…….	……
ii. ……..……	……-…
iii. ……...…	……
iv. ……..	……

26. What assets does your household own? (Tick what you own and indicate number).

Name of tool/equipment	***Number***
i. Television set ……..	
ii. Radio set ……..	
iii. Bicycle ……..……..…	
iv. Motorcycle ……...	
v. Motor vehicle ……...	
vi. House(s) for rented ……..…….	
vii. Shops for rent ……..…….	
viii. Land for lease (Ha) ……..……	
ix. Land for own agricultural production (Ha) ……	
x. Any other (specify) ……	

27. Does your household own livestock animals?
    i. Yes
    ii. No
28. If yes to question 27 above, what animals does your household own?

Name animal	***Number***
i. Cattle	…….
ii. Goats	……..…
iii. Sheep	…….
iv. Pigs	…….
v. Turks	……
vi. Chickens	……..

29. Does your household practice farming?
    i. Yes
    ii. No
30. If yes to question 29 above, name the crops that you grow ……..
31. How would you describe rainfall for agricultural crop production in the last 10 years?
    i. Good enough
    ii. Not adequate
    iii. Poor

32. If yes to question 29 above, how would you describe rainfall in this area in the last five years?
    i. Better
    ii. Same
    iii. Worse

Section C

33. How would you describe your access to food in a given year? Circle the answer that best suits you based on the key below.

1=6months or less 2=2 to 5 months 3=1 month or less 4=all the time

	Your Response / **Question**	**1** **Very Poor** (Not at all)	**2** **Poor** (Insufficient)	**3** **Good** (Inadequate)	**4** **Very Good** (Adequate)
i	Access to sufficient food	1	2	3	4
ii	Access to food at all times (throughout the year)	1	2	3	4
iii	Remain food secure using own resources	1	2	3	4

Source: Field data, 2015

APPENDIX II

Focused Group Discussion Questionnaire/Checklist

Date of Interview: ……. Name of Village: ……...
List of key informants: ……

4. **To determine whether or not there was a problem of food insecurity among households.**
    1. Does your household experience challenges in accessing food at certain times in a year? ……..
    2. If yes, list three main challenges that you face ……..……
    3. Which period of the year does your community face challenges in accessing food? ……..
    4. What would you attribute these challenges to? ……...
    5. How does your household cope with the difficulties in accessing food? ……..
    6. How would you rank the severity of food insecurity in terms of coping strategy types? …….
    7. Do you receive government or any external support during the period of food insecurity? ……..…
    8. If yes, how long have you been supported with food aid by the government? ……..…

5. **To identify factors that influenced food insecurity among households.**
    1. What are the three main sources of food for your household? ……..
    2. Which one is most important? ……
    3. What is the estimated annual income for your household? ……
    4. What are the three main sources of income for most households? ….……..
    5. Which one is most important? ……
    6. What common assets do the households own? List them all ……..…….
    7. Do you have access to land? ……..……..
    8. If yes, what is the estimated extent or size of your land? ……..……...
    9. Do you have title to your land? ……..…….
    10. Do some people in your community experience human-animal conflict? …….
    11. If yes to question10, does human-animal conflict influence household food insecurity? ….
    12. If yes to question 11, how does human-animal conflict influence household food insecurity?
    13. Do you have access to the market? ……
    14. If yes, what merchandize do you buy and or sell from this market? ……...
    15. Is the market functional throughout the year? ……..…….
    16. If no, which periods of the year is the market functional? …….
    17. How does education level attained by household heads relate to household food insecurity?
    18. How does sex of the household heads relate to household food insecurity? …….
    19. How does age of the household heads relate to household food insecurity? …….
    20. How does rainfall influence household food security/insecurity? ……..……..
    21. How does size of household relate to household food insecurity? ……
    22. Do you think length of period a household has lived here influenced their food insecurity?
    23. If yes to question 22, explain how …….…….

6. **To examine the resilience of households to food insecurity.**
    1. Is there a period when you do not have access to sufficient food for your household in a year? …
    2. If yes, state the period in a year when you do not have access to sufficient food for your household ……...
    3. What could be the reason for not having access to sufficient food for your household? ……