

**DETERMINANTS OF FOOD SECURITY AMONG RURAL HOUSEHOLDS IN  
MAGONG, NORTHWEST PROVINCE, SOUTH AFRICA**

By

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## DECLARATION

By submitting this dissertation I, Segametsi Christina Sentsho declare that the entirety of the work contained therein is my own original work, that I am the author thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification elsewhere.

Signature:..... Date:.....

Ms SC Sentsho

## **DEDICATION**

This mini-dissertation is dedicated to my dad and me. Papa Matong Samuel Sentsho –Moratiwa, for always having my back. Also myself, for finally conquering the fear of failure that has been holding me back all these years.

## **ACKNOWLEDGEMENTS**

I would also not have made it through without the strength from the Lord God. I appreciate the remarkable support from my family, especially my mother, Mamontsho and my brothers; Tshepang, Tsholofelo and Sentsho, my dad Matong and the wonderful circle of friends I have who motivated me to go on even when I felt like giving up.

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Prince Manaka, a wonderful friend of mine, is appreciated for being my sense and peace in the midst of all the hard work we had to put through, through the tears and through the fun times. He always managed to pull me through with him when things were tough, when I felt I'm not mentally prepared for this study. He is prodigiously thanked for his patience and support.

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## **ABSTRACT**

Food security is a broad concept especially as far as rural food security in countries is concerned. In essence, it is a phenomenon with the goal of ensuring that all individuals have at all times, an adequate level of food and which they will be able to utilize to meet their increasing consumption demand. Studies have shown that like other countries, South Africa is food secure at the national level but very food insecure at the household level. It is also shown that food insecurity is not fuelled by a lack of food but a lack of food insecurity tackling strategies. The aim of the study is to examine the determinants of food security among rural households in Magong, North West Province, South Africa where the main prevalent economic activity is farming supported with other formal and informal types of employment.

A multi-stage sampling technique was used to select the respondents that were interviewed. The first stage involved selecting districts and the second stage was the selection of municipalities. Farm and non-farming households were selected. Structured questionnaire were administered to 108 households. The third stage involved a selection Magong village using purposive sampling based on high concentration of both farming and non-farming activities were selected, which in our case is Magong. The fourth stage involved the selection of respondents based on simple random sampling proportionate to size. The study employed logit model for as data analysis. Of the variables modelled, only income and land size had a significant influence on food security.

As far as age is concerned, it was evident that the youth participation in agriculture lacks. This is because most young people are still after white collar jobs. Some were still in the academic world awaiting their certificates which they hope to use a ticket to their first job. The participation in agriculture increases steadily between ages 31 and 50 which could be because the persons in this age brackets were looking for ways to store their wealth as they approach their retirement age. Some of the respondents have inherited the farms from family members and are therefore “forced” to keep the family business running for the sake of sustainability. With regards to the marital status, there is a high number of single/ never married respondents compared to the other groups. This could be people co-habiting and choosing not to marry as a result of the economic conditions making marriage costs unaffordable. Divorce was at its lowest amongst the respondents.

In terms of the gender of the respondents, there was a high participation of women in agriculture. This may be a result of women-based agricultural programmes implemented in the past in the study area.

All the variables had a positive relationship with food security. Age had a positive effect of food security, with a positive parameter ( $\beta=0.013$ ) which indicated that contrary to what other researchers found, an increase in age when all other factors are held constant, resulted in an increase in food security. The marital status of the household head also positively affected food security. This indicated that compared to their unmarried counterparts, married household heads were food secure ( $\beta=0.049$ ). The findings also indicated that married couples and people living with partner had a higher chance of being food secure than those who were single, divorced or widowed. According to the results, male headship of households increases food security by 0.398.

It was found that the larger the household size, the more food secure it is. This may be because as the number of members in the household increase, they find more ways of making money and combating food insecurity. A unit increase in household size increases food security by .093 while an increase in land size, increases food security by 0.394. This is expected because as the land size increases, there are chances that the productivity will also increase. From the results of the survey household income had a positive effect on food security. Income is very important as it determines the household's affordability and its ability to meet its needs.

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## **ACRONYMS**

DAFF Department of Agriculture, Forestry and Fisheries

FAO Food and Agriculture Organisation

FAOSTAT Food and Agriculture Organisation Statistics

GDP Gross Domestic Product

HSRC Human Science Research Council

IFPRI International Food Policy Research Institute

ILO International Labour Organisation

NFCS National Food Consumption Survey

SONA State of the Nation Address

SPSS Statistical Package for the Social Sciences

StatsSA Statistics South Africa

UIF Unemployment Insurance Fund

UN United Nations

WFP World Food Programme

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

Food security is a broad concept especially as far as rural food security in countries is concerned. It is in its essence a phenomenon with the goal of ensuring that all individuals have at all times an adequate quantity of food which they will be able to utilize to meet their increasing consumption demand (WFP, 2018, DAFF, 2018). Connolly-Boutin and Smith (2016) outline the three aspects of food security as food availability, food access and food utilization. According to DAFF (2011), food availability is defined as a situation where a country has a supply of food in sufficient quantities on a continuous basis at both the national and household levels. Additionally, food access emphasises sustainability; and it is the ability to acquire sufficient food for both the nation and the households for the future use. Finally, food use refers to the accurate application of knowledge of nutrition and basic care as well as services like water and sanitation.

Food is a basic need and a fundamental human right and the issue of food security has been crucial in many parts of the world. A report by FAO (2014) highlighted that around 820 million people went hungry every day. Candel (2018) that that food security is multi-faceted and therefore application measures like the integrated food security strategies to fundamentally redesign goals, and monitoring the progress in providing targets for national and international political action, are essential in achieving food security. The South African food security situation is no different from the rest of the Africa. South Africa is food secure at the national level meaning that the country has the capacity to import food and is able to produce enough staple food to feed the growing nutritional requirements for its population (FAO, 2008, Schonfeldt et al. 2017).

Accordingly, a condition whereby a country is able to ensure food security by manufacturing, importing, retaining and sustaining food needed to support its population with minimum *per capita* nutritional standards is referred to as food security at a national level. In addition, food security at a household level refers to the

availability of food in one's home which one has access to. In conclusion, a household is regarded as food secure when the members of the household do not live in hunger or fear of starvation (DAFF, 2011).

There needs to be a distinction between national and household food security as according to Anderson (1990) approaches are not the same in those levels (DAFF, 2011). Abdalla (2007) opines the fact that in order for a country or government to successfully deal with food insecurity, there is a need to consider the issue at various levels, the micro (household), macro (regional) and the country (national) level.

In South Africa, there is an unfortunate situation where the sufficient aggregate availability of food does not translate into adequate accessibility for all people (Drimie and McLachlan, 2013). According to Labadarios *et al.* (2008), a report by NFCS in 2005 highlighted that one out of two households (51.6%) experienced hunger with only one out of five households which seemed to be food secure despite the overall South African economic growth. According to (Drimie and McLachlan, 2013) hunger is more prevalent in Northern Cape, Eastern Cape and Limpopo provinces. Since the early 1990s food security in South Africa has always been a topic of interest particularly in the light of occurrence of the droughts on the sub-continent (Van Zyl & Kristen 1992). Furthermore, immediately after South Africa gained its democracy in 1994, the government saw it fit to include the right and access to sufficient food in sections 26 and 27 of the South African Constitution. The two sections put an emphasis on the entitlement that each individual has to sufficient water, food and social security (DAFF, 2011).

Realizing that the issue of food security is crucial especially after the 2008 food riots that left most people chronically hungry in almost all of the African region (Drimie and Casale, 2009), the South African government reprioritized food security in 2010/2011 financial year (SONA, 2010). According to Zita (2012), the South African government launched two programmes to improve food security within its population. The programmes were the Zero Hunger by DAFF and Outcome 7 by the government (Government of South Africa, 2010, UN, 2015). The Zero Hunger Programme focused on food access, food production, nutrition security, development of marketing channels, fostering of partnerships with relevant stakeholders and promoting stakeholder dialogue. The Outcome 7 Programme focuses on sustainable agrarian

reforms and aims to improve access to affordable and diverse food, rural services and sustainable livelihoods, rural job creation and enabling an institutional environment for sustainable and inclusive growth.

## 1.2 Problem statement

South Africa still faces challenges to successfully improving food security, with the main challenge being food access. This is because according to Bonti-Ankomah (2001) and Wanjiru (2014) access is determined by demand and purchasing power and the persistent social and economic inequalities as according to Vella (2012). Altman *et al* (2009) make note of the fact that South Africa is a middle income country and characterised by inequalities and poverty. Income inequality has played a major role in increasing household food insecurity amongst the African populace (Von Braun, 2007). The other problem has been slow job creation and the increasing number of unemployed people, thus limiting access to the means to purchase food (Mwaniki, 2006).

Generally, poverty is mainly influenced by the structural growth and development of the country (Devereux, 2013). Yet, the South African poverty context is particular, given the high inequality in income and asset ownership. Hence, the effect of policy measures towards reducing poverty and food insecurity, and establishing the link between poverty, incomes and food security is still unclear, making policy targeting difficult. According to Labadarios *et al.*, (2011) these conditions have placed South Africa under severe pressure as the average South African citizen already struggles to meet basic household needs.

## 1.3 Motivation of the study

Food security has always been of paramount importance. It is for this reason that the much applauded Millennium Development Goals were formulated in 2000. The Millennium Development Goals pledged to reduce the number of people suffering from hunger according to the European Commission (2005). Studies on food security can never be over emphasized as food forms part of every organism's growth and

development. Of all the household's item of expense, food is always the single largest item for most residents in rural areas. It accounts for over half of the households' expenses. The incidence of the high rate of joblessness and low wages often lead to generalized food insecurity.

More often in rural households, the food expenditure is usually higher than the income which drives the households to debts. This study is intended to find out the difficulties they come face to face with daily as far as food security (food access, food utilization and food availability) is concerned. The North West Province particularly the rural areas, are characterised by the prevalence of slow job creation and the increasing number of unemployed people hence the limiting access to the means of purchasing food (Ndobo,2013).

#### 1.4 Aims of the study

The aim of the study is to examine the determinants of food security among rural households in Magong, North West Province, South Africa.

From the foregoing, this study intends to provide answers to the following research questions:

- What are the socio-economic characteristics of rural households in Magong, North West Province?
- What is the food security status of the households in the study area?
- What are the determinants of food security among the households?
- What are the constraints to food security in the study area?

#### 1.5 Objectives of the study

The specific objectives of this study are to:

- i. identify and describe socioeconomic characteristics of the households in the study area;
- ii. ascertain the food security status of the households ;

- iii. examine and analyse the determinants of food security ; and
- iv. identify and assess the constraints to food security.

## 1.6 Outline of the study

This study focused on the food security status of the households in Magong. Chapter One of the study focused on the background of the study, problem status, motivation, aims and objectives. Chapter Two is a review of the local, regional and international literature. Chapter Three focused on the methodology of the study including the study area, data collection methods, model used and data analysis. Chapter Four focused on the presentation of the results of descriptive statistics Household Food Insecurity Assessment Scale (HFIAS) and the Logit Model. Chapter Five highlighted the summary, conclusion and policy recommendations.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This study is on the determinants of food security among rural households in Magong, Northwest Province, South Africa. This section aims to outline all the aspects affecting food security status of the respondents using international, regional and local literature.

#### 2.2 The importance of food security

Food security matters immensely. It is a topic of keen interest to policy makers, academics and practitioners around the world in large parts because the consequences of food insecurity can affect almost every facet of the society. It is a concern for both the developing and the developed countries, with developing countries seemingly suffering more intense food insecurity than the developed countries. It is therefore that studies regarding food security can neither be over-emphasized nor overlooked. Food is a basic need and a basic human right (Hossain et al., 2018), apart from it being an essential element for humans' and other living things survival.

The world is home to 12 billion of people. It is therefore important that each and every individual has access to food, and that they are fed. It is however distressing that some of the populations including children less than 5 years old, especially in the developing areas still do not have access to adequate food and are therefore food insecure (Reynolds et al, 2015). Literature documents confirm that there are still populations who face a challenge in attaining food security (FAOSTAT, 2011). Kruidenier (2015) opines that amongst the populations who still find it challenging to attain food security are those who having difficulty in getting two meals a day and those not knowing where their next plate of food will come from, or whether it will come at all.

In addition, Burke and Lobell,. (2010) argue that there are roughly a billion people around the world who still live in chronic hunger, and humanity's ability to offer them

sustained livelihood improvements has been one of its most obdurate shortcomings. If food security is not attained, the consequences are seen on the people (particularly children), households and the nation as whole (Jackson and Vaughn, 2017). When defined, food security is the inability of people to access adequate and nutritious sourced in socially acceptable ways food for their needs. Failing this leads to chronic hunger and starvation.

Tarasuk *et al;* (2014) conducted a study in Canada which reveal the consequences of food insecurity in both adults and children. In children, the study point out depression, asthma in adolescence, late adulthood and diabetes, heart diseases and depression in adults. A household is said to be food insecure when its consumption falls to less than 80% of the daily minimum recommended allowance of caloric intake for an individual to be active and healthy. In particular, food insecurity manifests low food intake, variable access to food, and vulnerability- a livelihood strategy that secures adequate food in good times but is not resilient against shocks. These outcomes correspond broadly to chronic, cyclical, and transitory food insecurity, and all are endemic in Ethiopia (Devereux, 2000).

The concept of food security also has spatial and temporal dimensions (Hoddinott, 1999). The spatial dimension refers to the degree of aggregation at which food security is being considered. It is possible to analyze food security at the global, continental, national, sub-national, village, household, or individual level (Hoddinott, 1999). The temporal dimension refers to the time frame over which food security is being considered. In much of the food security literature, temporal dimension is almost universally classified in to two states-chronic or transitory (Hoddinott, 1999; Tweeten, 1997; Devereux, 2006).

Moreover, food insecurity exists in two types, the chronic and the transitory food insecurity, which are the long and the short-term occurrence respectively. FAO (2008) defines chronic food security as the prolonged periods in which people suffer from not getting a minimum amount of food they need for a healthy life while transitory food insecurity is defined as the inability to produce or have an adequate access to food in order to maintain a good nutritional status. According to FAO (2009), there are factors that are behind the existence of these two types. Prolonged poverty, lack of assets

and capital, for example, diminished access to productive or financial resources are what lead to chronic food insecurity and the short-term shocks and fluctuations in the availability and access, including year-to-year variations in food production, food prices and household incomes are what lead to transitory food insecurity.

Not only should food security be prioritized at the national level but should be at the household level also. A household is a unit where the people live together under one roof. Literature documents that many countries are food secure at the national but not the household level (Pieters et al., 2013) that these countries are able to provide the minimum foods for the diets of their citizens. Households are mainly classified into two, which is, the rural and the urban households. Food insecurity is prevalent in both types of households with rural households having higher prevalence. According to Ignowski (2012), it is crucial that household food security becomes prioritized as it is a vital step in international development and a major part in ending the cycle of poverty.

### 2.3 Distinction between food and nutritional security

The main important aspect of food security is the efficiency with which individuals convert food into nutrients. Although used interchangeably, food security and nutrition security are not the same. In order to remain healthy, food is needed. Food security is therefore concerned with food being available, how people access it, how the body utilizes the food and if the food would be sustainable. Nutritional security on the other hand is concerned with the adequacy of nutrients required to remain healthy (Austin, 2008). According to Headey and Ecker (2013) food security is measured by the extent to which people acquire food that meets their nutritional requirements, while nutrition security is measured by the occurrence of undernourishment and malnutrition. While food security is influenced by factors such as food prices, unemployment, income, and poverty amongst others, nutritional security is influenced by chronic hunger and the inefficiency of populations to convert food into nutrients.

FAO (2009) shows a different side of food and nutrition security and lists nutritional security as a component of food security. Hence, food security consists of four dimensions: (i) food availability, (ii) economic and physical access to food, (iii) food utilization, and (iv) stability (vulnerability and shocks). Each dimension is described by

a specific indicator. Based on this view, food security is a broad concept encompassing production, consumption, access, and utilization of food. Food utilization is the only dimension of food security that focuses on nutrition. This also means that nutritional security is a component of food security. They are, therefore, related but two distinct concepts. Food contains a number of basic elements such as carbohydrates, proteins, fats and oil. These elements all produce different quantities of energy when burnt. The amount of energy produced when one *ml* of any of these elements is burnt is known as its calorific value.

#### 2.4 Evolution of the food security concept

According to Gross et al. (2000) and Weingartner (2005), food security was first seen as a global concern in 1943 after the Food and Agriculture conference. The first definition of food security arose from that conference. Food security was defined as being a secure, adequate and a suitable supply of food for everyone. Between 1943 and the 70s, food security was redefined as adequacy of food supply at global or international levels. This was after a period of global food crisis that had arose and was therefore discussed. According to UN (1975), the second definition arose in 1974, at a World Food conference. It was defined as availability at all times of adequate world food supplies of basic food stuff to sustain a steady expansion of food consumption to offset fluctuations in production and prices. Due to this definition, policies were formulated on ways to increase production rather than focusing on access to food by the households and individuals.

The year 1983 saw an expansion in the definition of food security. According to FAO (1983) it was defined as ensuring that all people at all times have both physical and economic access to the basic food that they need. This was in order to incorporate food availability for vulnerable groups, considering supply on both demand and food security sides. In 1986, Noadson (1986) defined food security of a country as the summation of food prospects of individual households. He did not however overlook the aspects of availability, accessibility, utilization and stability as the elements (Hahn, 1989). Also in 1986, the World Bank defined food security as access at all times to enough food for an active and a healthy life. Another definition arose by Mkandawire and Matlosa (1993), as the absence of hunger and malnutrition.

The most common definition arose in 1996 from the World Food Summit, which was redefined to include nutrition, food safety and preference. "Food security exists when people, at all times have physical and economic access to sufficient safe and nutritious food that meets their needs and food preferences for an active and a healthy life (FAO, 1996). This definition, according to the World Food Summit (1996) includes availability and entitlement to food. Moreover, Temu and Msuya (2004) define food security as the guarantee of the physical availability and economical accessibility to sufficient food (produced with bioenvironmental and sustainable social methods) in terms of quantity (amount, distribution, calories) and quality (safe, nutritious, balanced) while cultural admittance for all people at all times means having a healthy and active lives to preserve human places.

## 2.5 Pillars of food security

According to Adom (2014) there are four dimensions of food security. These are food availability, food access, food utilization and stability. They further opine that these are classified as indicators. Aom (2014) classifies availability and access dimensions of food security as the determinant indicators, which refer to structural conditions, which worsen, or improves the food security status. In addition, utilization is considered an outcome indicator as it captures the results of inadequate food consumption. Finally, the stability dimension is linked to both availability and access dimensions as it is concerned with the sustainability of food security status.

Contrary to Adom (2014), Gebrehiwot (2009), points out that food security has three dimensions which are food availability, food access and food utilization. Food availability is concerned with sufficient quantities of food from own production or commercial imports or food aids. Food access is concerned with having adequate resources to obtain appropriate foods for a nutritious diet, which depends on available income, distribution of income in the household and food prices. Furthermore food utilisation is concerned with proper biological use of food, requiring a diet with sufficient energy and essential nutrients, potable water and adequate sanitation, as well as knowledge of food storage, processing, basic nutrition and child care and illness management.

## 2.6 Effects of gender on food security

Men and women play an important role in food security in terms of decision making over food production, consumption, nutrition and different coping mechanisms when it comes to emergencies. However, their roles are different and understanding these differences is crucial for effective food security programmes. This makes the role of gender a very interesting issue in food security (Kakwani & Son, 2016). A study of male and female households by Zakari et al, (2014) reveal that there is a significant positive relationship between household head and food security. Male-headed households are found to be more food secure than female headed households. Using the expected odd ratio of gender, it was found that the ratio was 2.64 which implies that male headed households are 2.6 times more food secure than female headed households.

In Brazil, a similar study was carried by Felker-Kantor and Wood (2012), with its main focus being on female headed households and food insecurity. The study reveal that there is a high prevalence of food insecurity in female headed households than in male headed households. In Niger also, more female headed households, particularly those headed by widows are more food insecure than male headed households. In addition, Ibnouf (2009) reveal that women are overburdened with food securing activities. In Sudan and in other parts of Sub-Sahara Africa, women work more than men in ensuring household food security. They perform activities such as collecting wood, slaughtering small animals, grinding and pounding grains, preserving and processing vegetables, meat and fruits, fetching water, rearing and milking small animals. This is to ensure that their household members are well fed or have an access to food they need for a healthy and an active life.

Accordingly, women are more capable than men to use available resources and skills in the improvement of their welfare and those of their families especially concerning nutrition and health (Alredaisy, 1993; Jackson, 1996, Coonrod, 1998; Smith and Haddad, 1999; and Elmasoud, 2001). Despite the double burden of child bearing and being wives to their husbands, women in most part of the world have been able to successfully diversify their livelihood systems. They have been able to utilize even the

less productive resources to ensure that food is available; these include using the back yard garden, using domestic animals, collecting forest and wild food etc.

Furthermore, there still exists a great inequality between the role of men and women in ensuring food security. A study finding by Leonard (2003), indicates and confirms that women work longer hours than men due to diversified roles of production activities, income generation and house chores. Preparing food takes longer, especially for women who use fire wood and crop residues to cook. Women would be regarded as breadwinners considering the amount and effort that they put into ensuring household food security. If their unpaid work and unvalued economic contribution would be valued, it would lead to a change in the contexts of economic, political and social aspects. It is obvious, as according to Hyder et al (2005) that women are primarily responsible for food production, food storage, and food sale within the households.

A study conducted by Bashir and Schilizzi (2013) reveal factors that contribute to food problems as those varying from man-made to natural forces. IFPRI (1995) indicate that there are social and legal restrictions that preventing women from owning or inheriting land, water rights or livestock, borrowing money and making decisions regarding household assets. Accordingly, this has a direct and a negative impact on their ability to manage food production and food security. Women's role in food security has always been undermined. ILO (1991) refer to women as a group operating under the conditions in which their reproductive activities are traded at the margin against their economic ventures. This limits their time and compromises activities that are compatible with their schedules. Women work on small-scale farms for production with attendant low yields and income that can hardly meet their varying household obligations; this limits their purchasing power and therefore reflects badly on their food security level.

## 2.7 Food security in South Africa

South Africa faces a structural household food insecurity problem, the prime causes of which are widespread chronic poverty and unemployment (Misselhorn et al, 2007). Numerous underlying causes have been explored in the body of literature. South

Africa is declared food secure at the national level, but the same cannot be said about food security at the household level (Hart et al, 2009). In order to bridge the food security gap, the country imports some of the food products to feed its vast growing population (FAO, 2008). The country has been shown to have met food needs of most of the population nationally and nothing seems to be said about the household food security especially in the rural South Africa.

Furthermore, a study by Demetre et al (2004) confirms South Africa's national food security level and points out that more than 35% of the population, is still vulnerable to food security. Machete (2004) reveal that about a quarter of children under the age of six are found to be stunted by malnutrition. Machete (2004) reports that food insecure persons are found in the rural areas with 75% of them being chronically poor. It is documented that South Africa experiences the prevalence of hunger and malnutrition which arise from an inadequate access to food by certain groups of individuals and households in the population and not by the shortage of food. This leads to documents about food insecurity, which according to literature and Stats SA is a long term event, that continuously threatening more than a third of the population (StatsSA, 2011).

Food insecurity has become a norm for the low-income earners and the unemployed. It is unfortunate that most of the population cannot produce food for their own consumption. They are therefore forced to buy their staple food from commercial suppliers, which are dependent on an access to cash money (Jacobs, 2009). The ways of getting money among the low income and the unemployed are through getting piece jobs, government's social welfare, safety nets (primarily in the form of child support grants and old age pensions), and private transfers from neighbours and relatives. This implies that they have a low purchasing power, thus having a little access to food. The access to food by South African citizens is also limited by their access to productive resources such as land on which they can produce food to feed themselves and their families, accessing resources such as wood, wild food and are able to rear livestock (StatsSA, 2011).

The real solutions to household food insecurity lie in growth and structural change. The citizens cannot wait for that to happen. People are hungry today and must eat

today, they cannot wait until tomorrow. The future growth and development trajectory depends on an inclusive path based on effective human development. Access to sufficient nutritious food and clean water underpins human development. Hart *et al.* (2009) alludes that there are no specific measures for food security in South Africa and therefore no regularized means of measuring it which makes it difficult for policy makers to find effective ways of addressing food security. This is somehow caused by the weak linkages between the government, private sectors and the civil society.

## 2.8 Effects of climate on food security

Climate change affects all environments in the world, which then affects food security. In Islands, food sources become lost to natural disasters where commercial and food crops become wiped out while some areas are hit hard by floods. This then results to food crises as food supply is interrupted and people do not have an access to food.

The climatic condition problem of most areas has contributed to the changing agro-ecological conditions which affect climate and this directly affects food and agricultural production. Also, the indirect effect of the demand for agricultural products affected by growth and distribution (Schmidhuber & Tubiello, 2007). African societies face a higher risk compared to other societies as far as food security is concerned due to the already witnessed prevalence of poverty, food insecurity, the impact of climate and a low adaptive and mitigative capacity (Jaramillo *et al.*; 2011).

Concerning food production, there are countries that depend on rain fed agriculture and other countries that depend on irrigation for food production. A projection by Intergovernmental Panel on Climate Change shows that yield of the rain fed agriculture in African countries could be reduced by 50% by year 2020 (Jaramillo *et al.*; 2011). Though there are still controversies around this figure, it is enough to say that some African countries are under a lot of pressure from climate change.

Not only does climate change affect food security, it has a direct and an indirect effect on food production and trade, and it negatively affects food availability and stability (Schmidhuber & Tubiello, 2007). Due to climate change, food utilization becomes

adversely affected due to the pressure on food safety and the adverse water and food borne diseases. Food accessibility is hampered by the stimulated food price which are volatile and the diminishing agricultural GDP gain of poor countries and lower agricultural productivity.

According to Armah *et al* (2011), land productivity is often reduced by a change in land fertility. In addition, climate change affects the crop yields and agricultural productivity. Misselhorn (2005), Badolo & Kinda (2014) and Van Dijk *et al* (2014) also explain the effect of climate change on food security which is said to aggravate malnutrition and food insecurity. Other factors which affect food security include higher frequency of drought and water scarcity, diminishing dietary diversity, reduced consumption, water contamination, exposure to infectious diseases. These often leads to malnutrition which is an outcome of food insecurity.

## 2.9 Education as a key to food security

There is seemingly a positive relationship between household security and household literacy rate. A study reveal that households with a higher literacy rate has lower chances of becoming food insecure than households with a low literacy rate. This is because, for the sake of competency, working efficiency, income diversification, adoption of technologies and becoming a visionary in creating a conducive environment to for the household head to educate dependents with long term target to ensure a better living condition than illiterate ones (Aschalew, 2006) . In this regard, household head plays a significant role in shaping households members. The importance of education to food security was found in a study by Ojogho (2010) who found that the probability of a household with a higher literacy rate to be food insecure decreased by 15.5%.

According to Shaikh (2007), the ability of individuals to apply information passed on them was proportional to education level which results in higher adoption of technology, better food production techniques and better utilization of resources. Moreover, FAO (2012) indicates that education is not only important for the growth of the economy of a country and improvement in the food security status but also for the individuals who make an effort to improve their literacy. These certain individuals reap

benefits such as accessing better job opportunities in the labour market and securing better and profitable entrepreneurship opportunities which can make them have an ease at securing food.

Herz *et al.*, (1991) focuses on the educational status of women and argues that not only does education increase the returns earned by the females but also leads to the reduction in the number of children hence less mouths to feed, improvement in their productivity and their contribution to national economic growth. The results have positive implications on food security. Due to improved education levels, the standard of living also improves. A study by Omotesho *et al* (2010) indicate that there is a higher chance of educated household heads being able to secure improved incomes and food. This is in line with the findings by WFP,. (2009) that 52.5% of households with little education level stands at a risk of losing incomes.

Education is also important for the development of human capital. Individuals who have been exposed to some level of education have the ability to grasp and understand what is being taught during training programme. A trained person is important for the adoption of technologies because of the easy adaptation (Darling-Hammond *et al.*, 2019)

## 2.10 Economic growth and food security

The effect of economic growth on food security has been well argued by economists who present their view by explaining food security relies on international trade, importing and exporting goods and products following comparative advantage. Accordingly, a country can achieve food security and be self-sufficient as long as it has enough money. In addition, according to Kargbo. (2000), Carter *et al* (2010), Herath *et al.* (2014) and Tadese *et al* (2014), rising income levels are consistent with food security. They state that rising income levels may cause consumers to take interest in non-food products due to improved levels of income. This will then lead decrease in the demand for food, making supply to be outstripped by demand. As a result, food prices will fall, improving both food availability and accessibility. This is backed up by a report from FAO (2000).

Development has made urbanization well known. According to Gebre (2012), there has been an increase in the number of people moving to urban areas in search of the greener pastures.

### 2.11 The role played by the Government in food security

The government is the body responsible for the regulation of a country through passing of relevant policies. For example, is in China where the rapid population growth caused the government to pass the one child per family rule. It was done through educating and sensitizing families about family planning. This was relevant as the population boom intensified the dependency ratio of families which threatened the agricultural resources. Although the government is able to come up with solutions to better the living conditions of the people, they are also able to negatively affect the livelihood of the people. That is, through political instabilities and civil strife that affects food security. According to Maxwell & Parker (2012), there is a cause-effect relationship between food security and political instability, but either of them can exist in the absence of the other. Maxwell & Parker further opines that other factors such as climate change; food price spikes etc. can affect food security. A relevant example is the 2007/2008 food price spikes, which spread to 30 countries including the Arab Spring (Asongu, 2012).

De Rose *et al* (1998) touch more on the issue of political instability and bring a new concept "food war" to the fore. De Rose *et al* (1998) stipulates that in some parts of the world, governments abuse their power and command followership by using the available food as a political weapon and starve their opponents to cow them into submission by constraining access to food, natural resources or means of livelihood. The approach can be both on a national and international levels. The civil war in Sudan, which took place in the 1980s, saw the government using food as a weapon to subdue rebels in southwestern part of the country (Kroef, 1995). Also in the 1980s, the Ethiopian government was overthrown in a civil war by a foreign donor who used food aid as the strategy (Kidane *et al*, 2006).

Different literature documents revealed that the present day famine in Africa are largely the result of military conflict that arises due to oppressive, unaccountable, and

non-participatory governments. The experience of Sudan, Liberia, Ethiopia, Chad, Rwanda, Burundi, and Somalia depicted how war disrupts the normal functioning of the economy, social and political situations (Salih, 1994; Kiros, 2005). This is a measure that the government uses to restrict reproductive resources such as finance. This is done through government policies. An example would be the case of forced resettlement plans or the adoption of discriminatory legal frameworks or social practices (De Rose et al., 1998). Armed conflict is the main cause of food shortage, due to its devastating impact on existing food systems. For instance, because of conflicts, more than 45 million people in developing countries were in need of emergency humanitarian assistance, 80% of which are in Sub-Saharan Africa (Messer & Cohen, 2004).

In addition, corruption, which is the “sale of government property for private gain” (Aidt, 2009), is the other political factor that can significantly affect food access and overall national food security. It adversely affects social and economic development, distorts market operation, increases income inequality, and deprives ordinary citizens of their right to access basic services. A study by Mo (2001) show that a 1% increase in corruption reduces economic growth by about 0.72%. Also, the impact of corruption is significant in inhibiting economic growth as it results in political instability and a reduced level of human capital and share of private investment (Mo, 2001).

While there is general consensus that corruption can distort efficient resource allocation and economic growth, there are arguments in favour of corruption for economic growth (Aidt, 2009). For instance, Leff (1964), argue that bribery might help overcome bureaucratic rules and regulations that hinder economic activity by enhancing quicker decision making which can help facilitate beneficial trade that would otherwise not have taken place. In the light of this, De Vaal and Ebben (2011) identified the direct effect of corruption, which is a reduction of economic growth through the misallocation of resources, and its indirect effect on the institutional framework, which might affect economic growth positively.

Accordingly, the impact of corruption on the three main determinant factors of growth, namely political stability, property rights and political system, has been analyzed empirically. The authors conclude that only when political stability or the protection of

property rights is above some threshold value, will corruption affect these institutions negatively, thereby hindering economic growth De Vaal & Ebben,.( 2011). Aidt (2009) argue that “undisputed, but isolated, instances of efficiency-enhancing corruption at the microeconomic level cannot be taken as evidence that corruption can be efficiency-enhancing at the macroeconomic level”.

## 2.12 Land reform and political instability

Land redistribution is considered the main cause of food insecurity. However, many argue that it is vital to address the issue of food insecurity especially in South Africa (FAO, 2008). Addressing the disparity of land distribution is considered a crucial factor in reducing food insecurity in the country. Black farmers own 17.1 million hectares of land of which only 2.6 million suitable for agricultural production. According to FAO (2008), the challenge in South Africa is predominantly around access to food and means to produce it. The report further indicates that black South Africans make up the majority of poor and food insecure households which are mostly found in rural areas. Factors such as lack of access to finance, communication infrastructure, education, skills development facilities and agricultural inputs still prevent black South Africans from making a substantial progress in farming.

Another cause for Zimbabwe’s challenges has been the fast-track resettlement programme, which started in 2000 as an extension of the land reform that began in 1979. Before this programme, Zimbabwe had a thriving agriculture sector and was a net exporter of food. The majority of the agricultural production firms was large, commercial, and owned by white farmers. This production brought money into the country and produced most of the country’s food.

The government’s step to redistribute land to the poor black population at first gave the white farmers the option to sell their land. But in 2000, this option of compensation was cancelled and farms were taken away, often very violently, and redistributed. Land ownership was much skewed before this reform. However, there was no training or education involved in redistributing this land. Overall agricultural production in the country severely declined along with the economy as a whole. Now, Zimbabwe is a net importer of food with a poor economy. Simply, having access to food and being

able to afford food has become a difficult task for many Zimbabweans (Ignowski, 2012).

### 2.13 Poverty and food security

Poverty is one of the main causes of food insecurity. For poor households, once expenditures on basic necessities (energy, clothes, shelter and others) have been deducted, there are not sufficient resources left to meet other family needs, including food. Poverty itself is both a cause and a consequence of undernourishment resulting from chronic food insecurity. Poverty is a major determinant of chronic household food insecurity. The poor do not have adequate purchasing power to secure their access to food, even when food is available in local markets. Moreover, the poor are vulnerable to shocks (such as natural disasters, crop failure) that cause transitory food insecurity. Increased food prices also result in transitory food insecurity of low-income households by lowering their real income and, hence, eroding their purchasing power (Ahmed *et al*, 2013).

There are strong links between vulnerability to food insecurity and chronic poverty: poverty undermines the ability of people to develop livelihood strategies, adaptive behaviours and coping strategies which help to ensure long-term food security. Those vulnerable to food insecurity are found in two, broadly defined, marginalized groups. The first group - the economically marginalized - lack land, capital and tools, livestock, literacy and other formal skills. They make up the 'working poor' or the 'under-employed poor'. The second group – the socially marginalized – are vulnerable because of gender (women and girls); age (children and the elderly) or by illness or disability. This group is often also economically marginalized and forms the core of the chronically poor. They usually have fewer coping options at their disposal (South African Department of Agriculture, 2006).

Numerous studies have demonstrated that chronic undernourishment is a factor in the perpetuation of poverty. An undernourished person attains a lower level of physical and intellectual development, and his/her capacity to work is constrained, especially by lack of available energy. He/she is also more likely to be sick and therefore not to be able to work at all. Undernourishment is also a factor in for the inter-generational

inheritance of poverty, as women weakened by an inadequate diet during their pregnancy; give birth to small and fragile infants who will have some kind of physical or even intellectual handicap from the moment of their birth. Similarly, an undernourished child will not do well at school, both as a result of reduced concentration - because of hunger - and also in many cases because of insufficient intellectual development. Finally, poverty is often the enemy of risk: a poor person will hesitate to embark on risky economic activities which often offer the highest potential profits.

#### 2.14 Agriculture and food security

The 2008 FAO report re-iterated that agriculture is considered as one of the sectors that can play a significant role towards attainment of food security in South Africa. This report states that the majority of people are in direct need of food especially in rural areas. The report furthermore reveal that the majority of people living in rural areas has access to land but lacks the necessary skills and access to recourses to farm sustainably.

Provision of inputs such as weedicides, fertilizer, improved seeds and others will motivate farming households and also increase their productivity, especially in the coastal areas. This will be a step in the right direction since it can increase the volume of food production. This could be done through selling of input at subsidized rate to farmers on credit by MOFA and allow farmers pay in kind with their farm produce. This will serve as source of market to farmers and also contribute to the performance of the government's buffer stock programme (Rahman, 2013).

Dercon (2009), on the other hand, argues that agriculture's importance as an engine of growth in Africa is unlikely and context specific. For resource-rich countries (like Nigeria, Angola and Congo), agriculture has no role in driving overall growth other than acting as a means of diversification and building up productive capacity. The issue in such countries is to manage wealth distribution, for which agriculture is not the one and only way; rather, investing in rural infrastructure could help more in redistribution (Dercon, 2009).

Secondly, in coastal and well-located countries (such as Ghana, Cote d'Ivoire, Kenya and South Africa), their comparative advantage is the world trade opportunity offered by their location. Their priorities therefore should focus on trade infrastructure, market institutions, investing in skills and supporting a well-working labour market to tap the opportunities offered by globalization. Therefore, supporting industrial development for manufacturing is the best route for development (Fan et al., 2013). Thirdly, the resource-poor, landlocked countries (such as Burkina Faso, Ethiopia and Burundi) are dependent on their better located neighbours to pull them into trade-oriented opportunities. But this opportunity is unlikely, due to their low level of infrastructure and their neighbours' lower integration with the world economy. As a result, it is possible to assume that these countries are effectively closed economies, regardless of trade liberalization. In such countries, agricultural growth is important for promoting overall growth and poverty reduction (Devereux, 1999).

In the light of this, the performance of agricultural growth is an important dimension of overall food security in Africa. Studies have shown that agriculture in SSA plays a very important role in employment and gross domestic product (GDP) share (FAO 2012). In this regard, small-scale farmers account for more than 90% of agricultural production in Africa (IFPRI, 2006). Moreover, they represent four fifth of the developing world's food production (FAO, 2012). However, the proportion of food insecurity is also higher among poor subsistence farmers and landless tenants in rural areas, who collectively account for about 80% of the undernourished (Panagariya, 2002).

Agricultural development through smallholder farmers will reduce poverty and food insecurity, accelerate economic development, lower costs of emergency food aid and help to stabilize important developing countries (Policy Brief, 2013). FAO (2004) emphasizes the fact that agriculture is a key to food security in many parts of the world. The report indicates further that agriculture contributes to poverty alleviation by reducing food prices, creating employment, improving farm income and increasing wages. Making agriculture work must be central component of policy approaches to food insecurity reduction and increasing economic growth. Increased investment in agriculture will help redress the current inequalities. Empowering people to grow their own food for subsistence or income generation will provide nourishment and potential income to many people in the country.

## 2.15 Summary

Food security in South Africa is still a challenge; especially because most people either do not know how to make a living or they do not have an access to productive resources that can make them earn a living on a sustainable basis. Unemployment is still the biggest challenge in the country, making it food insecure at the household level. The income inequality is still also one of the main challenges, while women suffer poor empowerment. On the one hand, government always come with strategies to improve the food security status of the country while on the other , it they fails to monitor and deliver these strategies as promised.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

The aim of the study was to examine the determinants of food security among rural households in Magong, Northwest Province, South Africa. This section of the study presents the methods used in the study for data collection and analysis of the variables to distinguish between food secure and food insecure households. The chapter contains a brief explanation of how the study was conducted using different research tools. It highlights the study area, data collection methods and the model used for processing data and the formulation of the model.

#### 3.2 Study area

The study was conducted in a small area called Magong in North West Province. Magong is a village of coordinates 25° 0' 1.9" south, 26° 58' 39.4" east with an average of 1,048 m above sea level (mapcarta.com, 14 March 2016). The main prevalent economic activity is farming and then other formal and informal types of employment. The study area was chosen due to the richness of farming activities and all the non-farming activities that are prevalent in the area. Of all the villages, it is the only one that has both the activities in abundance.

North West, the Platinum Province as, it is commonly known; lies in the North of South Africa, on the Botswana border. It is at the centre of Kalahari Desert, Gauteng, and Free State provinces; with Kalahari in the west, Gauteng in the east, and Free State in the south (Pocket Guide to South Africa, 2011/2012). It is the sixth largest province of the nine provinces in South Africa covering a total area of 116,320 km<sup>2</sup> (approximately 9.5% of South Africa). The province's climate is categorised into four well defined seasons with hot long sunny days and short cold days. Rainfall, which usually occurs from October to March, varies by region, with mountainous and wetter eastern region and the drier semi-desert plains of the Kalahari in the west (Walmsley, 2002).

In addition, mining forms the back-bone of North West's provincial economy with platinum mines and smelters in the Rustenburg Area, as well as the gold mines in the Orkney and Klerksdorp Areas. Agriculture is the second-most important sector, with maize and sunflowers as the most important crops grown, while cattle and game farming are also well-established. Tourism is widely considered to have a major growth potential as the Province is located adjacent to Gauteng, the socio-economic hub of South Africa (North West State of the Environmental report overview, 2002).

### 3.3 Sampling and Data collection

A multistage sampling technique was used to select the respondents that were interviewed. The first stage involved selecting districts and the second stage was the selection of municipalities. Farm and non-farming households were selected.

Structured questionnaire were administered to 108 households and the questionnaire covered questions on socioeconomic characteristics, food insecurity assessment scale of the households, challenges faced by households in ensuring food security and other relevant variables associated with the food security issue.

The third stage involved a selection of villages which were visited using simple random sampling. This was done with the help of the Department of Rural, Environmental and Agricultural Development. Villages with high concentration of both farming and non-farming activities were selected, which in our case is Magong. The fourth stage involved the selection of villages to be interviewed.

### 3.4 Analytical techniques

#### 3.4.1 Descriptive statistics

Descriptive statistics was used to analyse and describe the socio-economic characteristics of respondents (Objective 1.5.1) and to identify and assess the constraints to food security (Objective 1.5.4). These techniques included means, frequencies and percentages which were be used to catalogue and categorize households by socio-economic characteristics. For the study, SPSS was used as the statistical analysis.

### 3.4.2 Household Food Insecurity Assessment Scale

The Household Food Insecurity Access Scale (HFIAS) developed by the United States Agency for International Development (USAID) was used to ascertain the food security status of the households (Objective 1.5.2). The method is based on the idea that household food insecurity leads to predictable reactions and responses that can be captured and quantified through a survey and summarised in a scale. The HFIAS score was calculated using the answers based on the nine frequency-of-occurrence questions.

The head of each household was asked if the condition presented in each question had ever occurred in the previous month. If the condition occurred they were asked to indicate the frequency-of-occurrence: which included; rarely, sometimes or often. Participants were then scored as follows: 'never', 'sometimes' and 'often' presented by a score of 1, 2, and 3 respectively. The method has a range between the lowest and the highest value meaning that the higher the score the higher the probability of a household being vulnerable to food insecurity (Coates et al., 2007). According to the scheme recommended by the HFIAS indicator guide, the continuous score was divided into four categories, represented by food secure, mildly food insecure, moderately food insecure and severely food insecure (Knueppel et al., 2009).

### 3.4.3 Logit Model

In order to examine and analyse the determinants of food security in Magong (objective 1.5.3) logit model was used. The model is indicated as

$$P_i / (1 - P_i) = \exp(Z_i) / 1 + \exp(-Z_i)$$

As the above equation is non-linear, it was linearized by taking the natural log, then the given model is

$$L_i = \ln [Z_i / (1 - P_i)] = Z_i$$

$$= \beta_0 + \beta_1 X_{i1} + \dots + \beta_n X_{in} + e$$

Where:

$P_i (1-P_i)$  is the ratio of the probability that the household is food secure.

Thus, the endogenous variable is binary and it has two values 1 and 0. If the household is food secure then its value is 1 and 0 if the household is food insecure.

$\beta_0$  = constant

$\beta_1 - \beta_7$  = logistic regression coefficients

$X_1$  = Age of respondent

$X_2$  = marital status of household head

$X_3$  = sex of the household head

$X_4$  = education (number of years of formal education) of the household head

$X_5$  = household size

$X_6$  = household income

$X_7$  = land size

$e$  = error term

### 3.5 Limitations of the study

Variety/ variation in food taken was very difficult to obtain as most of the households are affected by almost the same phenomenon. Some households were unable to consistently recall the number of meals they consumed in a day.

### 3.6 Summary

The study used HFIAS to measure food security while Logit was used to determine the factors contributing to food security status of the households.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the results of analysis of primary data that were collected with the use of a questionnaire through face-to-face interviews. The chapter aims to highlight and analyse how the specific objectives of the study were achieved using descriptive statistics and Logit model via SPSS.

#### 4.2 Age of respondents

Table 4.1 Age of the respondents

| Age          | Frequency  | Percentage    |
|--------------|------------|---------------|
| 21-30        | 6          | 5.56          |
| 31-40        | 26         | 24.07         |
| 41-50        | 27         | 25.00         |
| 51-60        | 28         | 25.93         |
| 60+          | 21         | 19.44         |
| <b>Total</b> | <b>108</b> | <b>100.00</b> |

Source: Field survey

From the table above, it is very evident that the youth participation lacks with only 5.6% of the youth participating. This is because most young people hunt for white collar jobs or jobs in the corporate sector (Bezu and Holden,. 2014). The participation in agriculture increases steadily between ages 31 and 50 which could be because the respondents are looking for ways to store their wealth as they approach their retirement age. Some of the respondents are “forced” to keep the family business running for the sake of sustainability.

Due to a lack of extension and quality agricultural services from the government, most people lose interest in farming hence they chase cooperate company or end up pursuing non-farm activities like owning a tuck shop, salon, car wash etc. as a means to survive.

The ages 51-60 showed highest number of participation in farming activities (25.9%). This may be sparked by the fact that they see it as the only sustainable source of income after retirement. For them, acquiring inputs is not dependent on the government grants and services as they are able to start up or continue their businesses from the money received from their retirement pay outs.

It is not surprising that the aged people are not that interested in farming. The very small portion of 19.4% which may be as a result of them getting old, weary and unable to continue with farm work.

#### 4.3 Marital status of respondents

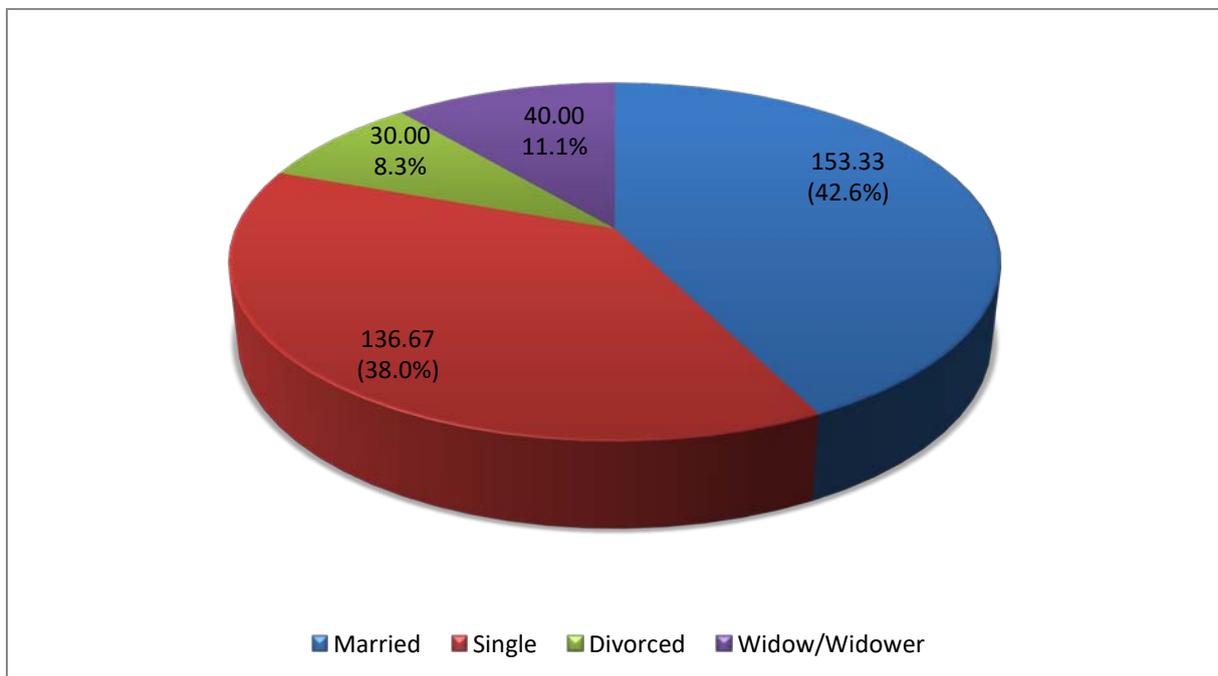


Figure 4.1 Marital status of the respondents

In this Pie Chart, it can be seen that more people (42.6%) are married, this may be as a result of people now resorting to cheaper wedding costs such as just going to the Magistrate's office to sign and celebrate the union with close friends and family. The results showed that 38.0% of the respondents are single. This may be due to not being lucky with marriage, choosing to stay single or simply not wanting to share their lives with a partner. The divorce rate was at 40%, it could be that people first resort to solving their problems before they go down the legal separation route.

#### 4.4 Sex of the respondents

Table 4.2 Sex of respondents

| Sex          | Frequency  | Percentage |
|--------------|------------|------------|
| Male         | 49         | 45.4       |
| Female       | 59         | 54.6       |
| <b>Total</b> | <b>108</b> | <b>100</b> |

Source: Field survey

The result showed that more women in the sampled respondents (54.6%) compared with men (45.4%). This may be that women emancipation programmes of the past have worked in the favour of the women in the study area. Beside the programmes, one may find that these women have decided to fight the stigma and strive to secure their families' food (Dheepa& Barani, 2009). Cooperatives may also be the reason why women seem to be more involved than men, since the cooperatives first target women.

The South African women are obstructed from exercising full control over land which explains how this increases women's marginality and dependency.

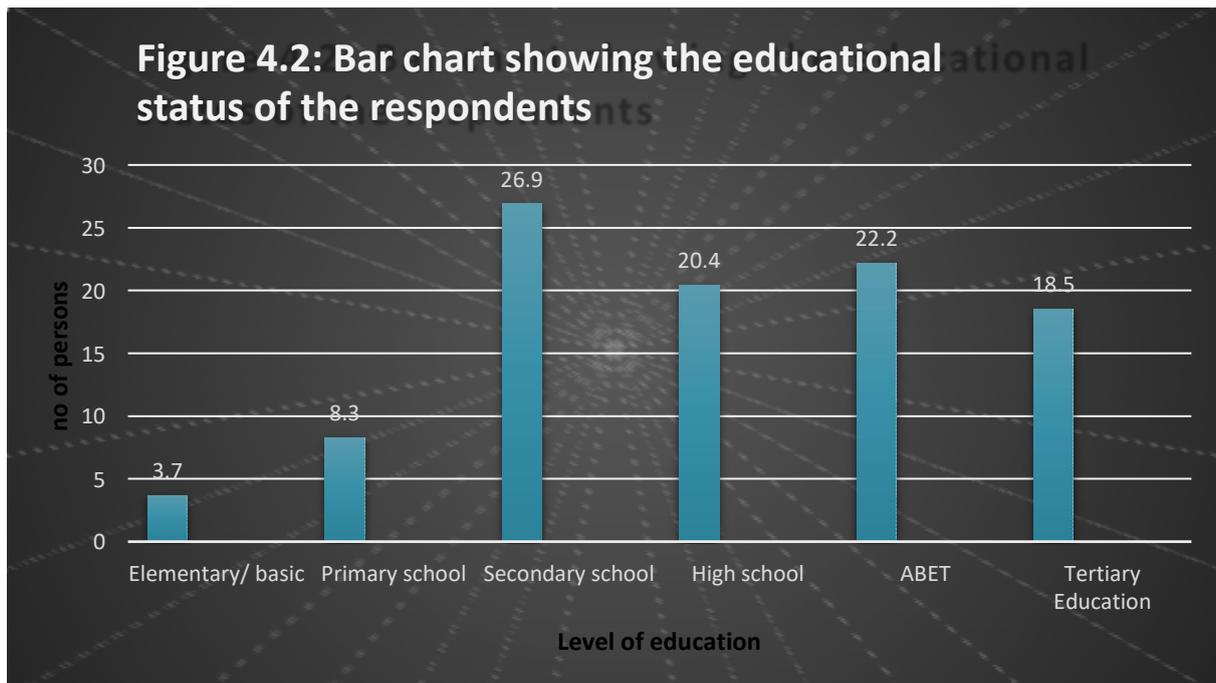


Figure 4.2 Education status of the respondents

From the figure above, secondary school education was the highest educational qualification (26.9%). This could be because of the parents not being able to afford education to help their children further their studies, or children choosing to drop out in search for jobs in the farms or mines as a means of helping their families to survive or as a result of seeing school as a waste of time. About 18.5% of the respondents managed to further their studies to the tertiary educational levels. One may say that the ones from the tertiary institutions are likely to be better farmers as they are able to make informed choices, have an access to local departments that can assist in terms of funding and advise however, it may also be argued that those who have more experience are better farmers, that is, tertiary qualifications do not automatically qualify one to be the best in farming.

#### 4.6 Household size of respondents

Table 4.3 Household size

| Household size | Frequency | Percentage |
|----------------|-----------|------------|
| 1-3            | 22        | 20.37      |

|              |            |            |
|--------------|------------|------------|
| 4-6          | 52         | 48.15      |
| 7-9          | 31         | 28.70      |
| 10-12        | 03         | 2.78       |
| <b>Total</b> | <b>108</b> | <b>100</b> |

Source: Field survey

The table above showed that people in Magong have more households (42.2%) in the bracket of 4-6 (48.1%) than any other households. Smaller households consisted of either single people, newlyweds without children and respondents who look after grandparents. The larger households were mainly extended families.

#### 4.7 Sources of energy for cooking

Table 4.4 Primary sources of energy for cooking

| Sources of energy for cooking        | Frequency  | Percentage    |
|--------------------------------------|------------|---------------|
| Electricity only                     | 58         | 53.70         |
| Electricity and Firewood             | 31         | 28.70         |
| Electricity, firewood and gas cooker | 02         | 1.85          |
| Electricity and gas cooker           | 15         | 13.39         |
| Firewood only                        | 01         | 0.93          |
| Gas cooker only                      | 01         | 0.93          |
| <b>Total</b>                         | <b>108</b> | <b>100.00</b> |

Source: Field survey

The table above showed the different sources of energy that the households choose for cooking. Other households prefer sticking to one source while others choose to use a range of them.

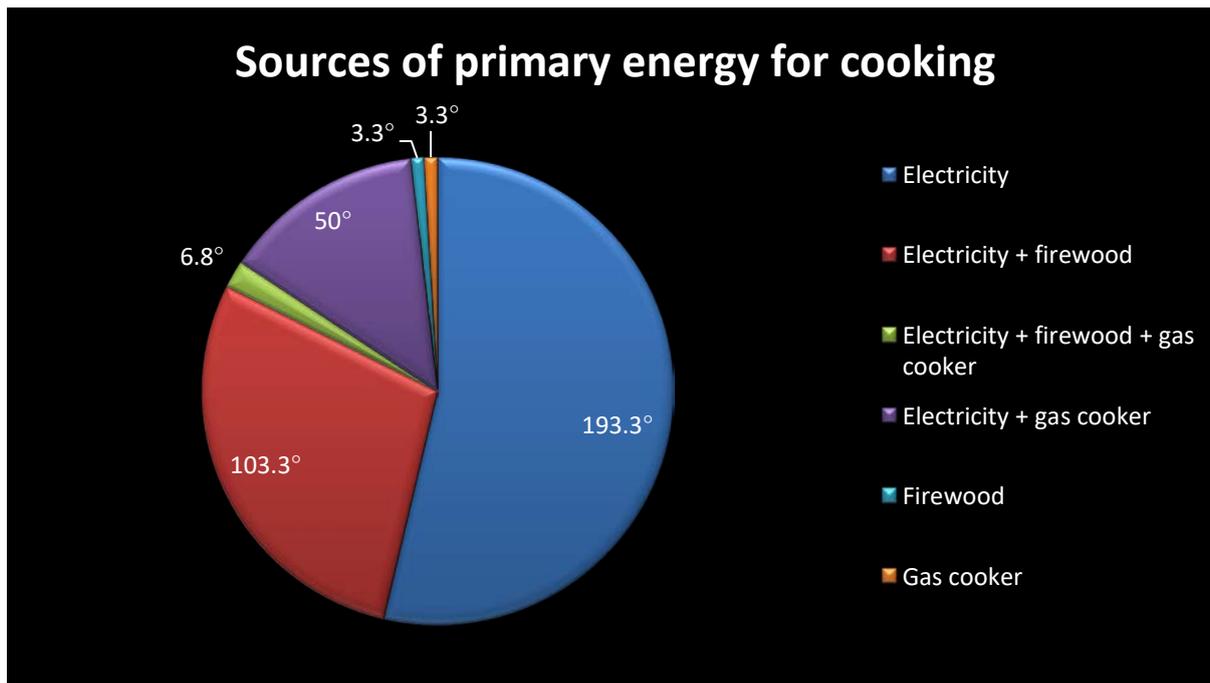


Figure 4.3 Sources of energy for cooking

The Pie Chart clearly showed that a high proportion of respondents (53.7%) choose electricity as a primary source of cooking; this may be due to being cleanest and for safety or not having an alternative source.

While 55.6% of the respondents stuck to just one source, 44.4% of the respondents combined two or three sources of energy due to the instability of supply from one source, affordability or just preference. The respondents highlighted that the more the sources of energy for cooking they have, the more they become short of food as they have to use some of the money for food to maintain or fill up the source.

#### 4.8 Household income of respondents

Table 4.4 Household income per month

| Household income( R ) | Frequency | Percentage |
|-----------------------|-----------|------------|
| 0-2999                | 22        | 20.37      |
| 3000-4999             | 41        | 37.96      |

|              |            |            |
|--------------|------------|------------|
| 5000-6999    | 26         | 24.07      |
| 7000+        | 19         | 17.60      |
| <b>Total</b> | <b>108</b> | <b>100</b> |

Source: Field survey

The modal class is the 3000-4999 with the highest percentage (38%). Most people in the study area are poor and thus find it hard to make their ends meet on a daily basis. South Africa characterised with high levels of unemployment an income inequality and poverty which then results in a reduction in household income.

#### 4.9 Type of activity

Table 4.5 Type of livelihood activity

| Type of activity       | Frequency  | Percentage |
|------------------------|------------|------------|
| Non-farm               | 56         | 51.85      |
| Both farm and non-farm | 32         | 29.63      |
| Farm                   | 20         | 18.52      |
| <b>Total</b>           | <b>108</b> | <b>100</b> |

Source: Field survey

The majority of the respondents (51.9%) relied on non-farm activities for survival. These may be either formal or informal activities. About 30.0 % of the respondents chose to be on the safe side by combining both activities. In spite of this' 18.5 % of the respondents decided to stay true to their passion of farming by generating their incomes exclusively from the farming activities. Those that combined farm and non-farm sources opined that farming alone is enough to meet their needs.

#### 4.10 Reasons for non-farm activities

Table 4.6 Reasons for engaging in non-farm activities

| Reasons for non-farm activities | Frequency  | Percentage    |
|---------------------------------|------------|---------------|
| Not applicable                  | 22         | 20.49         |
| Inadequate funds                | 51         | 47.20         |
| Inadequate skills               | 02         | 1.90          |
| Need to diversify livelihood    | 27         | 25.00         |
| Too old to do farm work         | 02         | 1.9.0         |
| <b>Total</b>                    | <b>108</b> | <b>100.00</b> |

Source: Field survey

The 20.4% of the respondents as shown are those who only concentrated on farming as a means of income generation. Thus. The question was not applicable to them. Most of the respondents (47.2%), due to inadequate funds end up throwing in the towel as, in that case, it is impossible to start the farming business with insufficient funds at their disposal.

Others included the (3.7%) who worked round the clock and took care of their families. From the table, 1.9% of the respondents needed to acquire the skills and knowledge, even though the interest is there. Then, there was another 25% of the respondents are those who decided to stick not just to farm activities for the purpose of diversifying their livelihood activities to guard against risk from running just the enterprise. Sadly, there was 1.9% of the respondents who are old and frail; some are even worn out more by chronic diseases associated with old age.

#### 4.11 Land size of respondents

Table 4.7 Land size of respondents

| Land size(ha) | Frequency | Percentage |
|---------------|-----------|------------|
|---------------|-----------|------------|

|                 |            |               |
|-----------------|------------|---------------|
| Do not own land | 42         | 38.89         |
| 0.1-2           | 51         | 47.22         |
| 3-5             | 15         | 13.89         |
| <b>Total</b>    | <b>108</b> | <b>100.00</b> |

Source: Field survey

The modal class from the table is the group that owned 0.1 – 2.0 ha of land. This is followed by 13.8% of the respondents that owned 3-5 ha of land. The land distribution is skewed, some are provided for by the government while some had to rely on their backyards to carry out their agricultural interests. From the table the bigger the land, the lower the number of people who has an access to it.

The land skewedness is not a problem however for some farmers as they only need a small piece for production to take place. For example, this category included those who are secondary broiler sellers and those with small stock like pigs and goats.

#### 4.12 Number of years in farming

Table 4.8 Number of years in farming

| Number of years in farming | Frequency | Percentage    |
|----------------------------|-----------|---------------|
| 0-2.9                      | 30        | 78.70         |
| 3.0-5.5                    | 18        | 16.67         |
| 5.6-8.1                    | 04        | 3.70          |
| 8.2-12.5                   | 01        | 0.93          |
| <b>Total</b>               | <b>53</b> | <b>100.00</b> |

Source: Field survey

The number of years range differently among different farmers with most farmers being new to the industry. They are mainly inspired by the involvement of the government in the provision of certain services such as extension services and vaccinations sometimes. The most of the population are those who were already in farming especially those with 3- 5.5 years.

#### 4.13 Reasons for going in farming

Table 4.9 Reasons for going in farming

| Reasons for going in farming  | Frequency | Percentage |
|---|-----------|------------|
| To meet family food requirement   | 2         | 3.77       |
| To meet family food requirement and a primary source of cash income       | 18        | 33.96      |
| As a primary source of income   | 11        | 20.75      |
| Minimize family food expenses on food                                     | 1         | 1.89       |
| As an additional source of income   | 16        | 30.19      |
| As an additional source of income and to minimise family expenses on food | 2         | 3.77       |
| To minimise family expenses on food                                       | 3         | 5.67       |
| <b>Total</b>  | <b>53</b> | <b>100</b> |

Source: Field survey

There are farmers who chose more than one option in terms of the reasons why they farm. Most farmers farm as an additional source of cash income; this means the farmers fall in the category of having both the farm and non-farm activities. Some are in farming to minimize the expense on families' food bill; they do so by planting vegetables like potatoes, tomatoes, spinach and onions.

#### 4.14 Farm Produce

Table 4.10 Farm produce

| Farm produce             | Frequency | Percentage |
|--------------------------|-----------|------------|
| Crops                    | 11        | 20.76      |
| Both crops and livestock | 21        | 39.62      |
| Livestock                | 21        | 39.62      |
| <b>Total</b>             | <b>53</b> | <b>100</b> |

Source: Field survey

The highest frequencies are those producing crops and livestock and those producing just livestock. Most of those producing both crops and livestock are those with vegetable gardens or a piece of land they can plant their crops and sell them.

#### 4.15 Sources of credit

Table 4.11 Sources of credit facilities

| Sources of credit   | Frequency  | Percentage |
|---|------------|------------|
| Loans from agricultural institutions                              | 03         | 2.78       |
| Loans from agricultural institutions and the government subsidy   | 01         | 0.93       |
| Loans from agricultural institutions and money lenders            | 02         | 1.85       |
| Loans from agricultural institutions, money lenders and relatives | 02         | 1.85       |
| Banks   | 33         | 30.56      |
| Banks and government  | 03         | 2.78       |
| Banks and money lenders   | 5          | 4.63       |
| Banks, money lenders and relatives                                | 11         | 10.19      |
| Banks and relatives   | 23         | 21.30      |
| Money lenders   | 06         | 5.56       |
| Money lenders and cooperatives                                    | 01         | 0.93       |
| Money lenders and relatives                                       | 15         | 13.89      |
| Cooperatives  | 01         | 0.93       |
| Relatives   | 02         | 1.85       |
| <b>Total</b>  | <b>108</b> | <b>100</b> |

Source: Field survey

The bad economic conditions have seen the respondents seeking other means to increase their income. They end up resorting to borrowing money from different institutions. It is very heart-warming that the majority of the respondents (30.6%) have an access to formal financial institutions.

## 4.2 Analysis of food security by HFIAS

The food security analysis was based on the careful assessment of a few given variables viz: manner in which food is shared in the household, the determinants of the type of food to be eaten, the determinants of the quantity of food eaten, whether or not the respondents include fruits and vegetables in their diet, the description of the food they had in the last 30 days and whether or not they worry about food running out before they have money for more.

In the Table 4.12, the food security status was denoted using 1 and 0 where 1 indicated that the households are food secure and 0 indicated that the households are food insecure.

### 4.2.1 Responses of the population using HFIAS

Table 4.12 Result from Households' Response using HFIAS

| <b>Options</b>                               |           |          |               |          |                  |          |              |          |
|--|-----------|----------|---------------|----------|------------------|----------|--------------|----------|
|  | <b>No</b> |          | <b>Rarely</b> |          | <b>Sometimes</b> |          | <b>Often</b> |          |
| <b>HFIAS questions</b>                       | <b>N</b>  | <b>%</b> | <b>N</b>      | <b>%</b> | <b>N</b>         | <b>%</b> | <b>N</b>     | <b>%</b> |
| Q1 : Worry about food                        | 36        | 33.33    | 55            | 50.93    | 17               | 15.74    | 0            | 0        |
| Q2: Unable to eat preferred foods            | 23        | 21.29    | 40            | 37.04    | 35               | 32.41    | 10           | 9.26     |
| Q3: Eat just a few kinds of foods            | 8         | 7.41     | 51            | 47.22    | 34               | 31.48    | 15           | 13.89    |
| Q4: Eat foods they really do not want to eat | 80        | 74.07    | 9             | 8.33     | 19               | 17.59    | 0            | 0        |
| Q5: Eat a smaller meal                       | 103       | 95.37    | 2             | 1.85     | 2                | 1.85     | 1            | 0.93     |
| Q6: Eat fewer meals in a day                 | 59        | 54.63    | 31            | 28.71    | 16               | 14.81    | 2            | 1.85     |
| Q7: No food of any kind in a household       | 108       | 0        | 0             | 0        | 0                | 0        | 0            | 0        |
| Q8: Go to sleep hungry                       | 108       | 0        | 0             | 0        | 0                | 0        | 0            | 0        |

|   |     |   |   |   |   |   |   |   |
|---|-----|---|---|---|---|---|---|---|
| Q9: Go a whole day and night without eating | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|-----|---|---|---|---|---|---|---|

Source: Field survey

Food security status of the respondents according to the 9 HFIAS questions is depicted in Table 4.12. It is important to note that questions 7-9 do not apply to any of the respondents. This meant that poverty among the respondents was not so severe that the respondents were unable to have food in the household, go to sleep hungry or go the whole day and night without eating. Although the food may have little or no nutritional value, they still managed to have something to eat. For example, most households harvest African spinach (which grows freely in the yard) when times are bad so as to have meals for the day.

Regarding going to bed hungry, the respondents prioritized breakfasts and suppers as the most important meals, hence none of them goes to bed hungry. It is almost impossible to have lunch together as a family as the parents go to work and children go to school. For most parents, they take the previous night's food to work and eat the food as lunch and due to the new government feeding schemes in schools in which children are fed at school.

With this said, there is no possibility of the households going the whole day and night without eating. When all failed, they find cheap sources like home baked bread that is sold in the village by a van and cheap food stuffs (e.g. biscuits, discounted vegetables, fruits etc.) from the tuck shops. Also, some households relied on buying food in bulk to last them the whole month while others take food credit from the supermarkets which are close by and pay at the end of the month.

#### 4.2.2 Food security status of the respondents

Table 4.13 Food security status of the respondents

| Food security status     | Frequency  | Percentage |
|--------------------------|------------|------------|
| Food secure              | 41         | 37.96      |
| Mildly food insecure     | 37         | 34.26      |
| Moderately food insecure | 27         | 25         |
| Severely food insecure   | 3          | 2.78       |
| <b>Total</b>             | <b>108</b> | <b>100</b> |

Source: Field survey

From the table above, it can be seen that most of the population is food secure (37.96%). This is followed by 34.26% of the mildly food insecure respondents, only a small percentage of the respondents (2.78%) severely food insecure. The table also shows that 25% of the respondents are moderately food insecure.

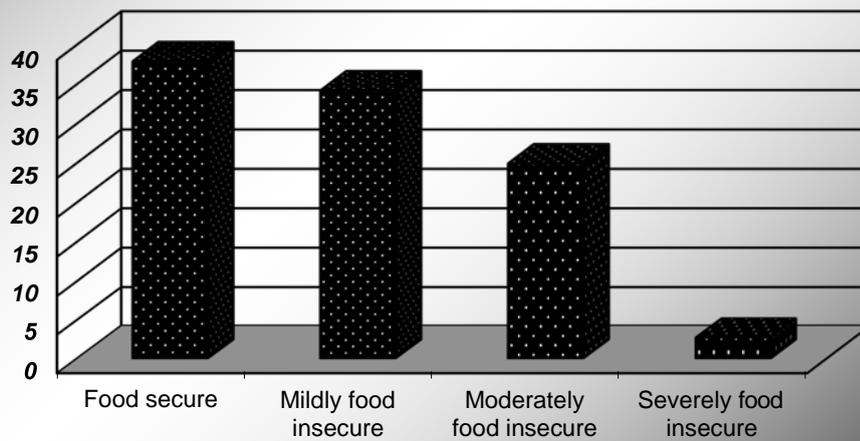


Figure 4.4 Food security status of the respondents

### 4.2.3 Age of the respondents

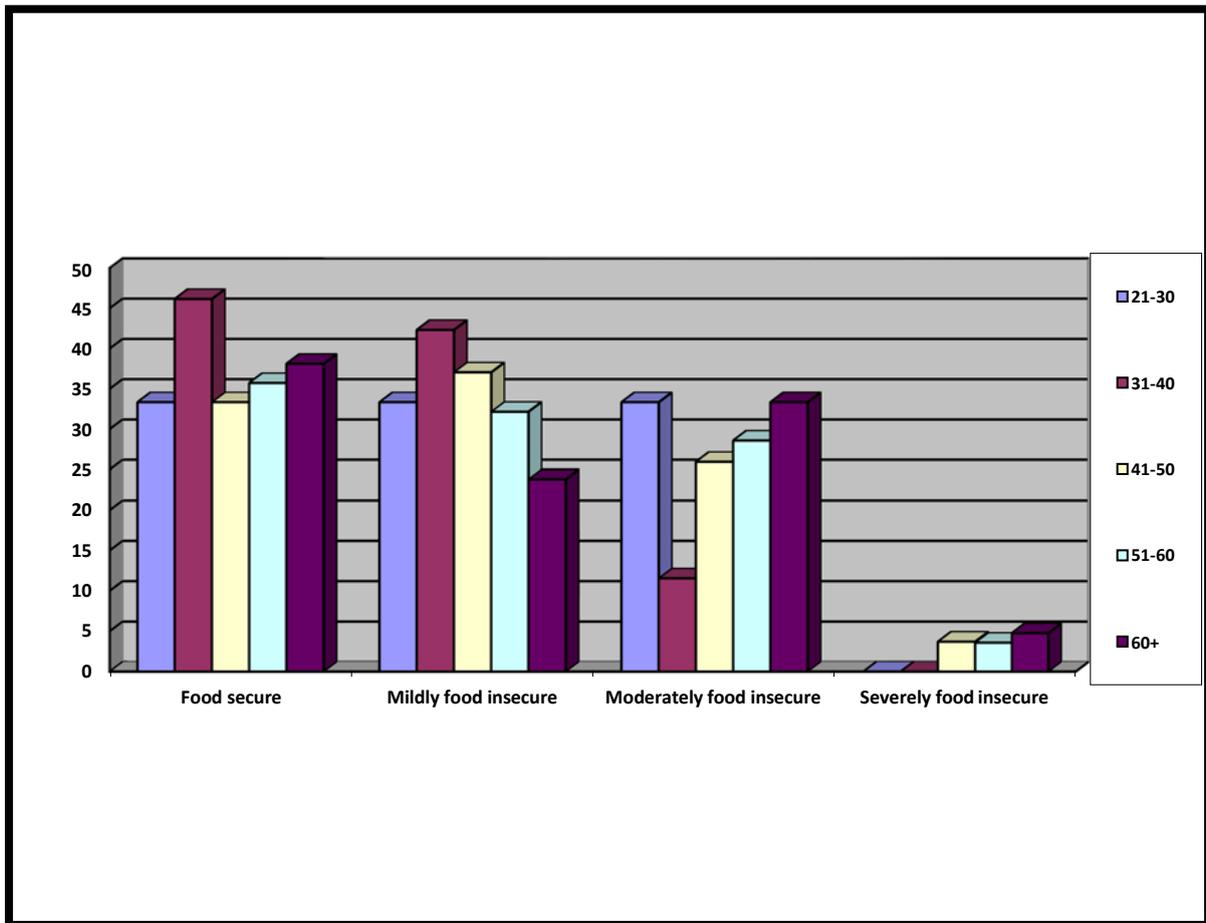


Figure 4.5 Food security status of different age groups of the respondents

Both the figure and the table above showed the food security status of the respondents across different age groups. In the food secure category, the age groups 21-30 and 41-50 are the lowest with 33.3%. This could be, for the age group 21-30 that most of the people are not yet working, still waiting to graduate or still in school. This could also be as a result of a large number of school dropouts who left school at grade 9 or lower. Life is now difficult for them as they struggle to meet their daily needs. For the late 20s, their food security status may be affected by the black tax, as they are required to work for their families. This negatively affects their food security status as they settle for less nutritious and cheap food in order to make remittance to loved ones. Age group 41-50 may be affected by the retrenchment rate across various sectors in the country, leaving them to depend on their unemployment Insurance Funds (UIF) and the provident pay-out which they spend quicker than a blink of an eye. Also, both groups may be affected by the unemployment rate of the country.

A report from StatsSA states that the unemployment rate has increased from 26.7% to 27.2% in the first quarters of 2018. The report further states that the South African youth (15-34) remains very vulnerable to unemployment (StatsSA, 2018).

Regarding mild food insecurity, there's almost equality across the groups ranging from 23.81% (60+) to 42.31 % (31-40). This category shows that food insecurity declines as the respondents get older. Contrary to this group is the moderately food insecure which indicates that as respondents get older, food insecurity increases (33.33% of the 60+ group). Also, the younger they are, the more food insecure they become (33.33% of 21-30 group). This is due to unemployment and other economic issues that affect the youth, they are unable to make ends meet. The elderly however are affected by illnesses in most cases which affect their productivity.

Age groups 21-30 and 31-40 are not affected by severe food insecurity. Despite the fact that they are unable to get formal employment, they are able to hustle and look for a form of employment like being street vendors, cleaning in people's households while some others however others resort to criminal activities. Groups 41-50 to 60+ are affected by food insecurity; which may be due to their reduced productivity that comes with age.

#### 4.2.4 Marital status of the respondents

Table 4.14 Marital status of the respondents

| Marital status | Food Secure |       | Mildly food insecure |       | Moderately food insecure |       | Severely food insecure |      |
|----------------|-------------|-------|----------------------|-------|--------------------------|-------|------------------------|------|
|                | N           | %     | N                    | %     | N                        | %     | N                      | %    |
| Married        | 20          | 43.48 | 17                   | 36.96 | 9                        | 19.57 | 0                      | 0    |
| Single         | 13          | 31.72 | 14                   | 34.15 | 13                       | 31.71 | 1                      | 2.44 |
| Divorced       | 3           | 33.33 | 2                    | 22.23 | 4                        | 44.44 | 0                      | 0    |

|                   |   |       |   |       |   |      |   |       |
|-------------------|---|-------|---|-------|---|------|---|-------|
| Widow/<br>widower | 5 | 41.67 | 4 | 33.33 | 1 | 8.33 | 2 | 16.67 |
|-------------------|---|-------|---|-------|---|------|---|-------|

Source: Field survey

From the table above, married couples are more food secure (43.48%) than other groups (single, divorced, widow/widower) with 31.72%, 33.33% and 41.67% respectively. Married couples tend to work together or work hard for the family to achieve their food security. They tend to offer each other support and mostly have wonderful support from their family members.

Widows/ widowers are more food secure compared to the divorced and single respondents, this is because unlike divorced couples, widows/ widowers tend to inherit everything that their spouse owned hence their food security status is better. Single household suffer from food insecurity as mostly income is expected from one adult, making them very vulnerable to food insecurity.

Single and widowed/ widower household heads suffer a lot from severe food insecurity (2.44% and 16.67 %). This is because, for single household heads lack of resources automatically renders them very vulnerable as they have nobody else to rely on. Even if they have a co-habiting partner, one may find that the partner is unemployed. The widow/ widower household heads suffer a lot from severe food insecure as one; the family of the deceased may want to take everything after the funeral, leaving them much stranded. It may also be as a result of not been able to consistently work and maintain the wealth that the deceased had created.

#### 4.2.5 Sex of the respondents

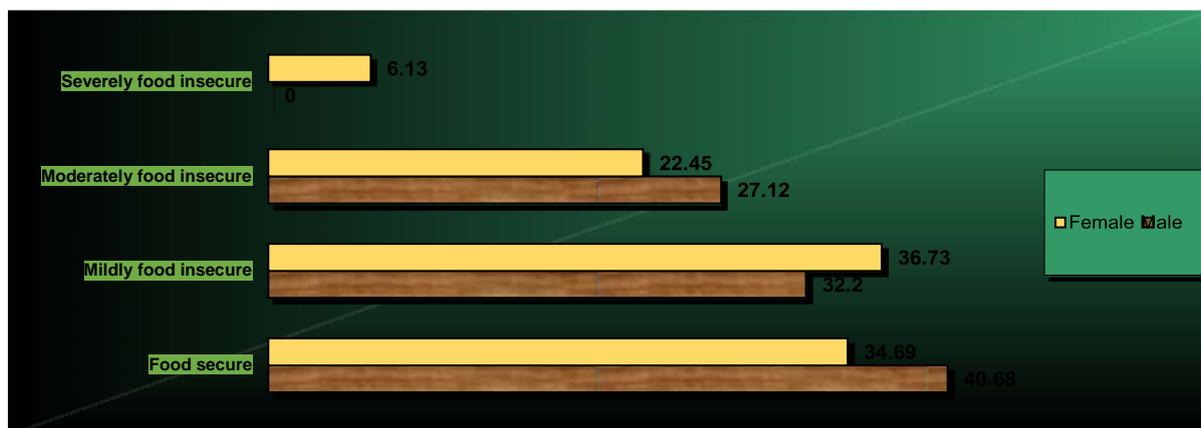


Figure 4.7 Food security status of the household heads

The figure shows the male headed households are more food secure than the female headed households. At the heart of women's differential vulnerability to household food insecurity is their lack of ownership of the means of food production, mainly land. Food is grown on land and access to land for productive purposes is vital for food security, especially for women who have little other means of securing food aside from performing subsistence farming for household food security (Ngwexana, 2018). The majority of the female headed households' food security worsens with each category with only 34.69% of them food secure compared to 40.68% of the male headed households. The worst is the severely insecure female headed households at 6.13% while their male counterparts suffer none.

Despite the substantial role women play in the production and preparation of food, studies show that women are the most vulnerable to household food insecurity (Kallman, 2015). Women food security status has mainly been affected by gender inequality, discrimination and unequal distribution of productive resources such as land. Their roles as the main food producers are always overlooked with men taking all the credit. A report by Bridge (2014) indicates that lack of resources, exclusion from decision making and endemic gender based violence render women and girls food insecure compared to males and boys.

Furthermore, the report makes reference to India that despite the vast economic growth; women and girls still lack food security.

#### 4.2.6 Household income of respondents

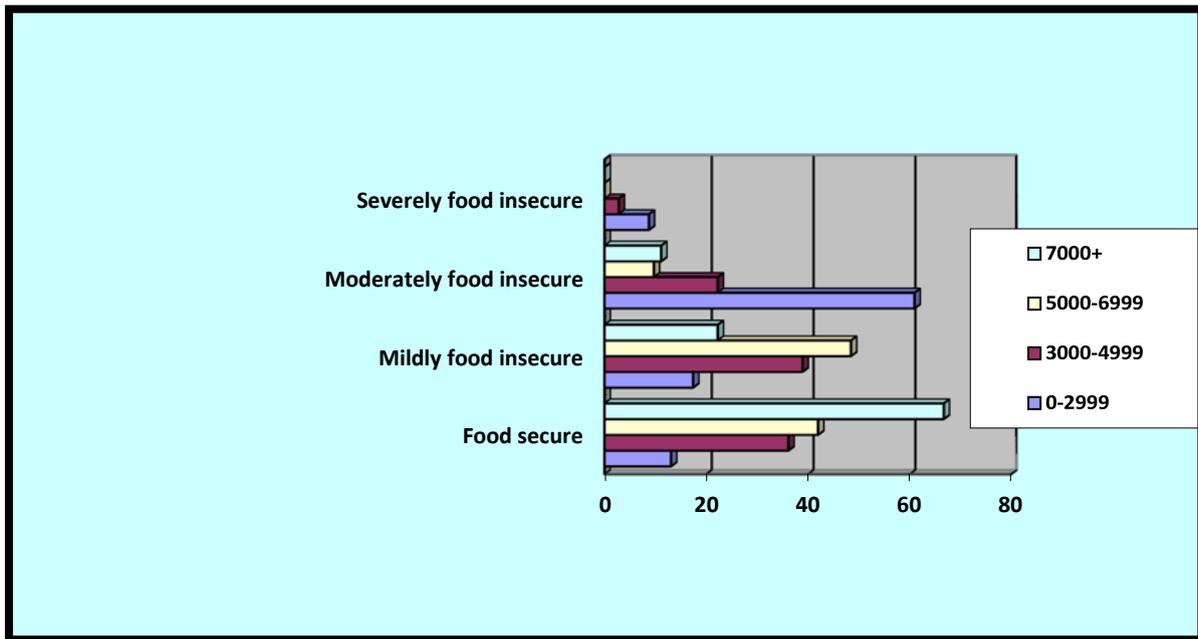


Figure 4.7 Food security status of the respondents by household income

From the four categories of income, food security seems to be very consistent with an increase in income, that is; an increase in income improves the food security status of the respondents. Findings by Rudolph et al (2012) and Oluyole et al (2009) support this that low income households experienced food insecurity than high income households.

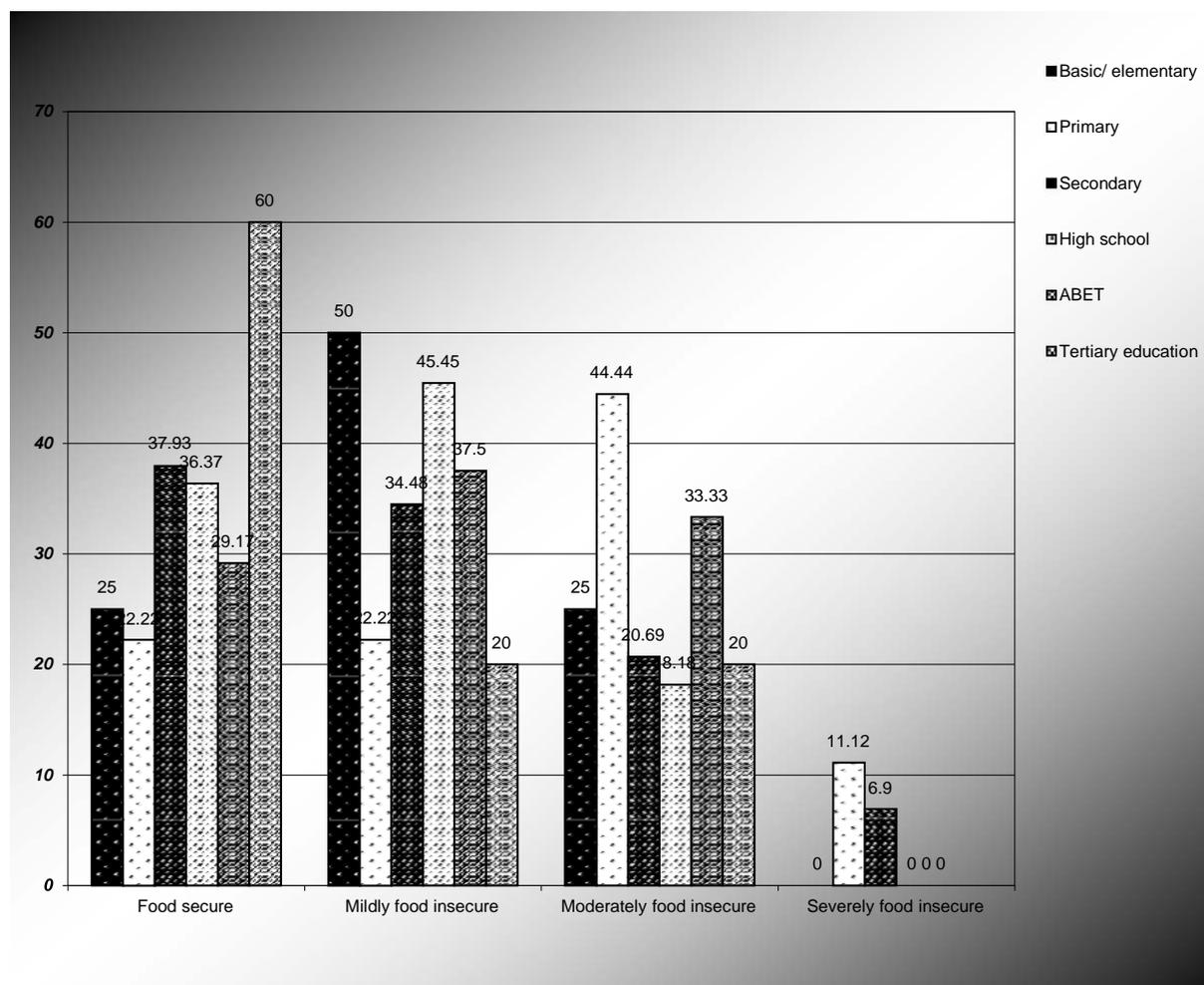
From the table above, households earning 5000-6999 (41.93%) and 7000+ (66.67%) are more food secure than the ones with the lower income; 0-2999(13.04%) and 3000-4999(36.11%). Also the lower income groups suffer from severe food insecurity, 0-2999 (60.87%) and 3000-4999 (38.89%). Low income households mostly do not have diverse income streams and with these bad economic conditions, they fail to get value for their money.

#### 4.2.7 Educational levels

Food security status of the respondents increase with an educational attainment. This is because better educated people are able to improve the quality of labour for generating-income. The findings are in line with Sakyi (2012) who indicated that severe food insecurity is directly linked with household headed by people with low

educational levels and no formal education. Tertiary education is the highest at 60%, household head with ABET education\ certificate are suffering regarding their food security status, this is due to the fact that most people with ABET qualifications still struggle to find jobs in the formal sector.

Figure 4.8 Food security status by educational levels of the respondents



#### 4.2.8 Household size

Table 4.15 Household size

| Household size | Food Secure |       | Mildly food insecure |       | Moderately food insecure |       | Severely food insecure |       |
|----------------|-------------|-------|----------------------|-------|--------------------------|-------|------------------------|-------|
|                | N           | %     | N                    | %     | N                        | %     | N                      | %     |
| 1-3            | 8           | 36.37 | 7                    | 31.82 | 6                        | 27.27 | 1                      | 4.54  |
| 4-6            | 21          | 40.38 | 19                   | 36.54 | 12                       | 23.08 | 0                      | 0     |
| 7-9            | 10          | 32.26 | 11                   | 35.48 | 9                        | 29.03 | 1                      | 3.23  |
| 10-12          | 2           | 66.67 | 0                    | 0     | 0                        | 0     | 1                      | 33.33 |

Food security status varies across different groups, with some respondents being more secure than others. It is surprising that the largest group (10-12) is more food secure than the rest of the groups at 66.67%. The group is followed by households

with 4-6 dwellers at 40.38%, then 1-3 at 36.37% and lastly, 7-9 at 32.26%. A low food security rate in 1-3 members households could be because most households are a parent and children composition which means only the parent is working. Households with 4-6 members are a norm in the village but the composition is not necessarily two parents and four children. It is sometimes an extended family composition. Their food security status is a bit high as mostly they have more than one income earners.

With regards to severe food insecurity, the table indicates that both 1-3 and 10-12 groups suffer, with 10-12 the highest at 33.33%. This is expected because in 1-3 members household, there is only one income earner. The highest percentage of 10-12 group of severe food insecurity is mainly contributed to by the fact that they have many mouths to feed. Although the household may have many income earners, the fact that they don't spend money on food only but on other things put their food security status at stake. The other issue may be because these households are mainly extended, with more children, the elderly and unemployed members

#### 4.2.9 Land size

Table 4.16 Land size

| Land size | Food Secure |       | Mildly food insecure |       | Moderately food insecure |       | Severely food insecure |      |
|-----------|-------------|-------|----------------------|-------|--------------------------|-------|------------------------|------|
|           | N           | %     | N                    | %     | N                        | %     | N                      | %    |
| No land   | 18          | 33.33 | 17                   | 31.48 | 16                       | 29.63 | 3                      | 5.56 |
| 0.1-2     | 13          | 32.5  | 17                   | 42.5  | 10                       | 25    | 0                      | 2.44 |
| 3-5       | 10          | 71.42 | 3                    | 21.43 | 1                        | 7.15  | 0                      | 0    |
| 6+        | 0           | 0     | 0                    | 0     | 0                        | 0     | 0                      | 0    |

Land ownership is the highest for the respondents holding 3-5 hectares (71.42%), this is evidence that owning more hectares of land puts one at an advantage over the other household heads as with a large piece of land one may have more than one produce. Respondents with no land and those with land ranging from 0.1-2 hectares suffer from severe food insecurity with 5.56 % and 2.44% respectively.

It is very interesting to note that land as big as 6 hectares and more has no effect on food security. This may be because, not many own land as big as that in the area; also

that most land holders of land as big in size are not using it for farming or business purposes. Either the land is idle, not knowing which establishment to start of using it for building houses. The owners usually are too busy to farm while others are demoralized by a lack of productive resources and stock theft.

#### 4.3 Determinants of food security

In order to analyse the determinants of food security (objective iii), logit model was used. The results of the survey showed that land size, reference category household income and household income (1)-(3) significantly affected food security of households in Magong. The model's pseudo R<sup>2</sup> was 25.1%.

Table 4.17 Logistic regression analysis

| <b>Variables</b>          | <b>Coefficients</b> | <b>Standard Error</b> | <b>Marginal effect</b> | <b>Significance level</b> |
|---------------------------|---------------------|-----------------------|------------------------|---------------------------|
| Age                       | .013                | .022                  | .334                   | .563                      |
| Marital status            | .049                | .233                  | .044                   | .833                      |
| Sex of the respondents(1) | .398                | .462                  | .740                   | .396                      |
| Educational level         | .093                | .202                  | .210                   | .646                      |
| Household size            | .082                | .111                  | .544                   | .461                      |
| Land size                 | .394                | .181                  | 4.749                  | .029                      |
| Household income          |                     |                       | 9.612                  | .022                      |
| <b>Constant</b>           | <b>-3.965</b>       | <b>1.989</b>          | <b>3.973</b>           | <b>.046</b>               |

An increase in land size, when all factors are held constant increased food security by .394. This is expected because as the land size increases there are chances that the productivity will also increase. The bigger the land, people are able to diversify their income streams and start different establishments such as chisa nyamas, places where they can sew people's clothes, hair salons, some can sell their farm produce while others can take advantage of the land and increase their yield.

As far as food access is concerned, household income is one of the significant determinant of household food security (Ndobo, 2013). From the results of the survey household income is very consistent with food security. Income is very important as it determines the household's affordability and its ability to meet its needs. Furthermore, from the reference income group which is the lowest income group to income number (3) which is the highest income group the coefficients increase from .737 to .868 as the income range increase. This is consistent with a study by Sekhampu (2013) where he found a positive relationship between food security and household income.

#### 4.4 Constraints to food security in the study area

Food security in the area is constrained by numerous factors such as age, participation in farming and non-farming activities and access to reproductive sources such as land

##### 4.4.1 Livelihood

The respondents are mostly disadvantaged as they do jobs, any job that comes their way to make a living. Not all jobs that they do are suitable for their qualifications, but with some having dropped out or having little education to acquire them a high paying jobs, they are forced to take anything that comes their way.

##### 4.4.2 Access to productive resources such as land

The land that is the hand of the youth is sometimes undeveloped and therefore required a lot of funding to be developed. The land that is in the hands of the elderly is mostly developed or productive but owing to the fact of being old and being frail, the productivity of the land is never optimised. Some of the land that is owned is in the hands of those who inherited it and are not interested in using it or are inexperienced to use it productively.

## **CHAPTER FIVE**

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

#### 5.1 Introduction

This chapter provides a summary to this write-up and highlights the major findings observed in this study. Also, a conclusion and recommendations are provided for the benefit of other researchers and policy makers.

#### 5.2 Summary

In analysing food security, the study applied HFIAS which found that questions 7-9 did not apply to households in Magong. This is because poverty is not so severe that the household members go a day and night without eating, go to sleep hungry or do not have any kinds of food in the household. This is because the household prioritized breakfast and supper hence they do not go to sleep hungry. They never lacked something to eat and if all fails, they make sure that they had enough maize meal in the house that they either ate with African spinach harvested in the yard, water and sugar, or tinned food.

The study revealed that in terms of the respondent's food security, most of the households were food secure (38.0%), followed by 34.3% that was mildly food insecure respondents. It was only a small portion of the respondents (2.8%) that was severely food insecure. The study also indicated that 25.0% of the respondents are moderately food insecure. Regarding the age groups of the respondents, the study shows that both the young 21-30 and the oldest 60+ were affected by food insecurity. This is because, the young are affected by the unemployment rate that the country is currently facing and also the lack of skills as some of the respondents in the 21-30 age group are drop outs. Some are basically unemployed due to the high requirements of the work place environment where mostly fresh out of school graduates are required

to have certain years of experience in their fields of interest. The oldest are basically affected by decreased productivity, being frail and being sick.

The results from the marital status showed that married household heads were more food secure than unmarried household heads. Gender analysis results indicated that male headed households are more food secure than female headed households. This is due to a lack of an access to resources by female household heads and especially being discriminated against, not being allowed to have an access to productive resources such as land etc. The study also revealed that land size and household income, significantly influenced food security. That is they had a significant effect on food security.

### 5.3 Conclusion

Land reform and food security are inseparable issues that should be addressed holistically to avoid future political revolution, discrimination and unfairness. The land skewdness should also be addressed. Land has always been an issue in South Africa, dating back as far as the 1900s. A recent move in the arena of land ownership in South Africa is the call for changes to the constitution to allow for land expropriation without compensation (Coetzee, 2018). This call comes in response to the lack of changes in terms of Black people's ownership of land, especially urban land. Before dealing with land expropriation with or without compensation, rural dwellers should look into having their home gardens. Most families, especially in the study area, have an access to land in their back yards. Eyzaguirre & Linares (2010) state that home gardens are often one of the most diverse parts of the farm and agricultural system, sometimes containing more than 200 useful species. The Bakgatla ba Kgafela tribe have implemented what they call home garden intervention, providing greenhouse tunnels for certain households. It is therefore important for this intervention to be adopted nationally in order to boost food security. A study by Kibrom et al (2017) states that home garden interventions are able to increase consumption of fruits and vegetables.

Land and Agrarian reform is the belief that redistribution of farmland, together with other rural development programs can make a significant contribution to poverty alleviation and positively to food security (Anusan and Kgotleng, 2015). Furthermore,

the land reform policies that are in place in South Africa largely drive a land restitution agenda that is only claimable by those who can prove historic rights and previous occupation. Not only has this rendered many South African's unable to own land to cultivate and sustain their livelihoods (PLAAS, 2014), it has advanced the marginalization of women, because since they do not have a history of owning or occupying land in their own right, they are precluded from claiming land through the restitution process.

Income generation on farms can be boosted by crop and livestock variation. Powell et al (2015) alludes that agrobiodiversity is believed to contribute to human nutrition through many pathways, including increasing dietary diversity and quality, improving income, enhancing resilience and providing the genetic resources for future adaptation. Sibhatu et al (2017) further states that not only will variations improve the farm income but can improve smallholder diets and nutrition through the subsistence pathway. Also, creating job opportunities seasonally. For example, a certain farm in Zebediela, Limpopo creates opportunities for different people every different season. It is also important for the Agricultural extension officers to be hands on as far as assisting small holder farmers is concerned. Powell et al (2015) states that agricultural interventions have a proven track record of increasing economic growth and reducing poverty. The extension officers should be able to convey information regarding what happens in the market and what opportunities are available in the market for different farmers.

#### 5.4 Recommendations

In South Africa, especially in most rural areas; most people do not have an access to income. One of the reasons is the high unemployment rate is at its peak amongst the youth, and women. In terms of the youth household food security, it is vital that the youth look for ways to generate income while waiting for employment in the cooperate world. Opportunities such as network marketing, small enterprises like car washes and mini shops (spaza shops) exist for them to use as a tool to combat food insecurity. That is, instead of everyone going to the cities to look for any form of employment, entrepreneurship should become a norm. Recently, there's been many companies retrenching people and cutting a lot of opportunities. For example, Standard Bank,

which cut about 100 jobs nationwide. According to Liang (2018), entrepreneurship has been the key driving force in developing and designing innovative food strategies at local and regional levels. The government and the policy holders should locate a bigger fraction of money to youth and people in entrepreneurship in terms of grants and sponsorship. Not only should funds be provided, entrepreneurs should also be assisted with marketing channels.

Accordingly, in much of the world, states continue to uphold laws that restrict women's ability to work, inherit, sign contracts, or act autonomously in the public sphere Hallward-Driemeier & Hasan (2012). Jensenius et al (2019) states that when women have access to income and resources, their lives improve and so does the society around them. Women play a pivotal role in food security. Growing, processing, purchasing, preparing and serving food to their families is a common and distinctive relationship they have to food in most societies in the world (Goldblatt and McLean, 2011). According to Karl (2009), a large part of the world's food is produced by women and even though data proving this statement is difficult to find. If given the opportunity, women can actually conquer food insecurity. They are key role players in the production of food and in ensuring that every individual in the household have access to food and consume nutritious food required for healthy lifestyle.

## REFERENCES

- Abdalla, Y.I., 2007. *Causes of food insecurity in Southern Africa: An assessment* (Doctoral dissertation, Stellenbosch: University of Stellenbosch).
- Adom, P.K., 2014. Determinants of food availability and access in Ghana: what can we learn beyond the regression results? *Studies in Agricultural Economics*, 116(1316-2016-102818), pp.153-164.
- Ahmed, A.U., Ahmad, K., Chou, V., Hernandez, R., Menon, P., Naeem, F., Naher, F., Quabili, W., Sraboni, E., Yu, B. and Hassan, Z., 2013. The status of food security in the Feed the Future Zone and other regions of Bangladesh: Results from the 2011–2012 Bangladesh Integrated Household Survey. *Project report submitted to the US Agency for International Development. International Food Policy Research Institute, Dhaka.*
- Aidt, T. 2009: Corruption, institutions, and economic development. *Oxford Review of Economic Policy* 25(2), 274.
- Alredaisy, S.M.A.H., 1993. *Food Security and Regional Development Policies in Arid Sudan* (Doctoral dissertation, University College of Swansea).pp 1-58.
- Altman, M., Hart, T.G. and Jacobs, P.T., 2009. Household food security status in South Africa. *Agrekon*, 48 (4), pp. 345-361.
- Amusan, L. and Kgotleng, M., 2015. South Africa's Food Security Development Challenges in the Era of Globalisation, Affirmative Action and Land Reform. [eBook] Mafikeng: North West University. pp 1-15.
- Anderson, S.A., 1990. Core indicators of nutritional state for difficult-to-sample populations. *The Journal of nutrition* (USA)
- Armah, F.A., Odoi, J.O., Yengoh, G.T., Obiri, S., Yawson, D.O. and Afrifa, E.K., 2011. Food security and climate change in drought-sensitive savanna zones of Ghana. *Mitigation and adaptation strategies for global change*, 16(3), pp.214.
- Austin, G., 2008. Resources, techniques, and strategies south of the Sahara: revising the factor endowments perspective on African economic development, 1500– 2000. *The Economic History Review*, 61(3), pp.587-624.

- Badolo, F. and Kinda, S., 2014. Climatic variability and food security in developing countries. *Etudes et Documents*, (05). pp 1-43.
- Bashir, M.K. and Schilizzi, S., 2013. Determinants of rural household food security: a comparative analysis of African and Asian studies. *Journal of the Science of Food and Agriculture*, 93(6), Pp.1251-1258.
- Bogale, A. and Shimelis, A., 2009. Household level determinants of food insecurity in rural areas of Dire Dawa, Eastern Ethiopia. *African Journal of Food, Agriculture, Nutrition and Development*, 9(9). pp 1-13.
- Bonti-Ankomah, S., 2001, June. Addressing food insecurity in South Africa. In *SARPN conference on land reform and poverty alleviation in Southern Africa*. Pretoria. pp 4-5.
- Bowers, S., Carter, K., Gorton, D., Heta, C., Lanumata, T., Maddison, R., McKerchar, C., Ni Mhurchu, C., O'Dea, D., Pearce, J. and Signal, L., 2009. Enhancing food security and physical activity for Māori, Pacific and low-income peoples. August 2009. Wellington: Clinical Trials Research Unit, University of Auckland; GeoHealth Laboratory, University of Canterbury. *Health Promotion and Policy Research Unit, University of Otago*. pp 1-227.
- Bridge, G., 2014. Resource geographies II: The resource-state nexus. *Progress in Human Geography*, 38(1), pp.118-130.
- Burke, M. and Lobell, D., 2010. Food security and adaptation to climate change: What do we know? In *Climate change and food security* Pp. 133-153.
- Cancian, M. and Reed, D., 2008. Family structure, childbearing, and parental employment: Implications for the level and trend in poverty. *University of Wisconsin-Madison, Institute for Research on Poverty*. pp 1-41.
- Candel, J.J., 2018. Diagnosing integrated food security strategies. *NJAS-Wageningen Journal of Life Sciences*, 84, pp.103-113.
- Clay, E., 2002. Food security: Concepts and measurement. Trade reforms and food security: Conceptualising the linkages. *Rome: Food and Agriculture Organization of the United Nations*. pp 1-315.

Connolly-Boutin, L. and Smit, B., 2016. Climate change, food security, and livelihoods in sub-Saharan Africa. *Regional Environmental Change*, 16(2), pp.385-399.

Coonrod, C. S. 1998. Chronic Hunger and the Status of Women in India. *New York: The Hunger Project*. pp 1-15.

De Vaal, A. and Ebben, W., 2011. Institutions and the relation between corruption and economic growth. *Review of Development Economics*, 15(1), pp.108-123.

Department of Agriculture, Forestry and Fisheries. 2016. *Directorate: Food Security, Strategic outlook (2010 – 2015)*. pp 1-15.

Department of Government, Communication and Information System. Pocket Guide to South Africa (2011/2012). *South Africa at a glance*. pp 1-2.

Dercon, S., 2009. Rural poverty: Old challenges in new contexts. *The World Bank Research Observer*, 24(1), pp.1-28.

DeRose, L., Messer, E. and Millman, S., 1998. Who's hungry? And how do we know? Food shortage, poverty, and deprivation. *UNU Press*. pp 1-214.

Devereux, S., 2016. Social protection for enhanced food security in sub-Saharan Africa. *Food Policy*, 60, pp.52-62.

Devereux, S. 2006. Distinguishing between Chronic and Transitory Food Insecurity in Emergency Needs Assessments. *World Food Programme Emergency Needs Assessment Branch, Rome, Italy*. pp 1-54.

Devereux, S., 1999. Targeting Transfers: Innovative Solutions to Familiar Problems 1. *IDS Bulletin*, 30(2), pp.61-74.

Devereux, S., 2000. Famine in the twentieth century. *IDS working Paper no 105*. pp 1-40.

Devereux, S., 2013. Trajectories of social protection in Africa. *Development Southern Africa*, 30(1), pp.13-23.

Drimie, S. and Casale, M., 2009. Multiple stressors in Southern Africa: the link between HIV/AIDS, food insecurity, poverty and children's vulnerability now and in the future. *Aids Care*, 21(sup1), pp.28-33.

Drimie, S. and McLachlan, M., 2013. Food security in South Africa—first steps toward a transdisciplinary approach. *Food Security*, 5(2), pp.217-226.

Eyzaguirre, P. B., & Linares, O. F. (Eds.). (2010). Home gardens and agrobiodiversity. *Washington: Smithsonian Books*. pp 1-20.

Fan, S., Pandya-Lorch, R. and Yosef, S. eds., 2014. Resilience for food and nutrition security. *Intl Food Policy Res Inst*. pp 1-74.

FAO, A., 2008. An introduction to the basic concepts of food security. *FAO, Rome, Italy*. pp 1-3.

FAO, 2009. The state of food insecurity in the world. *With the World Food Program of the United Nations*. pp 1-2.

FAO. (1983): Commission on plant genetic resources. Resolution 8/83 of the 22nd Session of the FAO Conference, Rome. pp 1-256.

FAO. 2000. 2000 World Census of agriculture: Analysis and international Analysis and international Comparison of the results (1996-2005). pp 1-162

FAO. 2004. Socio-economic Analysis and Policy Implications of the Roles of Agriculture in Developing Countries. *Summary Report, Roles of Agriculture Project, FAO, Rome*. pp 1-174

FAOSTAT (2011) World potato production quantity (tonnes), yields and harvested areas for 2009. pp 1-12

Felker-Kantor, E. and Wood, C.H., 2012. Female-headed households and food insecurity in Brazil. *Food Security*, 4(4), pp.607-617.

FAO, 2012. Gender Inequalities in Rural Employment in Ghana An overview. Prepared by the Gender, Equity and Rural Employment Division FAO. Rome, Italy. pp 1-58.

FAO, 2014. *State of Food Insecurity in the World 2013: The Multiple Dimensions of Food Security*. FAO. pp 1-56.

FAO, 1996. *Rome Declaration on World Food Security and World Food Summit Plan of Action: World Food Summit 13-17 November 1996, Rome, Italy*. FAO. pp 1-7.

Gebre, G.G., 2012. Determinants of food insecurity among households in Addis Ababa city, Ethiopia. *Interdisciplinary Description of Complex Systems: INDECS*, 10(2), pp.159-173.

Gebrehiwot, T., 2009. Determinants of food security in rural households of the Tigray region. *Unpublished MPhil thesis, Addis Ababa University, Ethiopia*. 99 pp 3-222.

Goldblatt, B., and McLean, K., 2011. Women's Social and Economic Rights: Developments in South Africa. *Juta & Co, Ltd*. pp 1-245

Government of South Africa 2010. *Outcome 7: vibrant, equitable and sustainable rural communities and food security for all. Draft 10 May 2010*.

Gross, R., Schoeneberger, H., Pfeifer, H. and Preuss, H.J., 2000. The four dimensions of food and nutrition security: definitions and concepts. *SCN News*, 20, pp.20-25.

Hahn, S.K., 1989. An overview of African traditional cassava processing and utilization. *Outlook on Agriculture*, 18(3), pp.110-118.

Hallward-Driemeier, M. and T. Hasan 2012. Empowering women: Legal rights and economic opportunities in Africa. *World Bank Publications*. pp 1-56

Headey, D. and Ecker, O., 2013. Rethinking the measurement of food security: from first principles to best practice. *Food security*, 5(3), pp.327-343.

Herath, H.M.S.P., 2014. Has trade liberalization improved food security? A comparative study on China and Sri Lanka. *European Journal of Business and Management*, 6(18), pp.62-67.

Herz, B., Subbarao, K., Habib, M. and Raney, L., 1991. *Letting girls learn: Promising approaches in primary and secondary education*. The World Bank. Pp 1-120

Hoddinott, J., 1999. Operationalizing household food security in development projects: an introduction. *Technical guide*, 1, pp.1-19.

Hossain, K., Raheem, D. and Cormier, S., 2018. Food Security: A Basic Need for Humans. In *Food Security Governance in the Arctic-Barents Region* (pp. 5-14). Springer, Cham.

Hyder, A.A., Maman, S., Nyoni, J.E., Khasiani, S.A., Teoh, N., Premji, Z. and Sohani, S., 2005. The pervasive triad of food security, gender inequity and women's health:

exploratory research from sub-Saharan Africa. *African health sciences*, 5(4), pp.328-334.

Htun, M., Jensenius, F.R. and Nelson-Nuñez, J., 2019. Gender-discriminatory laws and women's economic agency. *Social Politics: International Studies in Gender, State & Society*, 26(2), pp.19 Ibnouf, F.O., 2009. The role of women in providing and improving household food security in Sudan: implications for reducing hunger and malnutrition. *Journal of International Women's Studies*, 10(4), pp.144-167.

IFPRI (International Food Policy Research Institute)/CSA (Central Statistical Agency) (2006) Atlas of the Ethiopian Rural Economy. IFPRI, Washington, DC.

Ignowski, E.A., 2012. *Two Essays On Food Security In Zimbabwe* (Doctoral dissertation, University of Illinois at Urbana-Champaign). 62 pp 1-62

Jackson, C., 1996. Rescuing gender from the poverty trap. *World development*, 24(3), pp.489-504.

Jackson, D.B. and Vaughn, M.G., 2017. Household food insecurity during childhood and adolescent misconduct. *Preventive medicine*, 96, pp.113-117.

Jacobs, F.T., 2009. The status of household food security targets in South Africa. *Agrekon*, 48(4), pp.410-433.

Jaramillo, P. and Muller, N.Z., 2016. Air pollution emissions and damages from energy production in the US: 2002–2011. *Energy Policy*, 90, pp.202-211.

Kakwani, N. and Son, H.H., 2016. Measuring food insecurity: Global estimates. In *Social welfare functions and development*. Palgrave Macmillan, London. pp. 253- 294.

Kallman, K., 2015. The Right to Food-Addressing Women's Needs as Individuals, Wombs and Mothers (Chapter 9). *Women's Social and Economic Rights: Developments in South Africa Juta & Co, Ltd.* pp 208-256

Karl, M., 2009. Inseparable: The crucial role of women in food security revisited. *Women in action*, 1(1), pp.8-19.

Kargbo, J.M., 2000. Impacts of monetary and macroeconomic factors on food prices in eastern and southern Africa. *Applied Economics*, 32(11), pp.1373-1389.

Kidane, W., Maetz, M. and Dardel, P., 2006. Food security and agricultural development in sub-Saharan Africa. *FAO, Subregional Office for Southern and East Africa, Rom.* pp 1-122

Kiros, F.G., 2005. *Enough with famines in Ethiopia: A clarion call.* Tsehai Publishers. pp 1-14.

Knueppel, D., Demment, M. and Kaiser, L., 2010. Validation of the household food insecurity access scale in rural Tanzania. *Public health nutrition*, 13(3), pp.360-367.

Kruidenier, R., 2015. Trying for better circumstances (Zama Zama): Exploring ubuntu amongst marginalised women in an informal settlement. *Verbum et Ecclesia*, 36(2), pp.1-7.

Labadarios, D., Swart, R., Maunder, E.M.W., Kruger, H.S., Gericke, G.J., Kuzwayo, P.M.N., Ntsie, P.R., Steyn, N.P., Schloss, I., Dhansay, M.A. and Jooste, P.L., 2008. Executive summary of the National Food consumption Survey Fortification Baseline (NFCS-FB-I). *South African Journal of Clinical Nutrition*, 21(3), pp.247-300.

Liang, K., 2018. Theme Overview: The Linkages between Entrepreneurship and Sustainable Regional Food Networks. *Choices*, 33(2), pp.1-3.

Leff, N.H., 1964. Economic development through bureaucratic corruption. *American behavioral scientist*, 8(3), pp.8-14.

Leonard, M., 2003. Women and development: examining gender issues in developing countries. *From the local to the global key issues in development studies*, pp.76-92.

Machethe, C.L., 2004, October. Agriculture and poverty in South Africa: Can agriculture reduce poverty. In *Paper presented at the Overcoming Underdevelopment Conference held in Pretoria* Vol. 28, pp. 29.

Maxwell, D. and Parker, J., 2012. Coordination in food security crises: a stakeholder analysis of the challenges facing the global food security cluster. *Food Security*, 4(1), pp.25-40.

Mburu, N.F. and Kiriti-Nganga, T.W., 2007. Poverty In Kenya, 1994–1997: A Stochastic Dominance Approach. *Global Economic Integration and Inequality, Serial Pub: New Delhi.* Pp 1-32.

Messer, E. and Cohen, M.J., 2004. *Breaking the links between conflict and hunger in Africa* (No. 26). International Food Policy Research Institute (IFPRI). pp 1-6.

Misselhorn, A., Drimie, S., Schwabe, C., O'Donovan, M., Fabre, M., Hendriks, S., Kirsten, J., Maunder, E., Kuzwayo, P., Laubscher, P. and Lemke, S., 2007. Achieving food security in South Africa: Characteristics, stressors and recommendations to 2019. *Report to the Office of the Presidency. Pretoria: Human Sciences Research Council.*

Misselhorn, A.A., 2005. What drives food insecurity in southern Africa? A meta-analysis of household economy studies. *Global environmental change*, 15(1), pp.33-43.

Mkandawire, R. and Matlosa, K., 1993. Post-Colonial State and food security in Southern Africa: An overview in food policy and Agriculture in Southern Africa. *Atlantic Philosophy of Education Society, Southern Africa*, pp.3-7.

Mo, P.H., 2001. Corruption and economic growth. *Journal of comparative economics*, 29(1), pp.66-79.

Morgan, K. and Sonnino, R., 2010. The urban foodscape: world cities and the new food equation. *Cambridge Journal of Regions, Economy and Society*, 3(2), pp.209-224.

Mwaniki, A., 2006. Achieving food security in Africa: Challenges and issues. *New York: Cornell University*. pp 1-12.

Ngwexana, T., 2018. Access to land and productive resources among female farmers in Stellenbosch: Implications for women's empowerment and household food. pp 1-113.

Ndobo, F.P., 2013. Determining the food security status of households in a South African township (Doctoral dissertation, North-West University). 146 pp 1-146

Ojogho, O., 2010, Determinants of food insecurity among arable farmers in Oredo and Egor local government areas of Edo State, Nigeria: Policy for mitigating food crisis, *Social Science Research Network*, 2(2): 227-231.

Omotesho, O.A. and Muhammad-Lawal, A., 2010. Optimal food plan for rural households food security in Kwara State, Nigeria: The goal programming approach. *Journal of Agricultural Biotechnology and Sustainable Development*, 2(1), pp.7-14.

Oluyole, K.A. and Sanusi, R.A., 2009. Socio-economic variables and cocoa production in Cross River State, Nigeria. *Journal of Human Ecology*, 25(1), pp.5-8.

Panagariya, A., 2002, July. Trade and food security: Conceptualizing the linkages. In *presentation at the Conference on Trade, Agricultural Development, and Food Security: The Impact of Recent Economic and Trade Policy Reform, Food and Agricultural Organization, Rome, July*. pp. 11-12.

Pervaiz, B., Li, N., Manzoor, M.Q. and Yaseen, M., 2017. Socio-Economic Characteristics of Farming Community and Food Security Situation in Punjab, Pakistan. *Journal of Agricultural Science*, 9(8), pp.130-148

PLAAS (2014). The Restitution of Land Rights Amendment Act of 2014. Working paper. pp 1-4.

Powell, B., Thilsted, S.H., Ickowitz, A., Termote, C., Sunderland, T. and Herforth, A., 2015. Improving diets with wild and cultivated biodiversity from across the landscape. *Food Security*, 7(3), pp.535-554.

Rahman, M.A., 2013. Water security: Ethiopia–Egypt transboundary challenges over the Nile river basin. *Journal of Asian and African Studies*, 48(1), pp.35-46.

Reynolds, L.P., Wulster-Radcliffe, M.C., Aaron, D.K. and Davis, T.A., 2015. Importance of animals in agricultural sustainability and food security. *The Journal of nutrition*, 145(7), pp.1377-1379.

Rudolph, M., Kroll, F., Ruysenaar, S. and Dlamini, T., 2012. The state of food insecurity in Johannesburg. Urban Food Security Series No. 12. *Kingston and Cape Town: AFSUN*.

Sakyi, P., 2012. Determinants of food accessibility of rural households in the Limpopo Province, South Africa. *Unpublished. Masters of Science in Nutrition and Rural Development, Ghent University, Ghent*. 104 pp 1-104

Salih, S.A., 1994. Food security in east and southern africa. *Nordic Journal of African Studies*, 13(1), pp.3-27.

Santangelo, G.D., 2018. The impact of FDI in land in agriculture in developing countries on host country food security. *Journal of World Business*, 53(1), pp.75-84.

Schmidhuber, J. and Tubiello, F.N., 2007. Global food security under climate change. *Proceedings of the National Academy of Sciences*, 104(50), pp.19703- 19708.

Schönfeldt, H.C., Hall, N. and Pretorius, B., 2017. Nutrition-Sensitive Agricultural Development for Food Security in Africa: A Case Study of South Africa. *International Development*, p.1.

Sekhampu, T.J., 2013. Determination of the factors affecting the food security status of households in Bophelong, South Africa. *International Business & Economics Research Journal (IBER)*, 12(5), pp.543-550.

Shaikh, F.M., 2007. Determinants of household food security and consumption pattern in rural Sindh: non-separable agricultural household model. *IUB journal of social sciences and humanities*, 5(2), pp.18-39.

Sibhatu, K.T. and Qaim, M., 2017. Rural food security, subsistence agriculture, and seasonality. *PloS one*, 12(10), p.e0186406. pp 1-15.

Simplice, A., 2013. Globalization and Africa: implications for human development. *International Journal of Development Issues*, 12(3), Pp.213-238.

Smith, L. and Haddad, L., 1999. Women's Status, Women's Education and Child Nutrition in Developing Countries. Brown Bag Seminar. International Food Policy Research Institute (IFPRI). pp 100-158.

South African History online. 2010. President Zuma, State of the Nation Address, 11 February 2010. 6 pp. 1-6

Tadesse, T., Demisse, G.B., Zaitchik, B. and Dinku, T., 2014. Satellite-based hybrid drought monitoring tool for prediction of vegetation condition in Eastern Africa: A case study for Ethiopia. *Water Resources Research*, 50(3), pp.2176-2190.

Tarasuk, V., Dachner, N. and Loopstra, R., 2014. Food banks, welfare, and food insecurity in Canada. *British Food Journal*, 116(9), pp.1405-1417.

Temu, A. and Msuya, E., 2004, November. Capacity human building in information & communications managements toward food security. In *CTA Seminar on the role of information tools in food & nutrition Security, Maputo, Mozambique*. pp. 8-12.

Tweeten, L.G., 1997. Competing For Scarce Land: Food Security And Farmland Preservation (No. 28325). Ohio State University, Department of Agricultural, Environmental and Development Economics. pp 1-25.

UNDP.2006. Human Development Report,. 2006. Beyond scarcity: Power, poverty and the University, USA.

United Nations. Report of the World Food Conference, Rome 5–16November 1974. New York: United Nations; 1975. pp 1-70.

UN-HABITAT, 2003. The challenge of the slums. Global reports on human settlements, 2003. United Nations Human Settlements Programme, Geneva.UNICEF, 2001. Infant and under-five mortality. UNICEF Report.

United Nations,. 2015. Transforming our world: the 2030 Agenda for Sustainable Development. United Nations General Assembly Resolution, 2015 September 18. Available at: <https://sustainabledevelopment.un.org/post2015/transformingourworld> (accessed 13 May 2017).

Van Dijk, M. and Meijerink, G.W., 2014. A review of global food security scenario and assessment studies: results, gaps and research priorities. *Global Food Security*, 3(3-4), pp.227-238.

Van Zyl, J. and Kirsten, J., 1992. Food security in South Africa. *Agrekon*, 31(4), pp.170-184.

Vella, J., 2012. The future of food and water security in new Egypt. *Future Directions International Pty Ltd.: Dalkeith, Australia*. pp 1-6.

Von Braun, J., 2007. *The world food situation: new driving forces and required actions*. Intl Food Policy Research Institution . pp 1-8.

- Walmsley, J.J., 2002. Framework for measuring sustainable development in catchment systems. *Environmental management*, 29(2), pp.195-206.
- Wanjiru, K.R., 2014. Integrating Corporate Security in Strategic Management of Five-Star Hotels in Nairobi Kenya. Masters dissertation, University of Nairobi. 62 pp 1-62
- Weingärtner, L., 2005. The food and nutrition security situation at the beginning of the new millennium. *Achieving Food and Nutrition Security*, pp.1-29.
- Wonder, B., 2014. Smallholder Value Chains for Food Security. *A scoping study with particular attention to farmer groups and innovation platforms based on Landscape principles. Report to the Australian International Food Security Research (AIFSRC), ACIAR*. pp 1-126.
- World Food Summit, 1996. In *World Food Security* .pp. 347-360. Palgrave Macmillan, London.
- Zakari, S., Ying, L. and Song, B., 2014. Factors influencing household food security in West Africa: The case of Southern Niger. *Sustainability*, 6(3), pp.1191-1202.
- Zita, M.L., 2012. Zero Hunger Programme Provincial Implementation: *Department of Agriculture, Forestry & Fisheries briefing*. pp 1-13.

## APPENDICES

### Appendix 1: Questionnaire

#### FOOD SECURITY QUESTIONNAIRE

This questionnaire was designed to get information on the Determinants of Food Security among households in Magong, Northwest Province, South Africa. The questions asked are strictly for research purpose. Please feel free to provide objective answers to the question as your responses will be treated with utmost confidentiality

#### **Part 1: Socio-economic characteristics of the respondents**

##### **Section A**

1. Age

2. Marital status

##### **2.1 Key for marital status:**

- a. Married
- b. Single
- c. Divorced
- d. Widow/ Widower

Answer:

3. Respondent's sex, 1 if male, 0 if female

Answer:

4. Respondent's education level

#### 4.1. Key for education level

- a. Elementary/ basic
- b. Primary school
- c. Secondary school
- d. High school
- e. ABET
- f. Tertiary education

If other, please specify \_\_\_\_\_

Answer:

5. Household size \_\_\_\_\_

6. Household type

#### 6.1 Key for household type:

- a. Made of bricks
- b. Made of corrugated iron
- c. Made with mud

Answer:

7. Type of the land on which the house is built. Own land  Communal land

8. What is the primary source of energy for your household?

- a. Electricity
- b. Personal generator
- c. Solar energy

Answer:

If other specify \_\_\_\_\_

9. What are the means of cooking food in your household?

- a. Firewood
- b. Paraffin stove
- c. Charcoal
- d. Gas cooker

Answer:

Other, specify if other \_\_\_\_\_

10. What is the primary source of drinking water and domestic water for your household?

**10.1 Key for sources of drinking water**

- a. Spring/river water
- b. Bore hole water
- c. Pipe-borne (Tap) water

Answer:

If other Specify \_\_\_\_\_

**Part 2: Household income**

11. What is your household's monthly income?

**11.1 Key for household income**

- a. R0-R2999
- b. R3000-R4999
- c. R5000-6999
- d. R7000+

**11.2 Key for source of household income**

**Section A: Non-farm activities**

**a. Non-Farm**

12. Reasons for participation in non-farm activities

**12.1 Key for reasons for non-farm participation**

- a. We don't have enough money
- b. We don't have enough time
- c. We don't have enough education and training
- d. The income from farming is enough to meet our needs

Other specify \_\_\_\_\_

Answer:

**Section B: Farm activities**

13. Land Size

14. For how long have you been farming? (Years)

**15. What are your reasons for going into farming?**

**15.1 Key for reasons for going into farming**

- a. To meet family food requirement

- b. As a primary source of cash income
- c. As additional source of cash income
- d. To minimize family expenses on food

b. Answer:

c. If other please specify \_\_\_\_\_

**16. Farm produce**

- a. Crops
- b. Livestock
- c. Both crops and livestock

**17. Access to credit**

**17.1 Key for credit facilities**

- a. Loans from Agricultural institutions
- b. Banks
- c. Government subsidies/ loans that are granted by the government
- d. Money lenders
- e. Cooperatives
- f. Relatives

Answer:

**Section B: Household Food Insecurity Assessment Scale**

**NB: For each of the questions answered, please indicate the frequency of occurrence (i.e. rarely, sometimes, often) where 1= rarely, 2= sometimes, 3= often**

| Options                                      |    |   |        |   |           |   |       |   |
|--|----|---|--------|---|-----------|---|-------|---|
|  | No |   | Rarely |   | Sometimes |   | Often |   |
| HFIAS questions                              | N  | % | N      | % | N         | % | N     | % |
| Q1: Worry about food                         |    |   |        |   |           |   |       |   |
| Q2: Unable to eat preferred foods            |    |   |        |   |           |   |       |   |
| Q3: Eat just a few kinds of foods            |    |   |        |   |           |   |       |   |
| Q4: Eat foods they really do not want to eat |    |   |        |   |           |   |       |   |
| Q5: Eat a smaller meal                       |    |   |        |   |           |   |       |   |

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| Q6: Eat fewer meals in a day                |  |  |  |  |  |  |  |  |
| Q7: No food of any kind in a household      |  |  |  |  |  |  |  |  |
| Q8: Go to sleep hungry                      |  |  |  |  |  |  |  |  |
| Q9: Go a whole day and night without eating |  |  |  |  |  |  |  |  |