

**THE CONTRIBUTION OF WOMEN TO HOUSEHOLD FOOD SECURITY
IN BUSIA COUNTY, KENYA**

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**A Thesis Submitted to the School of Disaster Management and Humanitarian
Assistance in Partial Fulfillment of the Requirements for the Degree of Master of
Science in Disaster Management and Sustainable Development of Masinde
Muliro University of Science and Technology**

November, 2024

DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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ABSTRACT

The 2010 Kenyan Constitution provides for rights, in article 43 (1), assuring freedom from hunger and adequate food of acceptable quality. Despite such policy provisions, food security remains a challenge. Women, constitute 75 % agricultural labor force, bearing household food insecurity burden, yet play critical roles in food security. The study investigated women's contribution to household food security in Busia County. The objectives were: To determine the household food security status; to establish the role of women in household food security; to evaluate the strategies for enhancing household food security in Busia County. The study used descriptive survey and evaluative research design. Multi-stage, Quota, Purposive and Simple random sampling was used to samples, primary respondent size of 384 household members, purposive sampling for Key informants and quota sampling for four FGD participants. Data was collected using questionnaires, FGD guides and KII guides. Data was analyzed using the Statistical Package for Social Sciences software, and qualitative data was transcribed and entered into Nvivo software for analysis. The study used two theories, the gender perspective theory and entitlement theory to give understanding to this study. Findings reveal Busia County was food insecure: Two-thirds households (66.2%) had experienced food shortage the year preceding the study. The study observed that 51.4% of the respondents indicated that food produced from their farms in the last one year was not adequate for the house hold. The majority respondents, (69.9%) bought food from markets during food shortage. Farm produce was the main source of household food for majority (89%), and maize was the main crop grown by (88.4%) of the households. Notably, (64.1%) reported that household decisions on farming activities were mainly made by husbands. The study established that 99.2% women had kitchen gardens under their control. Indeed. Over (59.8%) respondents said farming was for consumption and income. The inferential statistical analysis showed positive significant relationship between household food security, and women's contribution in farms, level of education and marital status. The greatest challenge women faced in food security was inadequate collateral to access credit and not owning land for production. However, no specific policy articulates promoting women's involvement in food security, hence the need for a specific policy addressing women's role in food security. The study recommends the need to establish or strengthen multi-sectorial institutional structures/systems which will deliberately include women in intervention, since related challenges are multi-dimensional. In conclusion, Busia County was food insecure; Women play relatively important roles in household food security although, when it comes to domestic farming operations, men continue to make the majority of the decisions. The national and county governments' initiatives to strengthen the contribution of women to the enhancement of family food security in Busia County have not had the anticipated outcome. Recommendations included-the need to establish legal and policy frameworks to take into account women's rights to production resources effectively promoting food security

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ACRONYMS AND ABBREVIATIONS

ARD Agriculture and Rural Development

ASAL Arid and Semi-Arid Land

ASDSP Agricultural Sector Development Support Program

CAADP Comprehensive Africa Agricultural Development Program

CIDP County Integrated Development Plan

CWFS Committee on World Food Security

DD Dietary Diversity

EAC	East African Community
EMCA	Environmental Management Coordination Act
ERS	Economic Recovery Strategy
FAO	Food and Agriculture Organization
FCC	Food Consumption Coping Strategy Index
FCS	Food Consumption Score
FES	Food Expenditure Share

FGD	Focus group discussions
FIAN	Food First Information and Action Network
FSNS	Food Security and Nutrition Strategy
GBV	Gender based violence
GDP	Gross Domestic Product
GHI	Global Hunger Index
GoK	Government of Kenya

IFAD	International Fund for Agricultural Development
Kcal	Kilo-calories
KIPPRA	Kenyan Institute for Public Policy Research and Analysis
Km²	Square kilometers
KNBS	Kenya National Bureau of Statistics
LCSI	Livelihoods Coping Strategy Index
MAHFP	Months of Adequate Household Food Provisioning

MDD-SW Minimum Dietary Diversity Score for Women

MDGs Millennium Development Goals

NEMA National environmental Management Authority

NEPAD New Partnership for African Development

PALWECO Program for Agriculture and Livelihoods in Western Communities

PELUM Participatory Ecological Land Use Management

PPP Public-Private Partnership

SIDA Swedish International Development Cooperation Agency

SPSS Statistical Software for Social Sciences

SRA Strategy for Revitalizing Agriculture

UN United Nations

USDA United States Development Agency

WFP World Food Programme

WFS World Food Summit

WHO World Health Organization

DEFINITIONS OF OPERATIONAL TERMS

Coping strategies: Coping techniques are measures employed by households to survive when faced with unanticipated livelihood failures, such as food shortages.

Entitlement: This refers to the diverse methods by which households obtain sustenance, be it through domestic production or other revenue-generating endeavors like labor sales or trading.

Food security: This is the availability, usability, and consumption of enough wholesome food by all members of a community or household to meet their daily needs.

Household: This is a term used to describe a group of people who live in the same neighborhood, share a common residence, follow the same set of rules, share meals, and submit to the authority of a head role.

Livelihood: is a way to make money so that one can survive. It was used to describe methods by which people may earn a living and produce enough food that is both sufficient and nourishing in this context.

Strategy: This is a deliberate strategy to deal with the danger to food security and manage its effects in order to manage the situation in a way that enhances food security for households.

Women role: This is a reference to women's participation in decision-making processes that affect food security.

Women's contribution: This was a reference to women being involved in obtaining food for the food security of the home.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The State of Food Security and Nutrition in the World 2023 indicates that between 713 and 757 million people were undernourished in 2023, World Bank. (2024). The world continue to face challenges on food security yet the World Food Summit in 1996 pledged to achieve food security for all and to cut the number of undernourished people in half by the year 2015 (FAO, 1996). At that time, there were over 800 million undernourished people living in developing nations. According to the Kenya Food Security Outlook, June 2022 to January 2023, FEWS NET: IPC Phase 4, (2022), most of eastern Kenya will have below-average season-long rains on June 4. The ongoing reduction in crop and livestock productivity has limited household food supply and income. Acute food insecurity and acute malnutrition are also projected, with 4.1 million Kenyans living in the Arid and Semi-Arid Lands being identified as acutely food insecure. Approximately 10 million people in Kenya are estimated to be at risk of hunger, with 51% (KFSSG, 2011) of the population living in rural and urban areas, respectively, experiencing food insecurity. Women and children in rural communities with low and unstable earnings are among the most vulnerable (Kimani-Murage, *et al.*, 2011).

Women play a critical role, to ensure there is house hold food security. They produce, purchase, preserve, handle, prepare and serve food to families and community

institutions. They are principal guarantors of nutrition, food safety within the household and community levels. However, their rights, responsibilities and decision-making abilities need to be taken more seriously to improve food and nutrition security. Despite efforts to improve the situation of women, they still carry the brunt of worsening food insecurity situation at community and household levels in rural areas (FAO, 2022; Njuki, 2019). Women form over half the population approximately 24,417,639 of the totals of over 47.6 million people (Kenya Population and Housing Census, 2019). Women constitute about 75 % of Kenya's agricultural labour force, though women face challenges of limited access to resources like land, credit facilities, agricultural technologies, extension services, marketing facilities institutionalization and gender inequalities rooted in society attitudes which undermine their productivity (Kimani-Murage, *et al.*, 2011).

Food security exists when all people have continuous physical and economic access to sufficient, safe, and nutritious food to suit their dietary needs and food preferences for an active and healthy life (FAO, 2022). The four pillars of food security are availability, access, utilization and stability (FAO, 2022). In previous decades, Africa's food situation has been deficient. According to statistics from 2010, there were more hungry individuals in Africa (33%) than in Asia (16%), and the average daily calorie intake was 1,950 Kcal, which is less than the 2,100 Kcal minimum required by the WHO for survival and the 2,250 Kcal necessary for a healthy life

(FAO, 2010).

Regarding the challenges of food security, Kenya is a signatory to the United Nations (UN), the World Food Summit (WFS) of 1996, and the Sustainable Development Goals (SDG) 1, 2, 3, 12, and 17 (UN, 2017). In its continued attempts to attain food security, Kenya has ratified a number of regional agreements, such as the Comprehensive Africa Agricultural Development Program (CAADP) of the New Partnership for African Development (NEPAD) of 2002 (FAO, IFAD & WFP, 2002).

The main mechanisms in Kenya that control food security are the following: the 2010 Kenyan Constitution, which gives county governments more authority to provide services; Vision 2030, which aims to reduce the rate of malnutrition and boost the agricultural sector; the Economic Recovery Strategy (ERS), the Strategy for Revitalizing Agriculture (SRA), the Food Security and Nutrition Strategy (FSNS, 2008); the Kenyan Agricultural Sector Development Strategy 2010-2020, which envisions a prosperous and secure Kenya; and the Big Four Agenda, which aims to guarantee that Kenyans have access to reasonably priced, nutrient-dense, and palatable foods (GOK, 2010).

The county government through the Ministry of Agriculture, Livestock, and Fisheries; the Swedish International Development Cooperation Agency (SIDA); Finland through

the Program for Agriculture and Livelihoods in Western Communities (PALWECO); research institutions; and civil society organizations have been the main stakeholders in enhancing food and nutrition security in Busia.

Initiatives aimed at enhancing access to food and promoting food security have benefited greatly from the contributions of women. Developing initiatives that meet the needs of women in society continues to receive little attention. Understanding the responsibilities women play in food security and involving them in activities to develop food security are crucial for ensuring food security in households (Chinery, 2011). There isn't much information available on household food security in Busia County. The study on women's contribution to household food security in Busia County was required as a result of the previously described observations.

1.2 Statement of the problem

Food insecurity remains a challenge in Busia County as in many other parts of Kenya, affecting vulnerable groups including women and children in the communities (Kimani-Murage, *et al.*, 2011). Despite their significant contributions to food production and household food security, women in Busia County, Kenya, face persistent and multifaceted challenges that hinder their full potential to address food insecurity. The challenges include: limited recognition of their efforts, restricted

access to essential productive resources such as to financial credit, land ownership, market for produce, better infrastructure and Gender inequalities. These challenges therefore impact negatively on women's effort to contribute household food security in Busia County

While much has been studied in recent decades to enhance the status of women and food security, much work has to be done, particularly at the family level in Busia County. Research such as (Otieno & Oduor, 2022) examine how women's access to land affects food security in Busia County. It finds that women who have access to land have higher household food security than women who do not, and they are also more likely to invest in their farms and use improved agricultural practices. The study concludes that women's access to land is a critical factor in achieving food security; (Onyango & Otieno, 2021) a journal that explores the role of women's farmers' groups in food security in Busia County. The study found that women's farmers' groups provide women with access to information, resources, and training; (Langat, 2016) provided some insight on social cultural factors influencing women's participation in food security programs among households in Bomet County. Whereas (Kimani-Murage, *et al.*, 2011) studied challenges facing women in food security and nutrition among poor urban orphans in Nairobi. These studies showed that despite the challenges women face, they are key roles to food security through production, processes and provision of food. Women's contributions to household food security,

governance, and policymaking, in particular, are still not fully acknowledged. With the intention of offering suggestions that might be applied to enhance food security in the region, this study looks at the contributions made by women to household food security in Busia in particular.

1.3 Research Objectives

The main objective was to examine the contribution of women in enhancing food security at the household levels in Busia County, Kenya.

The specific objectives of the study were:

- i) To determine the household food security status in Busia County
- ii) To establish the role of women in household food security in Busia County
- iii) To evaluate the strategies for enhancing household food security in Busia County.

1.4 Research questions

- i) What is the status of household food security among residents living in Busia County?

- ii) What is the role of women in household food security in Busia County?
- iii) What are the strategies used to improve food security in Busia County?

1.5 Justification of the study

This study focused on the contribution of women to food security in Busia County, Kenya. Women and household still remain vulnerable to the impacts of food insecurity despite their key roles in household food security. A large proportion of agricultural production is attributed to women making them important agents of economic food security development. Policy support would enhance the participation of women in availing food for household food security but this remains a challenge. There are few studies focused on the contribution of women to food security in Busia County.

1.5.1 Policy Justification

Policies incorporating roles played by women in household food security, and strategies to improve food security are important for supporting women. In Kenya, household food security related policies have left out women who are therefore not well equipped to adequately achieve household food security. Policies have not adequately promoted women's participation and equal access to resources and governance opportunities hence limiting women's capacity to productively increase food security. The challenge of women to control means of production, especially

land ownership and access to finances still remain largely unsupported by existing policies. Therefore, the results of this study is expected to add to the understanding as well as provide useful information to guide in policy formulation for implementation of strategies that support women's efforts and contribution to household food security.

1.5.2 Academic Justification

Studies have examined the contribution of women to food security in the world. These previous studies have been mostly conducted in the Western world including Europe and America. Studies done in Busia are general (Otieno & Oduor, 2022; Otieno& Nyamwalo, 2020) not focusing on household food security, which remains a serious challenge mostly in the third world countries. Masita (2012) asserts that household food security is influenced by various food security coping strategies, access to market and social networks. Chinery (2011) reveals that it is important to realize the role women play and they should be included in development strategies of food security. Many homes have failed to implement new and appropriate food security strategies, initiatives and practices due to multiple constrains. The study findings will provide academic literature in the areas related to food security.

1.6 Scope of the Study

The study was conducted in Busia County with specific focus on the contribution of women to food security in Busia County, Kenya. Study targeted women household heads of reproductive age (18-49 years) as main respondents and women and men for

group discussion among farming communities, opinion leaders, Key informants from the department of Agriculture at the County level, Key informants from the Kenya Agricultural and Livestock Research Organization (KALRO). Data was obtained from Ministry of Agriculture and Livestock Development and key food security stakeholders. Women Household heads formed the main unit of analysis for the study in Busia County. The study was carried out between Augusts, 2016 to November, 2023. During the period The COVID-19 pandemic exacerbated existing food security challenges, particularly for women. Disruptions to supply chains, lockdowns, and economic downturns disproportionately affected women's livelihoods and food security. Women, often responsible for household food security, faced increased burdens as they took on additional caregiving responsibilities and struggled to access resources. FAO, (2023). Climate Change and Its Impact on Women's Food Security Climate change has had significant impacts on agriculture and food security, particularly for women who rely on climate-sensitive livelihoods. Extreme weather events, such as droughts and floods, have disrupted agricultural production, leading to food shortages and increased food prices. Women, often responsible for household food security, have borne the brunt of these challenges IPCC. (2021).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explores the available literature on the subject matter while taking cognizant of the contribution of women to food security discussions. The literature is cascaded from a global perspective, regional perspective as well as the national perspective while reviewing literature on the concept of food security, state of food security, Challenges of food security in Kenya, Recent achievements of food security in Kenya, Models for determination and measurement of food security, contributions of women to food security, Challenges that affect food security among women, Strategies to improve food security and a Conceptual Framework

2.2 The concept of food security

In the 1970s, the emphasis on food security was on national food security. In the 1980s, it shifted to household food security with a focus on food access. In the early 1990s, it shifted to nutritional security with a focus on food, health, and mother and child care. Finally, in the late 1990s, it shifted to household livelihood security. Food security in the home refers to having access to the nourishment required for a happy, healthy existence. According to FAO. (2022). household food insecurity is a result of limited availability to food and/or inadequate food usage.

Various scholars and international organizations have defined food security in various

ways over the years. Food security has been defined in nearly 200 ways, FAO. (2022). The idea of food security has been examined at the international, state, local, household, and individual levels. When food security was first defined, it was thought to mean giving inhabitants in underdeveloped nations a minimum amount of food grains during both good and bad harvest years.

As a result of the early 1970s food crisis, attention turned to national food security and the availability of food. The shortages brought on by production errors were the main concern of the world community. Inadequate food supplies have been identified as a primary contributor to food poverty since 1974. In the 1980s, definitions changed to reflect a range of opinions, from those advocating for greater access to food to those emphasizing national food security and expanded supply, Barrett, C. B. (2010). Additional information about food and nutritional security was included, drawing from studies conducted in the late 1980s and early 1990s.

According to (O'Brien, K. 2020; FAO, 2021), the concept of food security has expanded to encompass happy livelihood concerns. Food security issues impact low-income households, influencing their decision to disperse risk and strike a balance between competing interests in order to survive over the long run. By the time of the 1996 World Food Summit, food security was defined as the state in which all people, at all times, have physical and economic access to enough food that is safe, nutritious,

and meets their dietary needs and preferences for an active and healthy life, (FAO, 2023). This includes food security at the individual, household, national, regional, and global levels. The four pillars of food security are availability, access, utilization and stability, according Food and Agriculture Organization to (FAO 2023; Lam *et al.*, 2017).

Food availability was defined as the physical presence of food that was farmed, manufactured, imported, or transported to a location in adequate amounts on a regular basis. The emphasis on having enough finances to purchase food is on food access. This can be accomplished through food assistance, borrowing, trading, stocks, purchases, presents, and bartering. Access to food required having enough money or other resources to buy food (Gibson, 2012). Market proximity, social and institutional entitlement, physical insecurity due to violence, loss of coping mechanisms, including border closures that prohibit seasonal work mobility, or the dissolution of safety net organizations that formerly protected low-income people all have an impact on access. Food accessibility is positively impacted by electricity and adult literacy, however it is negatively impacted by land marginalization (FAO, 2016).

The act of using or consuming food indicates that a person is consuming enough food and has the capacity to absorb and utilize nutrients in their body. Food usage is determined by nutritional knowledge, handling, sanitation, and food quality; it is also

influenced by the way the food is prepared, stored, and consumed by the consumer's health (Omotayo et al., 2016). Certain disorders prevent the body from absorbing nutrients to their fullest potential, while growth necessitates consuming more of some nutrients. Similar to this, certain cultural bans restrict access to wholesome food on the basis of gender or age. Food security is increased by the availability of hospitals, good drinking water, female literacy, child immunization programs, and food absorption.

2.2.1 The state of food security

The Sustainable Development Goal (SDG) 2 envisaged a world free from hunger by 2030. In 2020, between 720 million and 811 persons were suffering from hunger worldwide. This number rose between 2014 and the onset of Covid-19 pandemic which contributed to pushing the pricing rates upwards. Disruptions from the Ukraine War also interfered with the global food supply chain contributing to world food crisis. Despite the assumption that there is plenty food produced to feed the world, there are 1 billion people still going to bed hungry (CGIAR, 2011). The concept of food security has progressively shifted its focus, for example from food availability to food accessibility where food could be made accessible to all individuals (Glopolis, 2013). Challenges have included, increased population growth contributing to increased food insecurity worldwide (Rayfuse & Weisfelt, 2012).

2.2.2 Global Food Security

The Sustainable Development Goals (SDGs) include, among other things, reducing inequality within and between countries, empowering women and girls globally to achieve gender equality, ending hunger, achieving food security and adequate nutrition for all, and promoting sustainable agriculture. They also include encouraging actions at all levels to address climate change. These goals were set forth by the United Nations in 2017. The State of Food Security and Nutrition in the World 2023 indicates that between 713 and 757 million people were undernourished in 2023, World Bank. (2024) from around 821 million people undernourished worldwide in 2018 despite attempts to achieve the aforementioned development goals (SDG) on food security (FAO et al., 2018; ECA, 2018). Governments, humanitarian organizations, and the media have made efforts, yet many communities still face daily hunger and starvation, raising doubts about global household food security. There's a good chance that the hunger crisis will worsen. (FAO et al., 2017) noted that following a period of decrease in hunger, new projections show that 815 million people were afflicted by hunger globally in 2016. Furthermore, the proportion of the world's population believed to be hungry rose in 2016. The food system is having difficulty addressing the globalization and industrialization of agriculture, as well as the growing marginalization of third-world farmers as a result of unfair international trade practices.

Global, regional, and national hunger were measured using multiple dimensions in the 2017 Global Hunger Index (GHI) study. It demonstrates that while there has been some global progress in ending hunger since 2000, that progress has been inconsistent and could be jeopardized (GHI, 2018). The research claims that hunger levels in a number of nations have increased after 2008, suggesting that some areas have seen a reversal of the previous decades-long progress in decreasing hunger (Grebmer et al., 2017). Similarly, according to the 2017 GHI scores, there has been a 27% drop in global hunger since 2000. Using the GHI Severity Scale, out of the 119 countries evaluated in the study for the year, one is classified as extremely frightening, seven as alarming, 44 as serious, and 24 as moderate. According to the research, just forty-three countries received a low grade. With scores in the serious range (30.9 and 29.4, respectively), South Asia and Africa south of the Sahara are the two regions of the globe most affected by hunger (Grebmer *et al.*, 2017).

The 2030 Agenda for Sustainable Development and the UN Decade of Action on Nutrition 2016–2025, which urge nations and stakeholders to collaborate in order to end hunger and prevent malnutrition by 2030, are examples of the ongoing efforts to end world hunger. According to estimates, there were 815 million chronically undernourished people in the globe in 2016, up from 777 million in 2015 but still less than 900 million in 2000 (FAO, 2017). Particularly in areas of sub-Saharan Africa, South-Eastern Asia, and Western Asia, the situation of food security has gotten worse.

These deteriorations have been particularly noticeable in war circumstances, which are occasionally accompanied by droughts or floods. The incidence of stunting in children is indicative of the situation. Although the frequency of stunting decreased from 29.5% to 22.9% globally between 2005 and 2016, 155 million children under the age of five still experience stunted growth. In 2016, 52 million children under the age of five were affected by wasting; of these, more than half (27.6 million) reside in Southern Asia (Aluisio & Fernanda, 2016).

Worldwide, there are several types of malnutrition, undernourishment in children, anemia in women, and adult obesity. Concerns are heightened by the rising prevalence of obesity and overweight. Overweight and obesity in children are on the rise in the majority of regions, and for adults, it is everywhere (WHO, 2023). 41 million children under the age of five were overweight in 2016. According to William (2017). Global warming-related climate change had an impact on family food insecurity worldwide. According to World Meteorological Organization (WMO). (2023) climate change has an impact on all aspects of food security, including availability, stability, access, and utilization. Researchers' quantitative assessments from the 20th century concluded that factors like global warming, variability in rainfall patterns, and variations in sunlight intensity have an impact on agriculture and food security globally. Good crop production was hampered in Latin America and

Sub-Saharan Africa by El Nino and La Nina. La Nina-related droughts have resulted in household food insecurity, particularly in Ethiopia, where 7 million people are considered food insecure and an additional 10 million are considered drought-prone (IPCC, 2021). In contrast to previous events like the famine in Bengal in 1943 that claimed an estimated 1.5 million lives, the similar famine in Ethiopia between 1888 and 1892 that killed a third of the population, the subsequent famine in the same country between 1972 and 1974 that claimed about 200,000 lives, and the famine in the Saharan countries in 1973 that killed 100,000 people, the global food supply was relatively stable in the recent past, FAO. (2022).

A number of nations rely on food imports. For instance, more than 80% of Haiti's staple rice is imported, which results in over 50% of the population being undernourished and 24% of children suffering from chronic malnutrition. Ghana is now vulnerable to the skyrocketing global food costs as a result of importing a sizable amount of its staple foods, such rice, in order to export to Europe for financial advantage. The need for food assistance has a significant impact on food insecurity; for instance, 10% of Burundi's population needs food assistance annually, FAO. (2022). for many people, food has become an expensive commodity due to rising food prices.

The increase in the cost of staple crops like wheat, rice, and corn is one factor contributing to global food insecurity. It is proven that as of March 2008, rice inflation was 75% and wheat inflation was 120% (Ronald, 2010). The cost of food is rising due to a multitude of variables. These include rising demand for food grains as a result of rising incomes in developing market economies; rising earnings also result in rising demand for dairy and meat products, which raises the price of grains since grains are a major ingredient in the manufacture of meat (IFAD. (2020). The development of biofuels, which also drives up grain prices, has resulted in a drop in worldwide investment in agriculture and rural regions; the growing price of oil has driven up the cost of agricultural inputs including fertilizer, transportation, and water (FAO, 2021). Weather-related changes have also had an impact on global food prices, which has led to low grain stockpiles and increased food costs overall. This has created emergency situations around the world.

Food security is also influenced by conflicts. Shocks linked to climate change are making conflicts more frequent, which has a major impact on food security. Severe food crises and newly re-emerging famines are largely caused by conflict, and hunger and undernutrition are much worse in areas where institutional capacities are poor and hostilities are protracted. When it comes to addressing food insecurity and malnutrition in conflict-affected areas, a conflict-sensitive approach that coordinates measures for immediate humanitarian relief, long-term development, and maintaining

peace should be treated seriously. Other causes of household food insecurity worldwide include increased use of non-agricultural technologies, political unrest, environmental deterioration, instability, and rapid population rise.

2.2.3 Food Security in Africa

According to a 2017 FAO assessment, after years of decline, the prevalence of hunger in Africa was on the rise (FAO, 2019). Out of the 821 million undernourished people in the world, 257 million Africans, or one in five, are undernourished (FAO and ECA 2018). Of the undernourished, 20 million live in Northern Africa and 237 million in Sub-Saharan Africa. In sub-Saharan Africa, there were 32.6 million more undernourished people in 2015 compared to 34.5 million in Africa, and 1.9 million more in Northern Africa. The rise in undernutrition in Western Africa accounts for over half of the increase, with Eastern Africa accounting for the remaining third. Early in 2017, there was a severe spike in hunger, leading to the declaration of famine in some parts of South Sudan and the issuance of famine alerts for three additional contexts: northeast Nigeria, Somalia, and South Sudan (FAO, 2017). The situation has not improved in the past ten years, and according to estimates from the Food and Agriculture Organization, 217 million out of 848 million Africans were undernourished in 2003–2005.

Vulnerability to food insecurity has been linked to a number of factors. Poverty and

food costs are related to food insecurity (Adeleke *et al.*, 2011). Conflict that is exacerbated by droughts or floods, which is partially linked to El Niño events, for instance, caused the food security situation in some parts of sub-Saharan Africa to drastically worsen in 2016. This is especially the case in cases where the effects of conflict on food security are exacerbated by droughts or floods. FAO (2017) found that the El Niño phenomenon was partially responsible for the drought and floods.

Other factors include most African countries being primarily agrarian with neither enough food being produced nor enough revenue to purchase the food surplus existing in world markets, affecting both consumer credit and production/enterprise credit; poor traditional postharvest management of food crops; poor infrastructure (roads); high food inflation rate like in 2008, the Consumer Price Index for Food in South Africa was 17.8%. People making less than US\$200 a month spent more than 30% of their income on food, while the price of necessities increased by more than 6% World Bank. (2023). Additional factors contributing to food insecurity, such as irregular rainfall patterns, dwindling soil fertility, pests and diseases, restricted land access for certain prospective farmers, low commodity prices, dependence on conventional farming practices like using hand hoes and outdated seeds and animal breeds, and inadequate extension services, raising serious concerns among Ugandan policy makers.

In addition to the severe household food insecurity that occurred in Ethiopia in 2007–2008, further climate shocks have led to back-to-back droughts that have skyrocketed hunger and elevated malnutrition rates (FAO, 2018). 2017 saw repeated droughts continue to impair agricultural output in several parts of the Horn of Africa, most notably in Somalia, eastern Kenya, and southeast Ethiopia (FSIN, 2018). The price of staple foods skyrocketed in Ethiopia, Kenya, Niger, Nigeria, South Sudan, Sudan, and Uganda due to drought and/or violence. However, conditions and harvests in Southern Africa, which was severely impacted by the 2016 drought, recovered in 2017.

2.2.4 Food Security in Kenya

In Kenya, over 5.4 million people faced acute food insecurity between March and June 2023 (IPC 2023). In Busia County 54% of households face food insufficiency and child malnutrition Ochieng, O., Ouma, et.al (2024) despite efforts to achieve food security. Although Kenya's rate of poverty is lower than that of Sub-Saharan Africa as a whole, the country is making progress in lowering its poverty rate. The estimated poverty rate decreased from 43.7% in 2005 to 36.8% in 2015 (World Bank, 2018). Kenya's GDP per capita increased by 2.4% year on average between 2007 and 2017, reaching \$1,508 in current US currency. Nevertheless, from 2005 to 2015, the number of individuals living in poverty increased in absolute terms due to the nation's fast population expansion. The forestry, fishing, and agricultural sectors are essential to Kenya's economy. They accounted for 38% of all employment and 32% of the GDP

of the nation in 2017, with growth in the agricultural sector contributing the most to the decrease in poverty (World Bank, 2018). The nation's farmers, however, confront a significant obstacle as a result of the population's rapid increase, which reduces the average size of land parcels that each farmer can access (FAO, 2018).

Production of food is not keeping up with consumption. In order to satisfy consumption in 2030, annual agricultural production will need to rise by an estimated 75% from 2015 levels (Wellborn, 2018). By 2040, agricultural consumption in Kenya will surpass production by about 20 million metric tons. This implies that about 25% of agricultural demand would need to be met by imports. 51% of Kenyans, primarily the impoverished, did not have enough food in 2010. Kenya's population increased quickly from 10.9 million in 1969 to 38,473,893 in 2010, and by 2030, it is expected to reach 63 million (NCPD, 2016). This suggests that extra nourishment is required. Based on total household income and the assumption that 60% originates from on-farm revenue, small-scale farmers currently make KES 400 per day. However, over the last ten years, earnings have not increased at the rate needed to reach the Sustainable Development Goal of doubling incomes by 2030. According to GOK (2018), historical trends indicate that if incomes remain unchanged from KES 400/day today, they should reach KES 465/day by 2023.

The Kenya National Food and Nutrition Security Policy of 2011 aimed to increase

exports while simultaneously achieving self-sufficiency in fulfilling food demands (National food and nutrition security policy, 2011). Only during the 1970s, when maize output reached such a high level that some was exported, was this goal ever met. The 2010 adoption of the current Kenyan Constitution, which explicitly recognizes everyone's right to adequate, wholesome food, safe, and clean water in sufficient quantities, as well as provisions for women's welfare, gave the food security debate a significant boost. Kenya also has policies that address issues related to food security and women.

Key policy documents such as The National Food and Nutrition Security Policy (2011), which aims to achieve food self-sufficiency, have propelled Kenya's economic growth. In 2017, the government unveiled the National Big Four Agenda, which focuses on Food and Nutrition Security and includes immediate priorities and actions to improve large-scale production, boost small-holder productivity, and lower food costs. Additional food security strategies include The Vision 2030 (Republic of Kenya (GoK, 2007) and the Strategy for Revitalizing Agriculture (SRA 2004–2014), which continues to be the primary reference document augmented by the Strategic Plans of particular Ministries dealing with Agriculture and Rural Development (ARD).) Kenya's development blueprint, spanning from 2008 until 2030. The Agricultural Sector Development Strategy (ASDS) 2010-2020, Kenya's comprehensive national agricultural sector policy framework, envisions a food-secure

and prosperous country through increased productivity, commercialization, and competitiveness of agricultural commodities and enterprises as well as developing and managing factors of production. Vision 2030 is the impetus for economic expansion and further isolates agriculture as a key sector in the strategy that will drive Kenya to become industrialized.

Kenya has several legislative tools at its disposal to carry out policy matters pertaining to agricultural and food security. The Agricultural Finance Corporation Act, the Crops Act, the Agriculture, Fisheries and Food Authority (AFFA) Act, and the Seeds and Plant Varieties Act are among the instruments. The Crops Act helps with the production, distribution, marketing, and inputs of scheduled crops. It also establishes a commodities fund that offers farmers access to low-cost finance to help them upgrade their farms and buy inputs. The Integrated National Land Use Guidelines, the Biosafety Act, the Biotechnology Policy, the National Livestock Policy, the Environmental Management and Coordination Act, and the Fertilizers and Animal Foodstuffs Act are further significant protocols.

In addition to the federal government's regulations governing food security, the majority of counties are currently adapting the federal policies to fit their own needs. In numerous instances, the Counties continue to be directed by the County Integrated Development Plan (CIDP). As stated in Article 191 of the Constitution, all counties

should implement the Kenyan Vision 2030, which centers on the Agricultural Sector Development Strategy. County governments will use this as a roadmap to create their own County Integrated Development Plans while incorporating federal policies.

The Kenya Chapter of Participatory Ecological Land Use Management (PELUM) examined how international policies were applied and domesticated in order to push for complete adherence by East African Community (EAC) regional, national, and local authorities. It was mentioned that policies need to be reviewed and improved for implementation because food security is still a problem in Africa (PELUM, 2015). Numerous deficiencies were discovered after a review and evaluation of national policies. Gaps were identified in the policies, laws, and emerging issues compared to the Constitution to ensure compliance. These gaps included a lack of legislation recognizing culture in relation to seeds, plant varieties, and genetic material, as well as delays in the enactment of policies and the implementation of directives on the agriculture sector. The review also points out that while the 2010 Kenyan Constitution upholds international treaties that support, among other things, agriculture and food supply, the pre-Constitution policies and laws need to be reviewed to take into account the new dispensational issues on the environment, land, water, and ecological land use management, thereby integrating the various legislations related to food security. More financial assistance for county-level agricultural development as well as interaction with authorities at different stages of the enactment and implementation process are required (PELUM, 2015).

2.2.5 Challenges of food security in Kenya

Kenya faces a number of obstacles to food security. One of the things influencing food insecurity in Kenya is poverty. Lack of access to causes of hunger, clothing, housing, food, health care, and education are all manifestations of poverty. Roughly 80% of the nation's people lived in rural areas where agriculture predominates (KNBS). (2019, and nearly 24% of Kenyans were not able to support themselves on less than \$1 per day in 2007–2008. The World Food Program (WFP) reports that the average family in Kenya spends about half of their household income on food, a sign of food insecurity and poverty (WFP, 2011). (Nganga, 2015). Kenya suffered an alarming rate of food insecurity as a result of rising food costs and was the leading importer of food and agricultural products in East Africa. Despite the fact that the nation's agricultural output has increased positively over the past 40 years, there have been significant agricultural sector declines in some areas during the 1980s and 1990s, as well as multiple instances of acute and periodic food shortages (World Bank, 2023).

According to Muigua (2014), a large number of the impoverished do not have the resources to support and participate in sustainable agriculture methods. Many rural poor farmers lack access to agricultural finance and extension services, which frequently require collateral and training on cost-effective, sustainable, and productive agricultural practices. According to Kenya National Bureau of Statistics. (2023), over

half of Kenyan women and girls live below the poverty line in rural areas and more do so in urban areas. About half of all homes headed by women are deemed to be impoverished and women are more likely than men to be poor and susceptible to adverse shocks.

The production of food, livestock, and overall livelihoods are all significantly impacted by the consequences of climate change and the extreme weather events that go along with it, posing a danger to sustainable development (Water and Housing Sector Report, 2012). Examples include droughts in Kenya's arid regions, which lower agricultural and livestock productivity among households there, and floods, which force people to relocate and put them at risk of food insecurity in the home. 700,000 people were thought to have been impacted by the 2006 floods in the nation; most of them were unable to receive food assistance because of impassable roads. There are two categories for food insecurity: "chronic" and "transitory." "Transitory" food insecurity is inadequate access to food because of fluctuations in food production, food supplies, and income, whereas "chronic" food insecurity is the result of consistently inadequate access to food and is caused by the chronic inability of households to either produce or purchase sufficient food (FAO, 2021).

Kenya's food crisis is mostly a transient one, brought on by recurrent droughts over time, institutional shortcomings, and ineffective policies that reduce the output of

food crops and cattle. The ASAL food crisis was primarily attributed to climatic and environmental factors; however, other factors have also played a role, such as inadequate income sources, unscrupulous cereal marketing channels, a lack of crop varieties resistant to disease and drought, limited crop diversification, inadequate storage techniques, a lack of credit services, inaccessibility of agricultural services, and illiteracy.

Since the early 1980s, there has been a decrease in the per capita supply of major commodities. FAO. (2022). implied that since not everyone has equal access to food production or availability, food insecurity can be seen as a matter of "entitlements." A breakdown in their "means" of obtaining food deprives some people of food. Food insecurity has arisen in Kenya without a decrease in the availability of food. People can still go hungry even with increased production per person. Other intervening factors, such as patterns of food distribution, national policies, and subsidies, are to blame for this.

Food shortages in some areas of Kenya have also been attributed to the rejection of native crops resistant to drought and soil conservation techniques, as well as land fragmentation beyond economically viable production capacity O'Brien, K. (2020). This is being fixed, and steps are being taken to assist farmers in returning to these methods. Notwithstanding the market's lack of acceptance of local crop varieties,

feeding practices and preferences are evolving. The difficulty of farmers to obtain the results of food crop research, the reduction of extension services, the unmotivated work of extension workers, the usage of primitive farming techniques, tribal conflicts, and displacement are further difficulties.

2.2.6 Recent Achievements of Food Security in Kenya

The Kenyan economy is heavily dependent on the agriculture and fishery sectors, which contributed 26.4% of GDP and 18% and 60% of formal and total employment, respectively, in the 2013–2014 fiscal year (Institute of Economic Affairs, 2013). The Kenya Vision 2030, the Agricultural Sector Development Strategy (ASDS) 2010–2020, the County Integrated Development Plan (CIDP), the 2010 Kenyan Constitution, the National Food and Nutrition Security Policy, The Kenya Vision 2030, the Big Four Agenda, and other appropriate policy interventions have all contributed to the country's continued progress in agriculture, food security, and nutrition.

This is combined with the purposeful public funding of important infrastructure initiatives and the implementation of performance-based management frameworks throughout the public sector. Consequently, the agricultural sector has experienced development, with estimates of GDP growth in the first quarter of 2007 at the market rate indicating a 6.3% increase from the 4.1% in the same quarter in 2006. Although income disparity persists, with the richest 10% of the population earning 40% of the

national income, the percentage of Kenyans living below the poverty line has decreased from 47% in 2005 to 39% in various counties in 2012. (Feed the Future, 2018). According to Feed the Future surveys conducted between 2013 and 2015, poverty declined from 46% in the eastern region to 41% in the northern region and from 61.9 % to 58.5 % in the eastern region.

Enhancing agricultural productivity in arid and semi-arid regions through public-private partnership investment is a crucial tactic. First, Kenya's economy is beginning to slowly recover after several obstacles slowed growth in 2017 (World Bank, 2018). With the help of better rains, the end of political unrest that discouraged investment, and the continuous global economic recovery, GDP growth is predicted to rebound to 5.5% in 2018 and increase gradually to 6.1% by 2020. Increasing investment in postharvest technologies and low-cost, small-scale irrigation projects, along with water pans and other climate change adaptation strategies, can help increase yields and decrease losses.

Increasing the productivity of agriculture also requires strengthening supply chain management to provide smallholder farmers with better access to markets (World Bank, 2018). Kenya may boost food security nationwide by increasing agricultural output and reducing its reliance on agricultural imports through these initiatives. Approximately 80% of the nation's population lives in rural areas where agriculture is

the primary industry, World Bank. (2023). Despite the fact that the nation's agricultural output has increased positively over the past 40 years, there have been significant agricultural sector declines in some areas during the 1980s and 1990s, as well as multiple instances of acute and periodic food shortages World Bank. (2023).

2.2.7 Food Security in Busia County

In Busia County 54% of households face food insufficiency and child malnutrition Ochieng, O., Ouma, et.al (2024) which remains a concern. Bunyala, Busia, Butula, Nambale, Samia, Teso North, and Teso South sub-counties make up Busia County. The County is 1,694.5 square kilometers (Km²) in size. According to the 2009 National Population and Housing Census (GOK, 2009), there were 743,946 people living in the county, with 387,824 (52.13%) women and 356,122 (47.87%) men. According to CIDP (2023; 2027), the population was expected to reach 987,000 by 2023. In comparison to the national poverty rate of 45.9% or the Bungoma poverty index of 52.9%, the same CIDP places the poverty level in Busia at 69.3%. Income disparity remains a concern in Kenya, even if the percentage of the population living below the poverty line decreased from 47% in 2005 to 39% in 2012. Poverty in western parts climbed from 43% to 49% for seven counties in Busia, which are among the worst in the country (Feed the Future, 2018).

Namenya (2018) found that in Busia County, 55.3% of households experienced food insecurity on average. This suggests that a sizable section of the county's population lacks proper access to food, putting them at risk for malnutrition and other associated health problems. The majority of the food produced in Busia County is used for subsistence, and it is frequently impacted by subpar farming methods, little input use, and limited market accessibility. Furthermore, low crop yields and livestock productivity are frequently caused by climate variability, which is typified by irregular rainfall patterns and protracted dry periods. This exacerbates the county's problems with food security.

The primary economic activities of Busia County are trading, fishing, and agriculture. The core of the Busia economy is agriculture. The livelihoods of the general public, as well as the growth and development of the County, are significantly influenced by the agricultural sector. The County Fiscal Strategy Paper (2014) states that the industry has also made a significant contribution to increased human health, food security, and nutritional status. With 141 ha of total cultivated land, the County's arable portion occupies 164 ha. 86 percent of the arable land is so under cultivation.

The town does not have enough food, even though more than 80% of the people gets their food from agriculture. 60% of homes have enough food to last between one and

three months, but just 5% of households have enough food to endure for a full year (Busia County Fiscal Strategy Paper, 2014). Due to loss of livelihood, smallholder farmers are disproportionately impacted by poverty and ongoing food insecurity.

Just 12% of the 124 km² of potential irrigated area in Busia are now under irrigation (Busia County Fiscal Strategy Paper, 2014). Due to the significant labor requirements and the costs associated with purchasing irrigation equipment, the documented irrigation is low. With an annual rainfall of 1200–1800 mm, the county enjoys a bimodal rainfall pattern. However, as a result of climate change, new, unpredictable rainfall patterns are emerging. In soils, acrinols predominate. Rivers that cut through the county and Lake Victoria, a vast body of water that borders the Bunyala and Samia Sub-counties, are just two of the many environmental features and natural resources that make up Busia County. The county contains two rivers: the Sio River flows through Nambale and Samia Sub-Counties, and the Malaba and Malakisi rivers flow through Teso Sub-County, both of which have their source on Mount Elgon. The Nzoia River drains into Lake Victoria via Bunyala Sub County, rising from the Cherangani Hills. According to the 2014 Busia County Fiscal Strategy Paper, there are 154 boreholes, 458 shallow wells, and 237 springs. Water supply schemes are in operation in all of the Sub-County headquarters in Busia County, including the major metropolitan centers like Bunyala Supply Scheme for Port Victoria town and its surroundings and Sio water supply for Busia town and its environs.

Though they haven't been successfully implemented, Busia County has created a number of policies and programs pertaining to food security to address the issues the area faces. The following are a few noteworthy policies and initiatives: The County's development agenda, which includes the agriculture sector, is guided by the Busia County Integrated Development Plan (CIDP), a comprehensive development plan. In order to improve food security in the county, the plan places a high priority on raising agricultural productivity, encouraging value addition, and expanding market accessibility. The Agricultural Sector Development Plan, a part of the Busia CIDP, is dedicated to enhancing the performance of the agricultural sector. The Busia County Climate Change Action Plan seeks to strengthen the county's resilience to climate change, which poses a serious threat to the county's food security. It also promotes sustainable agricultural practices and the creation of market linkages for farmers. The plan seeks to improve smallholder farmers' access to agricultural inputs, credit, and extension services. The plan places significant emphasis on the promotion of climate-resilient agricultural techniques, including conservation agriculture, agroforestry, and rainwater collection, in addition to the creation of emergency response plans and early warning systems.

The Busia County Food Security Bill is a piece of proposed legislation that would establish a legal foundation for the county's efforts to promote food security. The

Busia County Food and Nutrition Security Policy, which aims to improve food and nutrition security among Busia residents, is a bill that aims to increase food production, support sustainable agriculture practices, and guarantee that all residents of Busia County have access to adequate and nutritious food. The strategy places a high priority on encouraging sustainable agricultural methods, expanding access to food and nutrition information, and raising the nutritious content of food consumed in the county.

With the promotion of sustainable agriculture methods, increased agricultural output, and improved access to markets and other support services for smallholder farmers, these policies and programs should improve food security in Busia County. The unplanned, densely populated county towns and metropolitan districts have inadequate drainage and sewage infrastructure, no authorized dumpsites, and poor planning, all of which contribute to land degradation. Food production has decreased, drought intensity has grown, there is an oversupply of non-biodegradable material (plastics), and disease epidemics are results of environmental mismanagement. The Environmental Management Coordination Act (GoK, 1999) is being enforced by the National Environmental Management Authority (NEMA), the National Environment Government's supervisory authority.

Due to gender inequality and sociocultural variables like food taboos, which also

affect hunger and raise the risk of malnutrition, women and youth experience disproportionate disadvantage. A number of sociocultural variables, including pervasive illiteracy, job insecurity, and the absence of nutrition training received by mothers, can contribute to poverty and malnutrition. According to the Fiscal Strategy Paper (2014), men wait to spend the money earned from sugarcane while women work on the farms. The fact that 97.85% of the households relied on firewood for cooking and heating and that the majority used kerosene for lighting has an impact on women and girls as well (Busia County Fiscal Strategy Paper, 2014). Most people utilize electricity in metropolitan areas.

The Busia County Fiscal Strategy Paper (2014) identifies several obstacles to achieving greater food security and sustainability, such as unstable weather patterns, expensive agricultural inputs, subpar planting materials, an excessive dependence on a small number of food crops, unprofitable landholding practices, a lack of knowledge and expertise about efficient farming, raising livestock, and fishing, and unfavorable attitudes and stereotypes regarding land use. The strategies to address the issues are listed in the same document and include investing in non-rain-fed agriculture, implementing public-private partnership programs to supply farm inputs, high-quality planting materials, and crop diversification, endorsing modern farming practices, utilizing idle land for farming, offering extension services for agriculture, livestock, and fishing, and raising public awareness of affordable technologies. Ending hunger

and undernutrition may be possible with the increased involvement of the private sector, particularly if the correct incentives and environments are in place.

According to the Busia County Fiscal Strategy Paper (2014), the county would gain from investments in agricultural transformation and food security in order to increase food supply, lower food prices, support the growth of agro-processing enterprises, and promote export growth to neighboring counties and even international markets. The entrance to the larger lake region and beyond is located in Busia. Kenya's main trading partner is Uganda. Trade between the two countries is mostly dependent on the borders of Busia and Malaba. Possibilities to take advantage of this advantageous position strategically include: creating an atmosphere that is favorable for commerce and investment; offering facilities, services, hospitality, and necessities to attract clients and investors.

Finland has worked to enhance the lives of the populace, particularly women and vulnerable groups, and to alleviate poverty and food insecurity through the Program for Agriculture and Livelihoods in Western Communities (PALWECO). The program's objectives were to revive agriculture through the use of value chain theory and sustainable practices, to increase market accessibility for agricultural products, to build better infrastructure, and to provide new job opportunities, particularly for young people.

Huge investments have been made in the development of Busia County, with the goal of reducing poverty through the empowerment of rural communities, the involvement of several stakeholders, and the application of knowledge, innovation, and business development to agriculture. According to PALWECO, the vast majority of people are affected by an unequal distribution of wealth and poverty. Therefore, methods of developing economic activity in the agricultural sector are needed to improve the lives of the poor, raise their income, and create jobs that will boost agricultural productivity and food security while strengthening the resilience of local communities.

The Agricultural Sector Development Support Program (ASDSP), which aims to transform the agricultural sector into a competitive, innovative, and modern industry that will reduce poverty and improve food security, is another important player in improving livelihoods in Busia. Its goals are to increase equitable income, employment, and improved food security for both male and female target groups as a result of improved production and productivity in the rural smallholder farm and off-farm sectors. The Swedish International Development Cooperation Agency (SIDA) granted Busia 3,621,000, while GOK provided 3,770,000, for a total of 7,391,000 (ASDP, 2013).

2.2.8 Models for determination and measurement of food security

Even while the severe indications of food insecurity are frequently evident, many households who struggle to obtain food are less recognizable. Differentiating households with differing levels of food insecurity is a challenge to operational agencies since it helps them target and assess their efforts. The need for more accurate and straightforward measurements at the home, community, and even national levels is expanding.

Several measuring models predicting global, regional, national and household food security trace their roots to 1974 world conference. However, Mbukwa (2013) notes that there are challenges of measuring/ predicting household food security due to inadequacy of proper models, mechanism, tools and approaches. Similar to this, Jones et al. (2013) stress that determining the right measure of food security is essential for directing financial and food aid, assisting early warning systems for famine and worldwide monitoring systems, assessing nutrition, health, and development initiatives, and influencing public policy in a variety of areas. Despite studies and a developing definition of food security and its application, the various techniques and tools for assessing food security—including assessment tools, vocabulary, measurement, and validation—complicate this crucial effort.

The [World Food Summit \(WFS\)](#) initiated and mandated FAO to monitor the progress

towards achievements of objectives set by the WFS and the MDGs in 1996 of reducing the number of undernourished people to half their level by 2015. In 2000, the [Millennium Declaration](#) targeted to "halve, the proportion of people who suffer from hunger by 2015.

FAO continuously worked on methodologies and parameters needed to estimate the prevalence of undernourishment. They reviewed and refined the [practical structure](#) for estimating the prevalence of undernourishment, to identify the most appropriate model. The Changes resulted in use of indicators including: [Food Balance Sheets](#), Food consumption surveys, Anthropometric measures, Minimum Dietary Diversity Score for Women (MDD-SW), Months of Adequate Household Food Provisioning (MAHFP), Food Consumption Score (FCS), The Livelihoods Coping Strategy Index (LCSI), Food Consumption Coping Strategy Index (FCC) and or Food Expenditure Share (Jones *et al.*, 2013).

2.2.8.1 [Food Balance Sheets](#)

Their analysis of a nation's domestic food supply, domestic food consumption, and domestic food usage yields vital information on that nation's food system. Food balance sheets are updated yearly and generated using official figures from almost every country. The statistic roughly represents the number of people in a nation whose daily food availability falls short of the minimal quantity (kilocalories) required internationally.

2.2.8.2 Food consumption surveys

They offer data on food consumption, which is derived from converting food expenditure figures into calorie and quantity intake. Regular surveys of nationally representative households are carried out with ever-increasing precision. Compared to the above-mentioned FAO technique, food consumption surveys offer a more accurate measurement of food energy shortage at the household level. The household surveys may encounter difficulties with data accuracy, high costs, timeliness, coverage, and cross-national and cross-time comparability.

2.2.8.3 Anthropometric measures

The Demographic and Health Surveys (DHS) and integrated household expenditure surveys (such as living standard measurement surveys) are two examples of nationally representative surveys that serve as their basis. These surveys collect anthropometric measurements of all household members, children under the age of five, and women and young children (National Center for Health Statistics, 2023). The measurements yield prevalence rates of underweight (low weight for age), wasting (low height for age), and stunting (low height for age). Actionable indicators can be used to target particular treatments, track changes in nutritional status, and track how programs and policies are being received. The limitations of anthropometric measures include the fact that data is frequently only gathered on children and, in many circumstances, their caregiver (as in the DHS). Additionally, data is typically not collected annually, making it impossible to track short-term trends. Food supply data at the county or

national level can be used for the following metrics: micronutrient densities (micronutrients per 1000 kcal), the prevalence of undernourishment, and the third healthy eating index (score based on dietary rules or food groups, negative components – fats, sweets).

A key element of dietary quality is dietary diversity (DD), which is defined as consuming a greater variety of foods and food groups, which is linked to better nutritional adequacy (Labadarios et al., 2011). Meal frequency is regarded as a stand-in for energy intake from sources other than breast milk. Measuring dietary outcomes at the individual level is difficult because diet is a complex set of behaviors that takes into account proxies for diet quality and indicators of diet diversity. It is also difficult because there are many nutrients that should be considered essential, aggregating data into a single index, and the costs involved.

2.2.8.4 Diet quality and diversity

Determination of food security at Household may employs, Food Security Scores using: The Minimum Dietary Diversity Score for Women (MDD-SW) (FAO, 2016), Months of Adequate Household Food Provisioning (MAHFP), Food Consumption Score (FCS), The Livelihoods Coping Strategy Index (LCSI), Food Consumption Coping Strategy Index (FCC) and or Food Expenditure Share (FES) (Fanta project 2010; USAID 2002) as elaborated: the Minimum Dietary Diversity Score for Women

(MDD-SW) targets only women in child-bearing age for age 15-55 years and Questions 12 different food groups, asking if they ate it in the past 24 hours. Analysis involves eight Food Groups among but not limited to meat, eggs, poultry and fish with a threshold Minimum of 5 groups.

MAHFP - Months of Adequate Household Food Provisioning target everyone and questions Months in the past year where you did not have enough food to eat for the full month? It analyses: 12 minus number of months where there is not enough food. Food Consumption Score (FCS) also targets everyone and questions how many days in the past week a person ate a certain food focusing on 12 food groups. The analysis involves grouping food into 8 groups. The weights consider (meat, dairy 4; pulses and nuts 3; cereals 2, vegetables, fruits 1; sugar and oils 0.5). Thresholds are translated as Poor (27 or less), Borderline (28-42) or Acceptable (above 42).

The Livelihoods Coping Strategy Index (LCSI) measure targets everyone while questioning if anyone in a household engaged in certain behaviors (11 coping strategies) due to a lack of food or a lack of money to buy food in the past 30 days. The analysis Score Mean value (range 0-11), categories depending on type of coping strategy as Categories: Normal, Stress, Crisis or Emergency.

Food Consumption Coping Strategy Index (FCC) targets everyone and trails the last 7 days, checking if there were days when a household had to employ one of the five strategies (to cope with a lack of food or lack of money to buy food) Analysis looks at how many respondents used what strategy at least one day in the past week. Food Expenditure Share (FES) targets everyone and estimates the total cash/credit expenditure on each group in the past 30 days or Estimates consumption of the non-purchased food items. The analysis queries the total amount spent on food. How much was spent overall on non-food items? What percentage of your overall spending do you spend on food? Which are then divided into different age groups? Food group availability based on bio fortification and other specialized crop/livestock treatments, as well as energy availability (or food poverty) for household food security interventions, are the main topics of the food expenditure modules.

Measures taken at the county or national level using food supply data will take into account the following: the prevalence of undernourishment (energy per capita, distributional measure, and threshold); Micronutrient densities, which measure the amount of micronutrients per 1000 calories, and the third is the Healthy Eating Index, which assigns a score based on food types, dietary requirements, and negative components like sugar and fat. Meal frequency is thought to be a proxy for energy intake from foods other than breast milk. Dietary diversity (DD) is a significant factor in determining food security. Consumption of a higher number of food items and food

groups is associated with improved nutritional adequacy of the diet (Labadarios et al., 2011).

It is important to note that multidimensionality, the large number of nutrients that are deemed necessary, and the consolidation of data into a single indicator such as the Mean Probability of Adequacy make evaluating dietary effects at the individual level difficult. Because diet is a complicated set of behaviors that takes into account proxies for diet quality and indications of diet variation, measurement is also difficult and expensive.

2.3 The contributions of women to food security

Women contribute significantly to the food security of households worldwide. World Bank. (2023). provides a comprehensive overview of women's roles in Kenyan agriculture. It delving into aspects of women's involvement, in land ownership, decision-making, and income control highlighting the significant impact of women's empowerment on food security outcomes. Women are the primary agents of food security and household welfare in rural areas because they are responsible for the vast majority of food production (FAO, 2023). Women are employed as unpaid family workers, independent contractors, producers, workers on and off farms, business owners, service providers, traders, and researchers and inventors of technology. Accepting this gender distribution of labor and expertise can help agricultural

enterprises and the food security sector in developing countries overcome gender barriers associated to food production and contribute to general development by breaking intergenerational cycles of poverty.

Despite their undeniably important responsibilities in childbearing, family feeding, and income control, there are signs that women's positions within subsistence economies are becoming more precarious O'Brien, K. (2020). There are complex relationship between rural women, food security, and sustainable development because they face challenges by in accessing and controlling resources, hindering their ability to contribute to household food security. Women's income is typically linked to improvements in the family, especially in terms of the wellbeing of the kids. The primary source of revenue for men comes from their roles as breadwinners. However, it seems that men's income increases the portion of household spending on goods and services that are mostly used by males. Women's capacity to effectively provide food for their households is severely being hampered by their incapacity to engage in and have an impact on important decisions pertaining to household livelihoods, World Bank. (2023).

Improving the standard of living in rural regions, farming, and addressing food security are all areas in which women are essential. 186 nations honored the vital role that women play in ensuring food security at the World Food Summit. The goal of SDG 5 is to empower women and girls and attain gender equality. Backyard

agriculturalist women are vital to their families' food security because they grow grains, vegetables, and other staple items that are eaten at home. Furthermore, excess food is sold at neighborhood markets, bringing in money for them to add to their diets. However, because of certain societal stigmas and gender biases, their contributions are frequently hidden. Women in agriculture are rarely given enough attention by government programs. This reduces the potential advantages of programs, particularly those pertaining to population control, food production, nutrition, household income enhancement, literacy, and poverty reduction Kabeer, N. (2018).

Women actively engage in most phases of the value chain (from planting season to harvest), agro-industrial operations, and marketing, regardless of the primary agricultural activity of the family. They are crucial to the raising of tiny cattle as well. When it comes to large-scale livestock husbandry, their duties typically include cleaning stables and stalls, as well as providing the animals with water and milk. The earnings from these sources assist in providing for necessities that are not met by the income from subsistence farming (FAO, 2022). Decisions made by households on the usage and distribution of income are associated with improvements in the nutrition of the family. When managed well, agriculture can benefit rural population distribution, food security, and poverty reduction. Raising the amount of farm income enhances household income overall, suggesting that agriculture continues to be a significant

source of income for households in addition to non-farm sources

Women are more likely than males to be involved in certain animal species and activities, and they share responsibility for animal care with men and children. When it comes to making money from their animals, households led by women are just as successful as those headed by men Kabeer, N. (2018). However, due to labor shortages, they often own fewer animals.

Owning livestock increases the likelihood that women will make decisions about the distribution of livestock, livestock products, or income derived from these on household consumption, increasing the likelihood that households will consume these products. This is especially appealing to women in societies where access to land is restricted to men (FAO, 2021). When women own animals, homes can have enough food for a longer period of time. Increasing women's ownership of assets, such as cattle, benefits women's well-being as well as food security, child nutrition, and education.

Women also work as entrepreneurs and supply labor before, during, and after the catch in both artisanal and commercial fishing. For instance, the so-called "fish mamas" are quite important in West Africa. They typically own capital and actively participate in coordinating the entire fisheries chain, from fish production to fish sales.

This amounts to 12% of the entire amount. Women made up 21% and 24%, respectively, of all fishermen and fish farmers in China and India, two significant producing nations (FAO, 2011).

Women and girls are the backbone of smallholder agriculture in developing nations. Within primarily domestic marketplaces, they work as producers, laborers, processors, and traders. Nonetheless, women continue to be mostly misunderstood and underappreciated despite their enormous contribution to food production, important position as consumers, and family careers. Sweetman (2012) Food preparation and production in households are likewise dominated by women. In most underdeveloped nations, women produce 60–80% of the food, and they produce half of the food produced worldwide. According to Kabeer, N. (2018), providing rural women with equal access to educational resources will boost their performance and free them from social marginalization. Land reform, rural welfare, farming systems development, and agricultural extension are further areas where women's ability could be effectively utilized. Significant advancements have been noted in instances where women's potential has been intentionally realized, such as the expansion of institutional credit and home water supplies.

Increasing the output and productivity of women will enhance the food security of

households, eliminate barriers to their work, and improve their access to resources and knowledge. In order for women to fully utilize their creative potential and make a positive impact on their families, communities, and country, they must not be ostracized but rather mainstreamed into economic and social spheres. Furthermore, women have historically played a major role in running houses and doing the majority of the labor required for those households to run smoothly. Due to the ongoing significance of land for earnings, employment, and food security, women's rights to land must be taken seriously. Gender inequality is therefore perpetuated by gender systems that just ensure beneficiaries have the right to access resources without providing them with the opportunity to control and own those resources.

Research conducted in Ghana on the distribution of income across genders has revealed that women spend the greatest percentage of their earnings on feeding their family, with health care and other household expenses coming in second, African Union. (2020). When women have not cultivated enough of these food crops themselves, they purchase additional millet, vegetables, oil, and salt in addition to other necessities. Food security is almost as important to many Ghanaian impoverished women as income. In an effort to cut down on spending on non-essentials, initiatives taken by women have resulted in either purchasing food for each group member or giving members a percentage of the food the group produces. The money earned benefits women's families.

Women are essential to agriculture in Kenya and many other African countries because they produce and distribute food. Over 80% of Kenyan women reside in rural areas, where they work as small-scale farmers, wage workers, and family caregivers, among other multifaceted professions. On family holdings, women provide the majority of the labor needed for the cultivation of food crops, and on small and medium-sized holdings, they increasingly provide the majority of the labor needed for the production of cash crops. According to estimates, women in Kenya only oversee 27% of smallholdings. Hence, women play a significant role in agriculture and small animal husbandry, crop preservation, processing, and marketing, as well as food preparation for both personal use and commercial purposes. Women also make up a large portion of the workforce in land-related industries. websites (Feed the Future, 2018) Despite Kenya's generally favorable agriculture-based economic growth, gender and women's empowerment remain an issue, with barely one third of the country's women having attained this status.

According to FAO, (2022), food security is dependent not only on the availability of a sufficient food supply, but also on the sustainability of food access. She goes on to say that women make a greater contribution to agricultural productivity than is typically acknowledged, particularly in the area of food production. Because the majority of the labor produced by women in the agricultural sector is meant for

domestic use and does not enter the market economy, the reality in most sub-Saharan African nations, such as Tanzania and Kenya, is that these workers frequently go unnoticed.

2.4 Challenges that affect food security among women

Despite affirmative action and mainstreaming attempts, efforts to improve women's involvement in decision-making processes, boost their access to productive resources, and emancipate them are difficult and slow moving. Sub-Saharan Africa, including Kenya, is home to developing nations where women have less quantitatively and qualitatively access to resources for production, such as finance, financial capital, information, appropriate technology, land, labor, inputs, and markets. There are numerous explanations for why women's production in agriculture is weak. Their lives may be significantly improved and their entry into markets facilitated if they had access to resources like credit and financial capital, Kabeer, N. (2018).

Gender asset inequalities persist in most regions because, according to the FAO, there are up to 10% fewer female smallholders who can obtain finance than male smallholders. Agriculture productivity is negatively impacted by women's lack of access to credit Kabeer, N. (2018). Women farmers are significantly less able to invest in seeds, fertilizers, or technology, or to adopt new agricultural techniques, because they lack sufficient credit and are unable to purchase necessary farm inputs,

acquire appropriate technologies, or find labor.

One of the main tools for assisting women farmers in overcoming barriers to getting financing has been microfinance. Nevertheless, they haven't always had success with this strategy. In several instances, women were taking out loans, but the primary recipients were their male relatives. Studies conducted in Africa reveal that while income growth is significant, it does not always lead to empowerment and can instead leave people in debt Karimi, E. (2020). Women's restricted autonomy suggests that they have significantly fewer marketable assets under their control, which may prevent them from developing their own independent creditworthiness reputations.

Research reveals that women have less access to markets than do men (Kabeer, 2012). When it comes to promoting agroforestry products, women typically work in small-scale retail, with men controlling the wholesale market. Similar to how extension systems tend to favor men, market information systems likewise seem to cater mostly to men. For instance, women make up just 20% of users in Kenya's and Malawi's main market information systems (Kiptot & Franzel, 2011). It has long been believed that households led by women are more susceptible to non-income components of poverty and food insecurity. For instance, in some of the poorest regions of South Asia, cultural constraints prevent women from fully participating in food production operations, making them especially vulnerable during economic downturns.

Children in female-headed households have a lower socioeconomic attainment rate than children in male-headed households. Additionally, female-headed households occasionally make use of available resources, such as enlisting school-age children in income-generating activities, in order to survive. As a result, these children often have low levels of education, increasing the likelihood that they will pass on poverty and food insecurity to their offspring. In order to fulfill the first Millennium Development Goal, marginalized rural women must have greater access to resources such as education, information, credit, appropriate technology, and other tools that will lessen their labor burdens and guarantee their own and their families' well-being (UNDP, 2023).

Women in rural areas might have to spend more time cooking meals for their family since they have less access to basic tools or technologies that could relieve them of their menial tasks and increase their productivity. Time-consuming chores include gathering firewood and water, as well as preparing flour (made from maize, cassava, and millet) using a pestle and mortar. They may quickly improve the quality of their grain and lessen their labor using even simple threshing tools. However, it's crucial to remember that actions taken to close the technological gap may potentially have unforeseen repercussions. For instance, farmers' needs for more straightforward solutions are frequently incompatible with massive, costly machinery that they cannot

readily buy or access.

Certain technologies increase the workloads of women by adding complexity to activities; for instance, applying fertilizer frequently necessitates extra weeding. In the short run, women's independence and control over output may be strengthened by the increased economic responsibility and engagement brought about by new technology. But research indicates that males frequently take advantage of new technology when they produce a more lucrative crop or when a new processing apparatus raises revenue (Jack, 2013). These factors make it most likely that technology developed in collaboration with female farmers would meet their real demands.

Women in the rural sector face discrimination mostly in the areas of access to education and information. Women make up almost two thirds of the world's illiterate population, and many of them reside in rural areas. The likelihood that women farmers will be excluded from agricultural and other training activities is increased by their low literacy and numeracy capabilities. Just 15% of extension agents are women, and only 5% of women farmers in 97 countries have access to extension services (FAO, 2013). The Colombian local level efforts to advance and increase the knowledge of women farmers are shown in the box below.

Land tenure systems frequently discriminate against women, limiting their ability to

assert legal rights and engage in decision-making processes, and providing them with few legal options. Policies that support agriculture acknowledge the vital role that women play in the production of food. However, several institutional barriers, such as the agricultural sector's lack of control over land resources, still prohibit women from utilizing their greater authority as small-holding administrators. These barriers prevent women from holding significant managerial positions. Examples of these decisions include the use of land as collateral for agricultural loans, the provision of extension services, marketing, training, and membership in co-ops, which frequently favor male landowners. Women also have reduced access to finance when there are no land rights because land is frequently used as collateral for loans. It follows that they are unavoidably less inclined to fund sustainable agriculture.

The foundation of sustainable food production is land access. Entrepreneurship requires secure user rights, tenancy rights, or ownership (Netherlands Ministry of Foreign Affairs, 2011). Women are less likely than men to own or manage land in developing nations; when they do, the land they have access to is frequently smaller and of lower quality. For instance, women own less than 5% of the land in several North African and West Asian nations. Furthermore, just 25% of landowners are women, even in Latin America, where they have the most access to property.

For instance, women own only 2% of the land in Africa, and widows sometimes do

not inherit the land left by their late spouses. Less than 4% of women in Malawi and less than 3% in Mali are landowners (Ministry of Foreign Affairs of the Netherlands, 2011). Broadly speaking, women's organizations can play a significant role in promoting gender equality in land tenure. Tanzania and Ethiopia, for example, have demonstrated the positive impact of having women in village land councils that are in charge of resolving land disputes (FAO, 2011).

Men's landholdings are typically three times larger than women's in Kenya, (FAO, 2011; Kabeer, N. 2018). These gender disparities have a substantial impact on food and nutrition security at the home and community levels in addition to women's status. An average of sixty percent more malnourished children live in areas where women lack the rights or opportunities to own land. Conversely, when women have direct control over assets like land and income, this elevates their status and gives them more decision-making power, which benefits their families' nutritional well-being (OECD, 2012).

Kenya's 2010 constitution has officially increased women's equality by permitting both boys and girls to inherit land rights from their parents. Local customs may supersede state rules, even though state legislation—including land titling—may safeguard women's rights to own land. There are inherent conflicts in attempting to accommodate both official and customary land tenure systems and regulations,

despite the fact that many governments recognize both. For instance, statutory recognition of women's land ownership rights coexists with a parallel system of customary rules that are frequently in conflict with one another in Malawi and many other African nations. When divorced women go back to their birth villages, the Chief or other clan members either give them a plot of land or restrict their usage of the land to male family members. Widows are sometimes driven from their birth villages.

Poverty and household land ownership have an adverse relationship. When men mediate women's and children's rights to household resources, especially land, shocks affect them disproportionately, Kabeer, N. (2018).. Direct land access reduces the likelihood that women will become impoverished and, in turn, enhances their physical health and the chances for their offspring.

Gender based violence (GBV), impedes women from engaging in their own right to adequate food and from acting on behalf of their families and communities to the full extent of their capabilities (FIAN, 2013). GBV of which discrimination is a primary form is increasingly prevalent in conflict situations but is most common within households and communities. Domestic and other forms of violence specifically affect women through various pathways such as their ability to produce and sell food, or even to access inputs essential for food productivity. Food scarcity itself can lead to violence against women. For example, insufficient food in the home creates tensions

and can lead to physical or psychological violence and discrimination by men towards women, or by older women towards their daughters' in-law.

A study found that men's ability to support their families has been severely hampered by the food price crisis, which has fueled domestic violence and conflicts within the home (Hossain & Green, 2011). Market pressures, established social structures, and ingrained mindsets are the fundamental causes of gender inequality. Furthermore, in order to implement the policies that have the potential to spark social change and to allot the funds required to accomplish gender equality and women's empowerment in order to achieve food security, political commitments at the highest levels of both national and international government are needed. Women's needs, interests, and limitations are frequently overlooked in the creation of laws and policies that are crucial for reducing poverty, ensuring food security, and maintaining the environment because of the historically limited roles that women have played in decision-making at the household, village, and national levels in the majority of cultures (FAO, 2021).

The majority of those involved in agricultural support services—policy makers, managers, agents, and participants—are men, and they frequently lack adequate awareness of the unique issues and requirements facing female farmers. Because of this, information and extension services are usually targeted to male farmers with the hope that women will eventually catch on. The information that is currently available,

however, indicates that this is not the case. Achieving food security is hampered by the undervaluation of women in agriculture and resource management, particularly in low-income households (Chinery, 2011). Women must no longer face prejudice and have their roles valued if they are to contribute as much as possible to the security of food and nutrition. Further legislative changes are necessary to ensure that both men and women have an equal playing field.

2.4.1 Strategies to improve food security

Global issues require coordinated responses, immediate reform of national policies, global governance of food security, and innovative solutions. The international community uses a variety of tools and international structures to solve the issues (SDC, 2017). The Committee on World Food Security, which offers a forum for multi-stakeholder discussion and evidence-based policy norms and recommendations, the Human Rights Council, and the right to food instruments that were adopted by the FAO Council are among the other protocols. The 10-year framework of Programs on Sustainable Consumption and Production Patterns (10YFP) and its Sustainable Food Systems Program, led by UNEP, are among the other protocols. In addition to the aforementioned, target 2 of Agenda 2030 for Sustainable Development aims to mitigate climate change, land use, land rights, and gender equality while also promoting sustainable agriculture, food security, and improved nutrition.

The Comprehensive Africa Agriculture Development Program (CAADP) offers a policy framework for the continent of Africa with the goal of achieving improved agricultural output and the eradication of hunger by 2025. Some of the tools being used to improve food security are the 2010 Kenyan Constitution, the National Food and Nutrition Security Policy, the National Big Four Agenda, the Vision 2030, the Agricultural Sector Development Strategy (ASDS) 2010-2020, and various legislative instruments for implementing agriculture and food security. In addition, Kenyan counties follow their own policy plan found in the County Integrated Development Plan (CIDP) as well as the County Integrated Development Plan (CIDP).

Food security initiatives in the late 1970s and early 1980s typically used food vouchers or emergency food aid to combat hunger. A move toward community development models that prioritized localizing food systems and fostering agriculture in order to solve issues with public health, cultural preferences, economic inequality, and the environment occurred in the late 1990s and early 2000s. Winant, S. (2014). Notwithstanding the fact that food availability for direct human consumption increased by 19% between 1960 and 1994–1996 to 2 720 kcal/day against the minimum daily energy requirement of 2 200 kcal/day, availability is still very uneven, which has sparked recent initiatives aimed at improving the food security situation of the poor, most notably by the World Food Summit.

Those who are food insecure neither regularly produce enough food for themselves nor have enough money to buy food. One of the strategic methods to feeding the world's population is to encourage developing nations with food deficits to increase the productivity and efficiency of their export industries, then utilize the ensuing foreign exchange revenues to purchase food. Global commerce expansion permits the production and export of goods, services, and produce, allowing nations to buy food from North and South American countries that have excess food. Effective national food security policies are needed in order for this food to reach the food-insecure in developing nations. (FAO, 2022), supports that, in order to guarantee food entitlements for the impoverished in both rural and urban areas, these policies must enable enough access to food through work and income generating. Certain nations can attain food security on a national scale by encouraging food production within their borders. The underdeveloped nations with food shortages may have to import food since they lack the necessary institutions, resources, and technology. Technology and research can also make it possible to mobilize resources in the long run to attain food security.

Reorienting their development objectives to prioritize greater investment in agricultural areas is another tactic available to food deficit countries. In order to reduce food insecurity at the national, regional, and household levels, the food deficit countries must greatly boost their own food production and implement targeted

policies (FAO, 2011). Corporate interest in supporting food security interventions through women's empowerment as profitable solutions to food security has increased due to increased global awareness of the global food problem. It is envisaged that supporting women farmers will increase agricultural output, lessen hunger, spur economic growth, and help attain the development goals.

According to FAO estimates, women could raise agricultural yields on their farms by 20–30%, increase the amount of agricultural output produced in developing nations by 2.5–4%, and lower the number of hungry people in the world by 12–17% if they had equal access to productive resources as males (FAO, 2011). In order to improve women's rights and potential, strategies have included investments in women's capacities to guarantee more equitable access to resources and services like land, water, technology, innovation, credit, financial services, markets, and training. In a similar vein, assets, land, and inputs can help remove obstacles that prevent women farmers from increasing their output. Less than 2% of land is owned by women in developing nations, and they only receive 5% of agricultural extension services. Women receive only 10% of small farmer loans, and they are less likely than males to participate in food crop-related research and innovation (FAO, 2011).

Additional demand-side tactics are educational initiatives. According to research, families frequently traveled to far-off districts where healthy food was easily

accessible in addition to having a good understanding of and appreciation for healthy meals (Alkon, 2013). These could include nutrition education, agricultural extension, and cookery classes where locals learn about the nutritional value of food and how to prepare it. Programs for education have the potential to improve food access and lessen the negative health effects of malnutrition.

As stated in SDG 5, which aims to promote gender equality and empower women and girls, it is also crucial that efforts to improve food security include women's empowerment. Adopt SDG 16, which calls for representative, inclusive, responsive, and participatory decision-making at all levels.

2.4.1.1 Coping strategies

Coping strategies are coping mechanisms that households employ to get by in the event of unforeseen losses in income, World Bank. (2023), the strategies that households employ vary in a number of ways. For example, both within and between households, they cover a wide range of economic, social, political, and behavioral responses to declining food security. Positive coping strategies include working off the farm, using savings from the past, and utilizing family networks for sharing. Negative coping strategies include drastically reducing food consumption, Selling productive assets and personal belongings, cutting back on spending on essential services like health and education (female children are often the sacrificial lamb during times of scarcity), and irregular migration are some examples. Families, and

women in particular, have frequently turned to coping mechanisms in the face of food scarcity, such as letting the kids eat first, purchasing food on loan, eating only once a day, or stealing leftovers from social gatherings.

Families facing financial difficulties or inadequate food shock may turn to risk coping mechanisms include self-insurance through prudent savings and unofficial group-based risk distribution, as well as obtaining or obtaining food from other sources. During good years, households store up resources for use during bad years. Reducing the amount of food consumed, modifying its quality or quantity, or lowering the number of consumers can all affect food consumption. When income-generating techniques become stretched, consumption-soothing strategies tend to grow.

Finding solutions to assist rural women in their productive endeavors requires an understanding of poverty, the cycle of hunger, and survival techniques. 'Safety first' conduct is adopted by farming households, which includes coping mechanisms for external climate shocks. A prevalent initial tactic that has been noted is the decrease in food consumption or alteration of diet. Women may cut back on the number of meals they eat or switch to less expensive, less appetizing, and maybe less nutrient-dense foods (FAO, 2021). The capacity to recognize vulnerable households is a prerequisite for ensuring sufficient food security. The entire spectrum of variables that put people at risk of experiencing food insecurity is referred to as vulnerability. An

individual's, household's, or group's level of vulnerability is based on how much they are exposed to risk factors and how well they can handle or tolerate stressful events.

Vulnerable households typically fall into one of three categories: those that are vulnerable in any situation, such as when an adult's disability, illness, age, or other characteristic prevents them from providing an adequate livelihood for the household; those whose resource endowment is insufficient to generate a sufficient income from any source; and those whose resources and characteristics make them potentially vulnerable in the event of social and economic shocks, such as those who struggle to adjust to abrupt changes in economic activity brought on by economic policy. A significant increase in the consumer price of staple foods might be an example (World Bank, 2023).

The five common coping mechanisms are as follows, with corresponding severity weightings: eating fewer expensive or less preferred foods (1.0); borrowing food or depending on friends and family for assistance (2.0); restricting portion sizes during mealtimes (1.0); limiting adult intake to allow small children to eat (3.0); and cutting down on the number of meals per day (1.0).

The CSI is generated by asking a straightforward question: "In the last seven days, how many days has your household had to adopt a particular food-based coping

strategy if there have been times when you did not have enough food or enough money to buy food?" We assign a score to each coping method for every household. The score is calculated as follows: (coping strategy frequency) $\times$ (severity weight). Each household's composite score is calculated by adding the results for each coping method. Greater severity of food insecurity is indicated by higher index values.

2.5 Conceptual Framework

The study on women roles and household food security is conceptualized using two theories, the gender perspective theory and entitlement theory to give understanding to this study. Various conceptual theories and models exist, they include, the Food system theory views food security as a complex issue that is influenced by a variety of factors, including agricultural production, food distribution, and food access. Food system theorists (Galanopoulos, K. 2012; Holt-Giménez, E., & Altieri, M. A. 2014) argue that it is important to consider all of these factors when developing policies to address food insecurity. The conceptual model of hunger and food insecurity presented by (Finney Rutten et al., 2011) identifies important food subsystems and processes involved in the conversion of environmental inputs into individual and population health effects. It does this by drawing on integrative conceptual work on food systems. The study's findings suggest that the suggested food system and food

security model may be used to pinpoint individual and systemic obstacles to food resources in order to better target initiatives aimed at reducing hunger and enhancing food security. The Neo-Malthusian theory which argued that population growth will exceed food production, resulting in extensive famine. The theory argues that food security is affected by such factors as population growth, resource depletion, and climate change. Dependency theory stipulates that food insecurity in developing countries arises from exploitation by developed countries who use their economic supremacy to obtain resources from developing countries, hence destabilizing the of developing countries capability to produce its own food.

Similarly, different frameworks for gender analysis have been designed for different purposes and will be discussed below.

The study will be guided by two theories notably Gender perspective theory is very and the Entitlement theory.

2.5.1 Gender perspective theory

Connell, R. W. (2014) and Butler, J. (2019), asserts that the gender perspective is a conceptual framework that explains how relationships are socially constructed in society. The Gender and Development (GAD) theoretical framework, (Momsen, J. H.,

2019) examines the relationship between gender and development in a larger sense, is strongly linked to the gender viewpoint theory. The gender perspective theory ignores women's biological distinctions and instead concentrates on their socially defined roles. Women are not seen as victims but rather as participants in the process of development. As a result, it views women as change agents. The relational method, which examines men and women's relationships and societal roles, is also introduced from a gender viewpoint. Relationships between genders are ones of inequity, difference, and competitiveness. They specify the distribution of responsibilities and claims as well as the relative values of each, and they are focused on the dynamics of power dynamics between the sexes. As a result, they generate and maintain a systematic divide between the status of men and women in society. Gender relations varies between various groups of people depending on the period and place. They also differ based on other social relations, like disability, race and ethnicity, class, and so forth. The interactions between men and women in cultures, as well as the disparities within them, are examined and highlighted by gender analysis.

Though it differs from feminism, which sees women as oppressed by patriarchy, the gender perspective theory and feminism have many similar notions regarding feminine consciousness Momsen, J. H. (2019). The gender perspective rejects the mainstream feminist theory, which holds that women's oppression weakens their standing in society and their ability to exercise power. An analysis of gender is

transformative. In order to advance gender equality, it is focused on comprehending the real-world circumstances in which men and women carry out their respective duties. As a result, the gender perspective supports the equitable and unrestricted acknowledgment of women's roles in reproduction and production. This kind of analysis empowers women and helps them challenge the idea of equal gender power relations.

Integrating a gender analysis into every endeavor is a gender mainstreaming tactic. Gender mainstreaming extends beyond boosting women's participation to include bringing the experience, expertise, and men to bear on the development agenda, even while it does precede specific efforts that are either aimed at women or at reducing gender inequities. A gender analysis is therefore comprehensive. To allow women and men to equally influence, participate in, and benefit from the development process, it might be necessary to make changes to goals, methods, and courses of action.

This theory is pertinent to the study because it will help to clarify how households allocate different tasks and responsibilities based on gender. This understanding will be useful in organizing and supervising the participation of men and women in community development initiatives. For various reasons, several gender analysis frameworks have been developed. The Harvard Analytical Framework is one of the frameworks; it focuses on the contributions and assets that men and women make to

the community. The Gender Roles Framework (Moser Framework), which focuses on gender roles while introducing the issues of women's condition and position in society through the concepts of practical and strategic needs, is intended to encourage equitable resource allocation in development planning. The Gender Analysis Matrix, on the other hand, focuses on the gendered impacts of projects and programs. Therefore, it can be useful in evaluating the possible gendered effects of projects during the planning phase as well as in the ongoing assessment of the development activity; Sara Longwe's Women's Empowerment Framework, for example, focuses on methods of evaluating empowerment attained through projects and programs. It draws attention to participation and control issues and connects them to women's ability to alter their own circumstances and social status. Both the Social Relations Approach, a more sophisticated framework for examining the underlying structural causes of gendered disparities in the allocation of resources, responsibilities, and power, and the framework that you were introduced to in the introductory gender course. As a result, it aids in the development of an all-encompassing strategy to address social inequality at the local, state, market, and home levels of institutions.

The process of women's empowerment, which helps them take charge of their own life and the resources they require to thrive, is another idea that is supportive. Women who are empowered are better able to obtain food, decide how to consume it, and take part in its production and distribution. FAO (2022). The idea of food systems entails

intricate webs of participants and procedures involved in the production, distribution, consumption, and disposal of food. The significance of women in all facets of the food system, from production to consumption, is acknowledged by food systems approaches to food security. These are simply a handful of the theoretical models that encourage women's involvement in food security.

2.5.2 Entitlement theory

For this study, the Entitlement theory is the best fit since it takes into account both food access and household entitlement. "Entitlement" describes the range of ways that households obtain food, including through domestic production and other revenue-generating ventures like labor sales and trading. Different members of each household may engage in some of these activities, or the same individual may pursue them all. Furthermore, the entitlement of the household will be increased by transfers from sources outside of it, such as the government or friends and family (FAO, 2021).

Nowadays, a lot of research is done on topics pertaining to food security and nutrition using the concept of household entitlement to food, which was developed from the work of Amartya Sen. Sen first created the entitlement theory in 1981, superseding previous views that emphasized the lack of food availability as a source of food insecurity. Sen's strategy, on the other hand, is more concerned with household access to food, or "Entitlements." According to Sen (1981), entitlement relations use specific norms of legitimacy to link one set of ownerships to another.

Sen classified entitlement relationships into four categories. Rights based on production, according to which people are entitled to the products of their labor. People who are entitled to what they can obtain by selling or battering physical assets (including animals and cash crops) are said to have trade base entitlements. The main issue is how trade liberalization affects food availability, food access, and food supply stability, all of which have an impact on food consumption (WTO, 2023). Rights based on labor, which state that individuals have a right to the goods and services that can be acquired by selling their labor power. Transfer-based entitlements, which state that a person has a right to whatever that is legally transferred to them, whether it is official (from the government) or informal (from friends and relatives).

The present study aims to investigate the role of women in food security by dissecting their participation in the entitlements that were previously mentioned. The four categories represent legal methods of obtaining food. Product-based entitlements refer to the right of access to productive assets, such as land, trees, or animals, based on ownership or other rights, such as women's land rights, as men typically control the majority of land rights in society. The husband will still own the proceeds from the land, whether they are from crops or livestock, even if he chooses to give his wife a portion of the land. Household access to agricultural inputs like seeds and fertilizers has an impact as well, since women are primarily excluded from formal finance

sources like commercial bank loans.

Access to food through the market is a crucial part of household food security in trade-based systems. The cost of what customers purchase has an impact on this, and for farmers, it is connected to agricultural markets. The majority of women, particularly those who are unable to obtain official job, trade various commodities in order to generate cash that is utilized to provide for their families. In areas where land is scarce for entitlements based on productivity, women trade to augment agricultural yield and ensure food security for their households.

The labor force, technical knowledge, and skills possessed by various people and households, as well as their health, education, and access to food security, all have an impact on work-based rights. The productivity of labor on farms, whether it be for crops or cattle, will affect how much food a household can afford to eat. Food availability is a result of this, because food is essential for trade-based entitlements. Additionally, if there is enough labor, large areas of land will be farmed, increasing the quantity of food and bringing down the cost of food for households.

Transfer-based entitlements mostly depend on government policy, the availability and volume of food or cash transfers, and official transfers from the state, donor aid, and non-governmental organizations. Informal transfers originate from friends and family

and are reliant on the strength and existence of social networks, particularly kinship networks. In the production of food, women need support from the government as well as from friends and family. The other three entitlements are what make transfer-based entitlements possible. Kins and relatives can either give food or money to buy food, or they can work with women to ensure food security in the home.

Given the availability of food, entitlement might be defined as the household's ability to communicate its true need for food. Demand should become consumption of food produced for family consumption and bought with cash or transfers from governments and organizations that work to improve household food security. These entities act as a middleman between potential and reality. In order to rebuild their productive foundation, impoverished households—particularly those whose resource bases were impacted by natural disasters—may require access to additional resources. Other households will look for ways to generate entitlement to food through trade or direct employment, based on their location and specific skills. Food security is dependent on the growth of income-generating activities, such as small-scale jobs and self-employment in the rural unofficial sector. Due to some of its inherent flaws, the theory has drawn criticism for downplaying the connection between poverty and food insecurity as well as ignoring the structural factors that underlie food insecurity (Momsen, J. H. 2019; Devereux, S. 2001).

2.5.3 Conceptual Model

Figure 2.1, which depicts the conceptual framework, illustrates the link and interrelationships between the independent, dependent, and intervening variables. This study used this model to explain the relationship between women's duties and home food security, as well as the roles of other intervening agencies and males in ensuring optimal household food security. The dependent variable is household food security, which is defined by food availability, food access, food usage, and food availability. The independent variable is women's roles, which were characterized by labor, production, and trading. The study included many intervening variables, such as culture and customs, access to means of production, regulations connected to agriculture and gender, social support systems such as extended family, shared interest groups, governments, and non-governmental organizations, and the engagement of men.

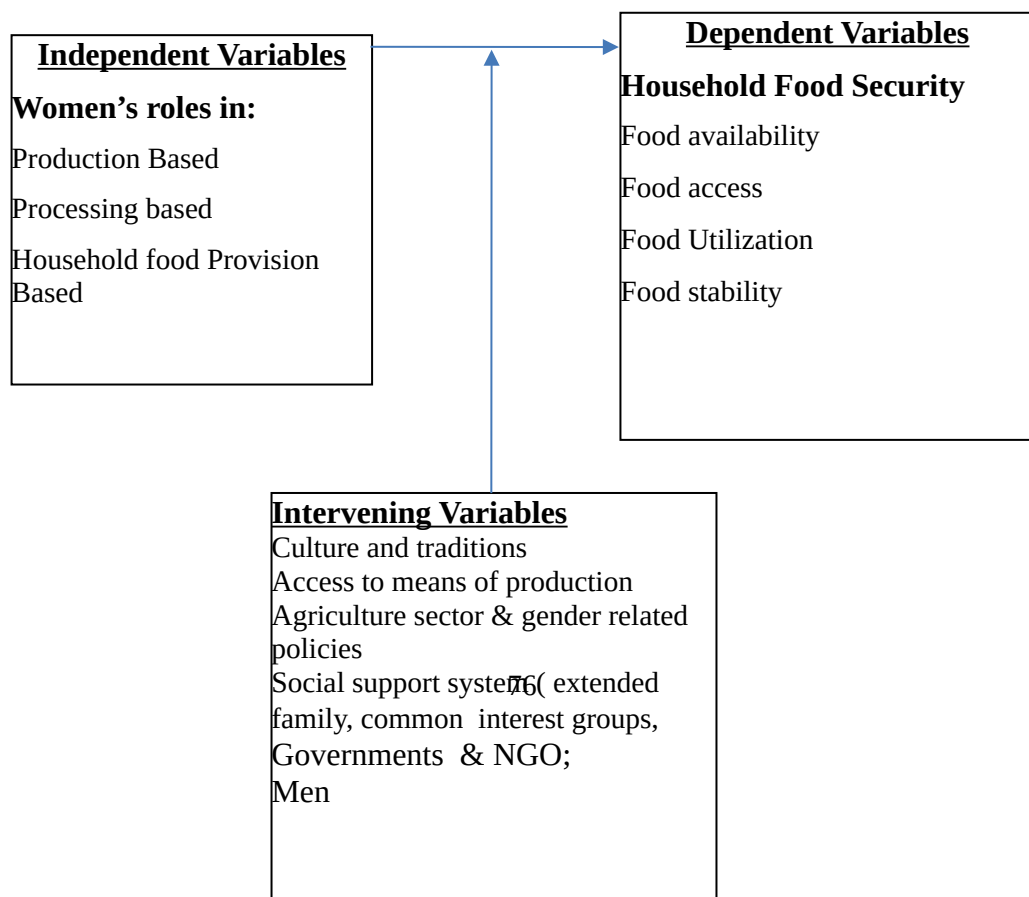


Figure 2.1: Conceptual Framework Model showing the variables of relationship between women roles and Household food Security

Source: Researcher, 2017

2.6 Gaps in knowledge

Smallholder farmers' ability to produce more food could be increased by better farming techniques. Agriculture is a major sector in which many African countries invest in order to boost economic growth and combat poverty. However, even in cases where study findings are accessible, many of these investments or programs have not adequately taken them into account. PELUM (2015) found gaps in laws and policies, compared new problems to the Constitution to evaluate conformity, and noted delays in passing laws and putting agricultural directives into effect.

There is unquestionably a need for reliable researchers who can produce solid results. However, scholars must be eager to impart their expertise. According to Jones, AD et al. (2013), sectorial policies are informed by the vital significance of measuring food security appropriately and targeting it for food aid, early famine warning, monitoring, and evaluation systems, and nutrition, health, and development program monitoring. These measures of food security have drawn criticism for the potential for biases in the coefficient of variation, which is used to reflect consumption inequality among nations, and the possibility of errors in food balance sheets due to ambiguous data received from national level data inputs. There are many holes and uncertainties in the database, and its accuracy is debatable.

Kimani-Murage et al. (2011) outline the obstacles that women face, but they don't go on to discuss how women participate in food security, particularly in households. Similarly, "While qualitative studies often highlight women's significant contributions, quantitative data on their specific roles, workload, and productivity is often lacking." (FAO, 2021, p. 12) Other studies, primarily on the African continent, have looked at women in agriculture, gender concerns, food security, and feminist perspectives on food sovereignty. PELUM (2015) found gaps in laws and policies, compared new problems to the Constitution to evaluate conformity, and noted delays in passing laws and putting agricultural directives into effect. PELUM adds that laws and policies pertaining to the Constitution must be modified to reflect the current political climate and incorporate legislation pertaining to food security. Other gaps include Gender-Based Analysis of Food Security Policies and Programs that are biases hindering women's empowerment and food security." (IFAD, 2020, p. 8) as opposed to Intersectional Analysis of Women's Roles which explores the intersection of gender, age, ethnicity, and socioeconomic status thus giving a more distinctive appreciation of women's experiences and challenges in food-security.(UN-Women,2022,17).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research approach employed in this study is described in this chapter. It includes information on the target population, sampling procedures, sample size, data collection methods, data analysis and presentation, assumptions, limitations, and ethical considerations. It also includes information on the study area, research design, population, administrative boundaries, climate, economic activities, and population distribution of the study area.

3.2 Study area

The research domain Situated in the most western part of Kenya, Busia County shares borders with the Republic of Uganda to the west, Bungoma to the north, Kakamega to the east, and Siaya to the south-east. Additionally, it is bordered by Lake Victoria to the south-west. It has 1,694.5 square kilometers (km²) in total area. At 1,130 meters above sea level, it is delimited by latitudes 0° and 0° 45' North and longitudes 34° 25' East (Figure 3.1).

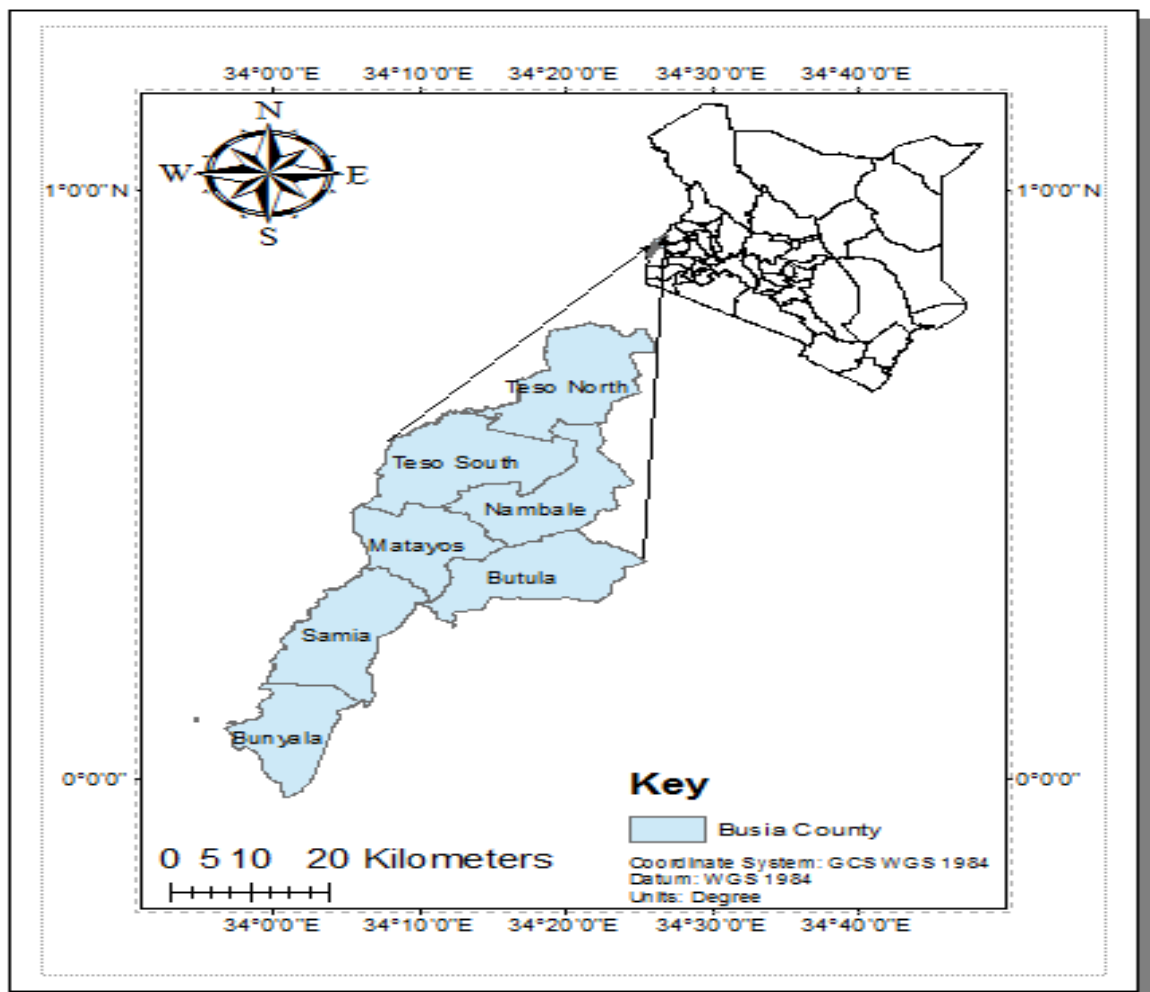


Figure 3.1: Map of Busia County

Source: Researcher (2023)

3.2.1 Administrative boundaries of the study area

The seven administrative sub-counties that make up Busia County are Samia, Bunyala, Butula, Matayos, Nambale, Teso North, and Teso South. The study region is comprised of 120 villages, 60 wards, 181 sub-locations, 10 divisions, and 181 sub-counties (GoK, 2013).

3.2.2 Study Population

The total population of Busia County is 893,681. There are 426,252 females, 467,401 males, and 28 intersex individuals. With an average household size of 4.5 people, the county has a population density of 527 people per square kilometer (GoK, 2020). The Teso and Luhya tribes of Kenya, as well as tiny Luo populations, live in Busia. The Abakhayo, Marachi, Samia, and Abanyala communities are among the Luhya communities. This therefor forms the population social-economically involved in food security as producers, consumers or traders. The data collection was carried out in Teso South and Nambale constituting 31.3 % of the entire county population, meeting the 30% rule. Mugenda and Mugenda (2003).

Table 3.2.: Study population

Sub county	Male	Female	Total
Teso South	80,484	87,630	168,114
Nambale	52,900	58,732	111,632

Source: (Census 2019)

3.2.3 Target population of the study area

The study's target demographic consists of women living in Busia County, specifically two sub counties, Teso South and Nambale as indicated in table 3.2. The survey also focused on men and women focus group discussions, county government officials from the Department of Agriculture, national government representatives and those from KALRO, and employees of civil society organizations in Busia County, Kenya. The primary sources of data for study population comprised women

household heads of reproductive age (18-49 years) involved in agricultural and food security activities in Busia County.

3.2.4 Climatic condition of the study area

The primary data collection was carried out in Teso South and Nambale sub Counties constituting 31.3 % of the entire county population, meeting the 30% rule. Mugenda and Mugenda (2003). Rainfall in Busia County ranges from 760 to 2000 millimeters (mm) each year. 25% of the rainfall occurs during the brief rains between August and October, while 50% occurs during the long rain season, which peaks between late March and late May. It is the dry season, December through February, with sporadic showers. The county as a whole experiences very consistent temperatures. The average yearly maximum temperature falls between 26°C and 30°C, while the average yearly minimum temperature falls between 14°C and 22°C (GoK, 2018).

3.2.5 Economic activities in the study area

Busia County's main economic activities include agriculture, fishing, and trade. Busia and Malaba Towns are vibrant trade towns where cattle, agricultural products, and manufactured items are handled, serving as the entrance points between Kenya and Uganda. Agriculture is supported by the climate of Busia County. Small-scale farming operations in the county produce a variety of goods, including cotton, tobacco, sugar cane, beans, sweet potatoes, millet, cassava, and maize (GoK, 2022).

3.3 Research design of the study

Descriptive survey and assessment research designs were used in the study. Studies that attempt to characterize the traits of a specific person or group are known as

descriptive research studies (Creswell, J. W. 2014; Kothari, 2004). Descriptive research can accurately define activities, ascertain the nature of prevailing circumstances, practices, and institutions, and describe the current status of phenomena.

For objectives one and two, Descriptive survey research design was employed in this study seeking to ascertain the level of household food security and the role played by women in food security. Evaluation research design was then employed for objective three, which sought to assess the methods for improving food security in Busia County. The study also made use of quantitative and qualitative methodologies. Table 3.2 presents a summary of the research design.

Table 3.4: Research design by specific objectives

Objective	Measurable variables/indicators	Research Design
To determine household food security status	Number of meals in a day Adequacy of food produced Food shortage	Descriptive cross sectional survey, Observations, Quantitative and qualitative

To establish the role of women in household food Security	Labor, time, Production and Trade	Descriptive cross sectional survey, Observations, Quantitative and qualitative
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To evaluate the strategies of enhancing food security	Access to production resources, Agricultural policies, Food security policies, Land and gender policies	Evaluation & descriptive
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Source: Author (2017)

3.4 Sample size Determination and Sampling procedure

The study sampled females, males, County, and Civil society Representatives, and community leaders in Busia County and female house hold heads from Nambale and Teso South Sub-Counties.

3.4.1 Sampling of household Respondents

The primary sample population was women household heads above 18 years in

Nambale and Teso South Sub-Counties. This sample size was therefore calculated

$$n = \frac{Z^2 pq}{d^2}$$

using the following formula Raosoft. (2019).

If the target population is larger than 10,000, then n = the intended sample size. Z is the standard normal deviation (i.e. 1.96) at the necessary 95% confidence level.

p is the percentage of the target population that is thought to possess the traits under study. As there is no statistical evidence to support the extent of the food security issue, the study will employ 0.5, or 50%.

q = 1-p.

d = the level of statistical significance set, which will be set at 5% or 0.05. Therefore, the sample size will be:

$$n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}$$

$$= 384.16 \sim 384$$

The survey included a total of 384 primary women respondents. It was necessary to include four wards in order to achieve representativeness, which allowed for the generalizations for the entire population, this sample was deemed appropriate for statistical analysis. The sample size was chosen by a combination of different methods used in the sampling operation. According to Field, A. (2018), a higher sample size increases the researcher's confidence that the same outcomes would be attained if a different sample size of a comparable number was chosen.

Multi-stage, Quota, Purposive and Simple random sampling was employed in sampling the study area. The study area is divided into seven sub County administrative boundaries namely Teso South, Teso North, Nambale, Matayos, Butula, Samia and Bunyala. Basing on the 30% rule by Mugenda and Mugenda (2003) as well as, Field, A. (2018). The study sampled 2 sub counties out of the 7 sub counties which were Nambale and Teso South Sub Counties. Nambale sub-county has four wards namely; Nambale township, Bukhayo East, Bukhayo North and Bukhayo Central. Similarly, Teso South Sub County is divided into six wards, Amukura West, Amukura East, Amukura Central, Angorom, Chakol North and Chakol South. Nambale and Teso South sub-Counties were chosen because they are known for both large scale commercial crop farming and subsistence farming. The major crops grown include; sugarcane, maize, beans, cotton, and coffee. Farmers also keep livestock for food security and selling (CIDP, 2018). Proportionate sampling technique was then used to sample 384 women from the 50% of the wards from each sub Counties sampled. Table 3.3 summarizes the sampling procedure.

Table 3.5.1: Proportionate sampling of the wards from the sampled wards

S/N	Sub counties (Wards)	Total number of wards	Sample of wards
1	Nambale	4	2
2	Teso South	6	2
Total		10	4

Source: KNBS (2020) and Researcher (2020)

Table 3.5.2: Proportionate Allocation by wards sampled from the Two Sub Counties

Sampled Wards	Total Number of Households (Nh)	Sample size $nh = \left(\frac{Nh}{N}\right)h$
Bukhayo East	5,219	146
Bukhayo Central	4,497	126
Amukura West	1,407	39
Amukura Central	537	15
Amukura East	2,064	58
Total	13724	384

Source: KNBS (2020) and Researcher (2020)

In-depth interviews were conducted in person with 2 representatives from each organization including Department of Agriculture of the County of Busia, Kenya Agricultural and Livestock Research Organization (KALRO) and Non-Government Organizations totaling to Eight (8). These important informants were found using a mix of purposive and basic random sampling methods. Telephone appointments were made with respondents who were willing and able to speak with the interviewers regarding the role that women play in food security in Busia County.

A semi-structured interview framework was used to conduct the in-depth interviews. The participants gave their approval for the interviews to be recorded. Observing the participants' nonverbal cues, attitudes, and tones, notes were taken. Participants in the FGD were sampled using quota sampling. On the day of the interview's conclusion, a brief document summarizing the most important findings was created for each one. With the interviewees' permission, all verbatim transcriptions of the talks and interviews were done into English and checked for accuracy.

Table 3.5.3: Summary of study population units, sample methods and sample size

Population Units	Sample size	Sampling strategy
Households respondents	384	Multi stage & simple random sampling
Department of Agriculture (Crops Officer)	2	Purposive
Research institutions (KALRO)	2	Purposive
Non-Governmental Organizations (NGOs)	2	Purposive
Focus Group Discussions (8-12 people)	4	Quota

Source: Author (2020)

3.5 Data Collection instruments

This study used both secondary and primary types of data. Secondary data was obtained through literature review such as documentary sources, while the primary data was collected from fieldwork. These data (documentary and field) were used to examine the role of women in food security provision in Busia County. In relation to Mugenda and Mugenda (2003), this study developed instruments that helped in gathering primary data.

The study used questionnaires, interviews schedules, observations and focus group discussion as follows.

3.5.1 Questionnaires

For this study, the researcher distributed 384 questionnaires as per the sample size. The response rate was 381 in which the research assistants completed the

questionnaires successfully at 99.2% for the questionnaire return rate. The researcher collected data using focus groups, interviews, and questionnaires to gather information about views, opinions, perceptions, sentiments, and attitudes. The type of data to be gathered, the amount of time available, and the study's goals all played a role in the instrument and method selection.

Primary data was gathered using a structured survey questionnaire that included both closed- and open-ended questions. Respondents, who were women in each home, were given questionnaires by research assistants working under the direction of the principal researcher. In this study, a primary woman was defined as a female household member who engages in the most active household activities (e.g., farming, food preparation). This might include the female head of the household, the head of the household's wife, or any other adult female, such as daughters, nieces, or grandmothers.

The questionnaire had three main sections: demographic information; women's role in the three dimensions – availability, access and utilization – of food security; their perceptions regarding the challenges they face and their opinions on food security. The questionnaire had been tailored for this study but borrowed from various food security indices/measures, such as: Food Consumption Score; Women's Minimum Dietary Diversity Score; MAFHP (months of adequate household provisioning);

Livelihood Coping Strategies Index; Food Expenditure Score; and Normal every day/ yesterday family meal for households and grain storage period. A pilot study was undertaken amongst seven households with similar characteristics in Matungu Sub County in Kakamega County to pre-test the questionnaire for corrections to be made on the instrument to be used, prior to commencement of the study.

3.5.2 Observation

This involved observing behaviors, interactions, and processes in the FGD meetings. The researchers keenly watched, listened, while recording behaviors, interactions in the field and meeting. It allows researchers to gain firsthand insights into how people behave, interact, and experience issues related to women involvement in food production.

3.5.3 Focus group discussions

Four Focus group discussions (FGDs) consisting of (8-12) persons were conducted in the four wards of Nambale and Teso South Sub-Counties targeting both males and females. Consequently, two FGDs were undertaken in each ward using a focus group discussion guide. Participants were (1FGD – only men for comparative purposes, 1FGD with women & Men and (c) 2 with women) of 8-21 persons from the four wards sampled through quota sampling then Purposive sampling was finally used to select participants for FGDs from the quotas of village common interest groups based on their knowledge and experience in agriculture and food security Creswell, J. W.

(2014). The FGDs were tape-recorded after obtaining consent from the participants and led by a moderator of the same gender aided by two assistants who took supplementary notes. The FGDs sought to outline the understanding of food security from the participants, discuss in-depth their perceptions of what role they believed women play in food security and their opinions of what should be done at policy level to help improve household food security.

3.5.4 Key Informant Interviews

Purposively sampling the key informants was done in light of their knowledge and experience in general on the contribution of women to food security. The collection of information from youth leaders, people with disabilities, women leaders, and members of the national and county governments was made easier with the implementation of a key informant guide. A total of six key informant interviews were carried out.

Table 3.6 Summary of Data Collection Instruments

Study Population unit	Sample Size	Data Collection Instruments
Females primary respondents	381	Questionnaires

Key Informants include; National/ County government, Civil society & Research institutions, Representatives,	6	Key Informant Interview guide
Village common interest groups.	4	Focus group discussion guide applied to (a)1FGD - men, (b) 1FGD with women & Men (c) 2 with women

Source: Researcher, 2017

3.6 Data Collection Procedure

During the data collection period the researcher trained the assistant researchers who worked alongside the researcher. Training was done in regards to the research tools, limitations, ethical considerations and assumption for the study. The researcher submitted the proposal to the University Directorate of Postgraduate studies for approval and applied for a research permit from NACOSTI. The researcher administered the questionnaires and conducted interview schedules and also carried out FGDs. The data gathered was processed and analyzed.

3.7 Reliability and Validity of the Research Instruments

A pilot study was conducted to test the validity and reliability in Matungu sub-county as discussed below.

3.7.1 Validity of Research Instruments

Questionnaires for this study were subjected to face and content validity. The questionnaires were given to the lecturers and professionals in this area. Prior to commencement of the study, a pilot study was undertaken in Matungu Sub County in Kakamega County to pre-test the questionnaire so that requisite corrections can be made to the questionnaire. Matungu sub-county was a suitable place for a pilot study because of its representativeness, capturing diverse similarities in terms of socio-economic, cultural conditions and agricultural practices. The sub-county is relatively accessible for researchers, facilitating data collection and logistical operations. It is also a feasible geographic area making the pilot study more manageable and cost-effective. Insights from the pilot study informed the design and implementation for Busia County.

The sample size of the pilot study was seventeen persons. The sample of 17 households was used as a basis to provide initial insights into the research question, helping to inform the direction of the larger study and assess the feasibility of a larger study (Yin, R. K. 2014). This includes testing data collection methods, refining research questions, and estimating the time and resources required which was limited. The pilot study identified potential challenges and assisted to refine data collection instruments, and improve the overall research design. It offered detailed, in-depth interviews and observations to understand social economic aspects of each participant's experiences and perspectives (Creswell, J. W. 2014). The respondents

were asked to indicate the length of time they took in filling the questionnaire, to outline the questions they found unclear, and suggest on how the questionnaire was to be improved.

Here are the Key Findings from the pilot study: On the roles played by women in food production, findings among the 17 persons interviewed revealed that women play a primary role in food production as producers of food crops, especially staple foods like maize, sorghum, and cassava. 14 respondents indicated they are responsible for agricultural labor, including planting, weeding, harvesting, and post-harvest activities. On the challenges faced by women in food production 12 Respondents reported limited Access to Resources mentioning credit, and agricultural inputs, such as fertilizers and pesticides. Four of respondents reported facing discriminatory practices in accessing extension services and training opportunities.

On Food Security Strategies 14 respondents indicated they are use various strategies to ensure household food security, such as diversifying crop production, engaging in off-farm activities (selling small quantities of sugar, cooking fat, salt tea leave), and participating in group savings and loaning activities. However, these strategies may be constrained by limited resources and socio-cultural factors. During the pilot study, Data Collection, the following challenges were experienced: Language barrier, cultural sensitivity. These barriers were resolved by elaborating the questions for

better understanding hence overcoming the language barrier and cultural sensitivity. By addressing these challenges, the pilot study provided valuable insights into the role of women in household food security in Busia County.

3.7.2 Reliability of Research Instruments

Reliability is where specific processes give constant results through multiple attempts. Reliability of research instrument was measured by Cronbach alpha for the pilot study. Internal quality reliability is commonly used in measuring survey instruments and abilities. The results for Cronbach alpha value were 0.785 which meant the research instruments were reliable for this study.

3.8 Data analysis and presentation

The study had both quantitative and qualitative data. Quantitative Data was mainly collected using the household questionnaires. The questionnaire was coded and data entry undertaken in the Statistical Software for Social Sciences (SPSS) version 24. Analysis incorporated both descriptive and inferential analysis. It was envisaged that this study would yield data to allow for correlations and triangulations.

Qualitative information was mainly collected from key informants and focus group discussions and the data was transcribed and entered into Nvivo software (30-day trial version) for analysis. A code book for analysis was developed and used as the basis for thematic analysis as shown in Table 3.7. The FGD were analyzed by reading

through the transcripts multiple times to gain a deep understanding of the data. Identify recurring themes or patterns in the data. Assign codes to specific sections of the text that relate to the identified themes and using Group related codes into broader themes Further divided into sub-themes for a more detailed analysis (Ochieng, O., et al. 2024). The researcher analyzed the frequency, intensity, and diversity of themes across different four FGDs, then developed a coding framework to guide the coding process and for consistency. The findings were further interpreted in the context of existing literature and theoretical framework. Identify Key Insights were highlighted the most significant findings and implications to validate by triangulating the findings with data from other sources, such as surveys or interviews. The analysis forms discussed findings and the implications of the findings for example on women's involvement, strategies to improve food security, policies and future research.

Data was presented Using bar charts, and pie charts to visually represent information, highlighting key trends and patterns to make the information engaging. Narrative sections that summarizes the key findings and provides a narrative analysis of the data to convey the information to a diverse audience, cite relevant sources using APA format to support claims. The researcher concise policy information that highlights the key policy implications of the findings and provide clear and actionable recommendations for policymakers and practitioners. The research also used in depth and contributes to the existing body of knowledge.

Table 3.9: Type of data, research variables and methods of analysis

Data collected	Nature	Variables	Methods of analysis to be used
Household food security status	Primary/Secondary	Number of meals in a day Adequacy of food produced Food shortage	Descriptive, inferential and narrative analysis
Role of women in food security	Primary/Secondary	Labour, production and Trade	Descriptive, inferential and narrative analysis
Strategies for food security	Primary/secondary	Existing policies, Support systems and Household initiatives	Descriptive, inferential, evaluative and narrative analysis

Improvement

Source: Author (2017)

3.9 Limitation of the study

During the study, the following limitations alongside their solutions were observed:

- i. Lack of continuous historical food crop production data to inform household food security trends in Busia from the Department of Agriculture of the county. The study resorted to household survey that provided opinions of the respondents on the status of food security in the study area.
- ii. Inaccessibility of some wards in due to impassable roads which hampered the convenient movement during the data collection period. The poor feeder roads challenge was averted by use of motorcycles and boats to facilitate movement during fieldwork.

3.10 Assumptions of the study

- i). The study made the assumption that all respondents gave truthful information, and that the information was adequate to address the research topics.

ii). The respondents who were to take part in the study were representative of the entire population of Nambale and Teso South Sub counties.

iii). The women had key roles in production, processing and general provision of food to their individual households

3.11: Ethical considerations

Permission to conduct the study was obtained from the research committee of Masinde Muliro University of Science and Technology (MMUST). This facilitated acquisition of research permit from the National Council of Science and Technology (NACOSTI). Additional authorization was obtained from the Directorate of education and also from the county commissioner of Busia County. During data collection, there was informed consent of the informant and participants to provide information and participate in the execution of the research activities. In addition, the respondents adhered to freedom of expression of ideas and consensus during data collection. The information given was treated with confidentiality and used for academic purposes only. The respondents had prior information of their right to withdraw at any stage of

the engagement and the right to demand explanation on the use of the information provided to the researchers.

CHAPTER FOUR

HOUSEHOLD FOOD SECURITY STATUS IN BUSIA COUNTY, KENYA

4.1 Introduction

This chapter presents results which were obtained from the field data analysis as per the first objective. The chapter therefore presents findings and discussions on the demographic characteristics of the respondents in the study area and lastly presents results and discusses findings on the status of food security in Busia County.

4.2 Socio-demographic characteristics

The study presented demographic characteristics which were educational level, marital status, household size and age.

The questionnaires response was 381 questionnaires completed and returned at 99.2% as illustrated in Table 4.1 for the questionnaire return rate.

Table 4.1: Questionnaire return rate

Questionnaire Return Rate	Frequency	percentage
Returned	381	99.2

Not returned	3	0.8
Total	384	100

Source: Researcher, 2017

Three questionnaires were not adequately filled and therefore discarded. On the other hand, the response rate for interview schedule response rate for FDGs was at 100%.

4.2.1 Education level of the household heads

The research looked at the educational level of the respondents. Literacy level is a critical factor with regard to influencing the food production, investment as well as consumption decision making behavior of individuals and communities in general. Various literacy levels for the respondents were identified in Figure 4.1.

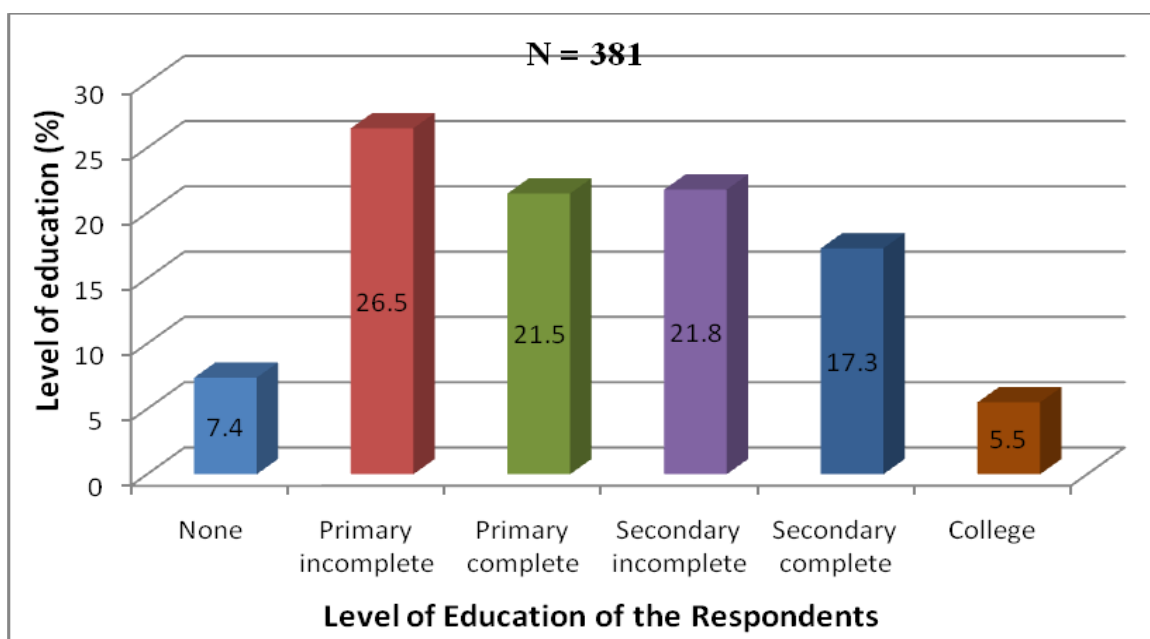


Figure 4.1: Level of education of the respondents in Busia County

Source: Field Data, 2017

Figure 4.1 demonstrates that Majority 92.7% of the respondents surveyed had attended some formal schooling. Among the respondents, 26.5% did not complete the primary level of education, 21.5% completed primary education, 21.8% did not complete secondary education, and 17.3% completed secondary education while 5.5% had some college level of education. Nearly a tenth (7.4%) reported that they had no formal education. The study further conducted an inferential analysis of Pearson Correlation. The results were as shown in Table 4.2.

Table 4.2 Inferential Analysis for Education Level

Highest education level achieved	Pearson Correlation	-.293**	1	-.189**	-.023
	Sig. (2-tailed)	.000		.000	.657
	N	381	381	381	379

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

Source: Field Data, 2017

The findings from the inferential statistics show that there is a positive significant relationship between household food security and their level of education.

4.2.2 Marital status of respondents household heads

The sample respondents were asked to indicate their marital status. Figure 4.2 shows the marital status of the participants in this research.

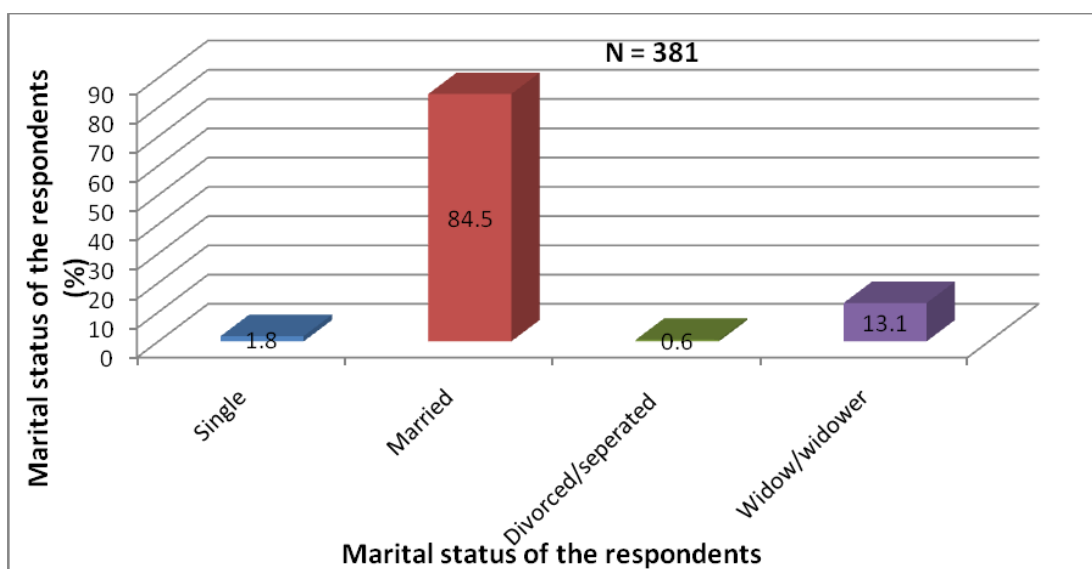


Figure 4.2: Distribution of respondents by marital status in Busia County

Source: Field Data, 2017

Findings revealed that majority 84.5%, of the respondents were married. However, the study did not specifically investigate whether the respondents were in monogamous or polygamous marriages. More than a tenth (13.1%) of the respondents was either widows or widowers whereas 1.8% reported that they were single as they had not gotten married yet. The least proportion (0.6%) were either divorced or separated. It is probable that outside marital union, women are more likely to experience food insecurity possibly due to lack of social capital or support that their husband provides. This is because social support can be a mediator of economic hardships. Further analysis revealed that out of those who were married, majority of the respondents (71.4%, n=381) reported that they were a spouse to the household

head whereas 28.6% of those that responded were the head of their respective households. This is consistent with the findings of Deere, Avarado, and Twyman (2012), who state that, depending on the region, 5–30% of Kenyan rural households are headed by women. As a result, it is important to recognize the relative status of women in male-headed households. In Kenya's rural communities, women are expected to lead households in the event that a primary male is absent, either permanently or temporarily as a result of a legal marriage partner's divorce or death, or both.

Table 4.3 Inferential Analysis for Marital Status for Respondents

	Pearson Correlation	.373**	-.189**	1	.138**
Marital status					
	Sig. (2-tailed)	.000	.000		.007
	N	381	381	381	379

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

Source: Field Data, 2017

The findings from the inferential statistics concurs with the findings from this study that there is a positive significant relationship between marital status and household food security. Overall, several findings from other inferential statistics studies indicate that Marital status has influence on household food security as the women have greater access to resources and decision making in Nigeria, (Ogwumike and Odih, 2020); India (Mishra, et al) as well as in Ethiopia (Bekele and Alemu, 2019). Policies should therefore further support married women economic empowerment and decision making.

4.2.3 Household size in the study area

The respondents were asked to state the size of their household. Table 4.4 outlines the findings of the research.

Table 4.4: Distribution of households by size

Number of household members	Frequency	percentage
1 – 3	70	18.4
4 – 6	196	51.5
7 – 9	83	21.7
>10	32	8.4
Total	381	100

Source: Field Data, 2017

Findings show that the mean household size for the study population was 5.6 people higher than the national mean size of 3.6 recorded in Kenya from the Kenya Demographic Health Survey (KDHS 2014). One household reported a membership of one while one household also reported a membership of 15 people implying an increased challenge on household food security in study area. Majority of the households (51.5%) reported a household membership of 4 – 6 people. The analysis from interview and focus group discussion, showed that in comparison to larger household sizes, a small size household is less likely to have a negative impact on food security.

4.2.4 Age of the household respondents in Busia County

The study sought to establish the age groups of the respondents. Figure 4.3 shows the ages of the participants for this study.

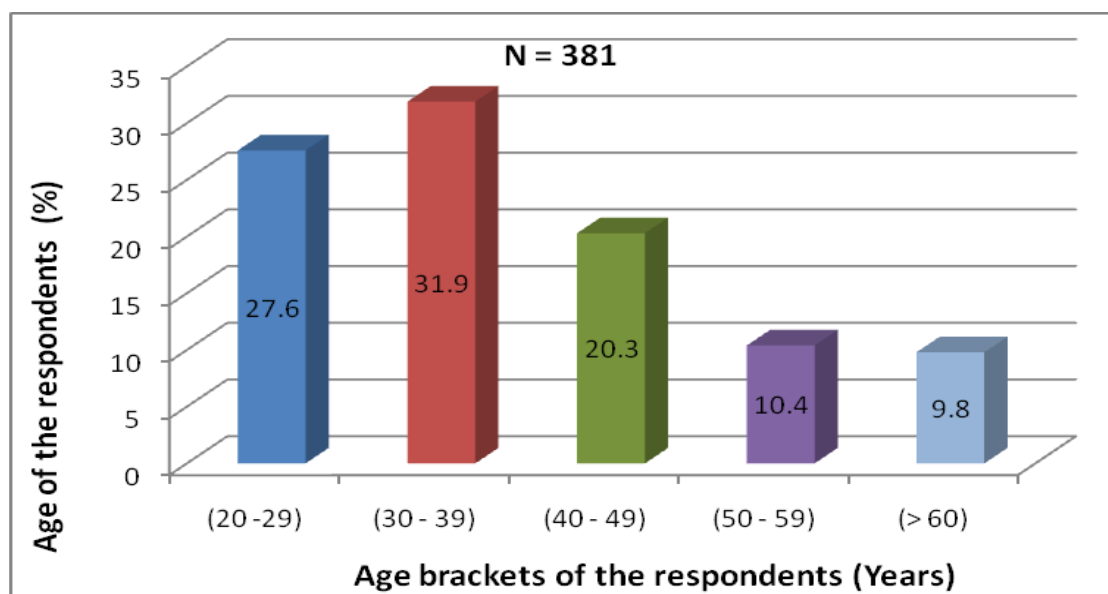


Figure 4.3: Distribution of respondents by age

Source: Field Data, 2017

Figure 4.3 shows the ages of the respondents where most of the respondents belonged to the age bracket 30 to 39 years accounting for 31.9%; this was followed by those from the age bracket 20- 29 years who accounted for 27.6% and 40-49 years who accounted for 20.3% of the respondents. Nearly a tenth (9.8%) were aged 60 years and above. Conclusions drawn from the findings indicated that majority of the respondents were between the ages of 30-39 years (31.9%) hence this age range was suitable for this study. The age structure of any population is significant in all demographic analyses. For instance, findings from Kenya Demographic Health Survey (KDHS) 2014 revealed that in general, women's participation in decision making increases with age, education, and wealth quintile. Findings revealed that the proportion of respondents tend to decline with increasing age, reflecting the comparatively young age structure of the population.

Further, the study carried out an inferential analysis which applied Pearson Correlation. The results were as follows in table 4.5

Table 4.5 Inferential Analysis between Age and Household Food Security

Pearson Correlation	1	-.293**	.373**	.095
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Respondents age

Sig. (2-tailed)	.000	.000	.065
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N	381	381	381	379
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**. Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data, 2017

The study indicated that there is a significant relationship between age and household food security $P = .065$. The overall results showed that there was a positive significant relationship between age and household food security.

4.3 Main source of income of the household respondents

The study sought to establish the main source of income for the respondents. The findings are displayed in figure 4.5. As shown in figure 4.5 Majority (91.1%, $n=381$) of the respondents reported that farming was their main source of income indicating the magnitude of dependence on farming by the respondents not only as a source of food but also the main income stays. Given that food security can be disrupted by many factors such as climate change, disempowerment, poverty, natural disasters and

conflict; there is therefore need to invest in production and management of farming processes.

4.4 Household food security status in Busia County

4.4.1 Sources of income of the respondents in Busia County

To establish the main source of income for the respondents in the study area and the results are as shown in Figure 4.4. Findings reveal that the sources of income by the respondents included small scale business and casual labour were mentioned by the same proportion of respondents (3.9%, n=15), remittance from relatives (0.8%, n=3). A proportion of 0.2% (n=1) reported not having any source of income.

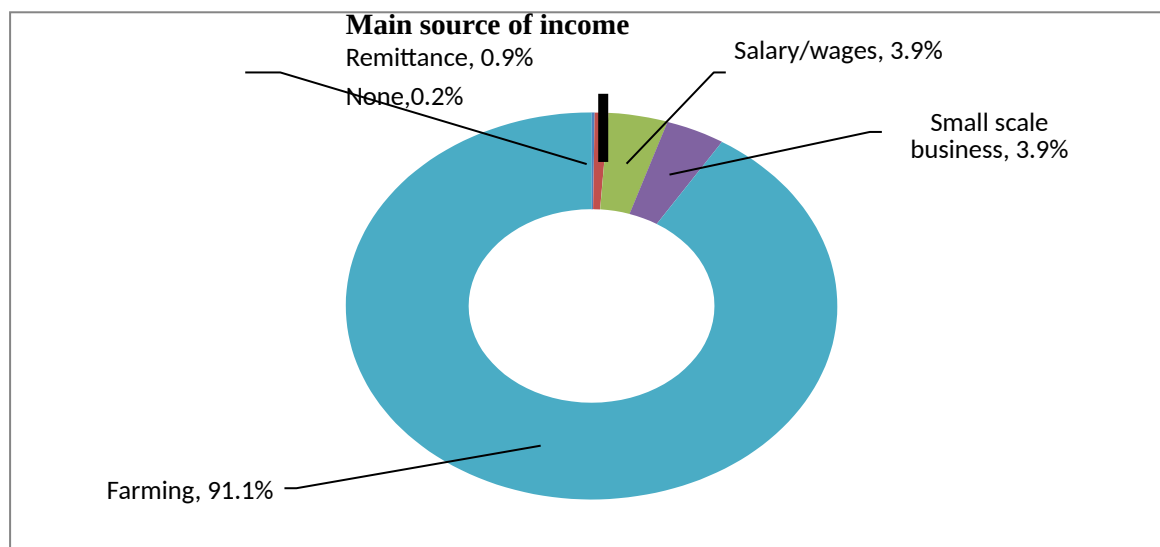


Figure 4.4: Distribution of Respondents by main source of income in Busia County

Source: Field Data, 2017

During interview schedules it was evident that food insecurity at household level can be influenced by social and/ or economic factors notably respondent's incomes and employment. The risk for food insecurity increases when money to buy the food is not available or limited. Women are engaged in different activities to ensure food availability and security in their households. Such activities include formal employment, peasant farming, small businesses and even casual labour (CIDP, 2023 – 2027). This concurs with KNBS and SID (2013) report stating that the unemployed are therefore among the most vulnerable in society.

4.4.2 Main crop grown by households in Busia County

The study sought to establish the main crop grown in Busia County to support food security. When the respondents were asked about the main crop grown, majority of the households noted that maize was the main crop grown (88.4%, n=337) which is agreement with (ACCI) 2011. Other crops grown that were mentioned included Bananas (1.1%), Cassava (5.3%), Sorghum (1.3%), Sugarcane (0.8%) and vegetables (1.3%) as shown in Table 4.6.

Table 4.6: Main Crops Cultivated by Households

Main crop grown	Frequency	percentage
Maize	337	88.4
Cassava	20	5.3
Vegetables	7	1.8
Others	5	1.3
Sorghum	5	1.3
Banana	4	1.1
Sugarcane	3	0.8
Total	381	100

Source: Field Data, 2017

Results from interviews indicate that a vast of the respondents in Busia still rely mainly on cultivation of maize (CIDP 2023-2027) both as a subsistence and commercial product. This could be occasioned by the reduced sugarcane farming that compelled community to resort to maize farming. Findings from Focus Group Discussions revealed that the county government gave free fertilizers and inputs (maize seeds) to the community members' which may have encouraged maize production. It is worth noting that any negative occurrence affecting maize production like changes in climatic conditions can have a devastating effect on the residents with regard to access to food and also household disposable incomes. Besides, there is need for respondents to diversify their agricultural production not to predominantly rely on maize as the main source of income.

The women were further asked why maize was the main crop grown. An overwhelming majority (96.3%, n=367) reported that the need to provide food was the main reason why maize was the main crop grown whereas 3.6% (n=14) reported that maize was mainly grown as a cash crop. These findings are in agreement with that of the Busia County Integrated Development Plan (CIDP2023 – 2027), which reported that over the past five years, maize production increased by 111% While Sorghum recorded an increase by 1.8%. Maize is the preferred food crop, resonating with Namenya, D. N. (2018), the lower part covering parts of Nambale, Funyula sub-

counties are suitable for maize, sorghum, millet, and sugarcane cultivation (GoK, 2013).

4.5 Main source of food in Busia County

The study sought to establish the main source of food for the respondents and the results are as shown in figure 4.5.

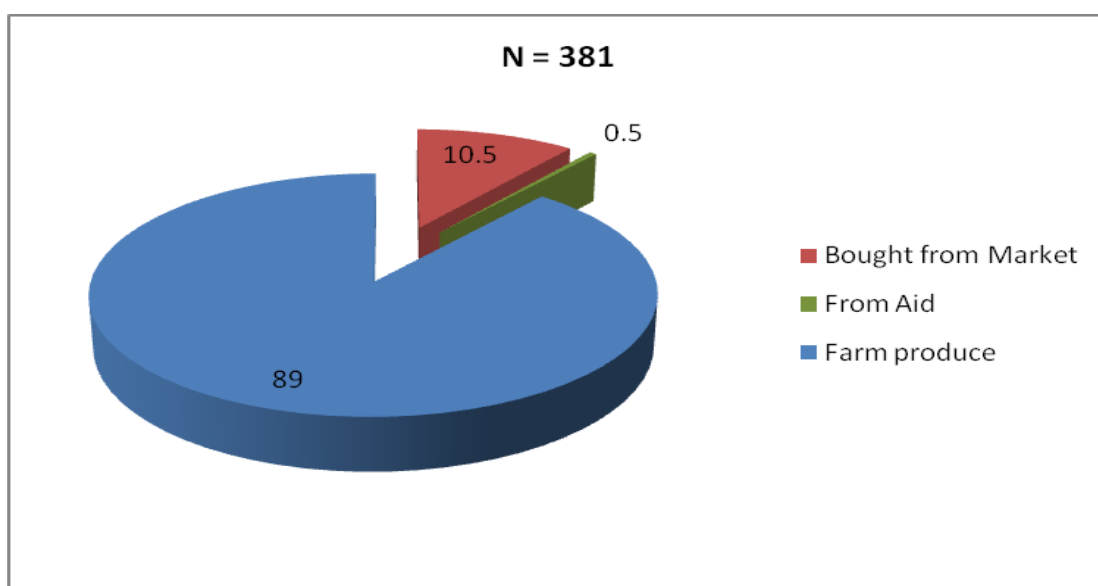


Figure 4.5: Main source of food for respondents in Busia County

Source: Field Data, 2017

Findings revealed that farm produce was the main source of food for majority (89%, n=381) of the respondents. About a tenth of the respondents (10.5%, n=381) of respondents sourced food mainly through purchasing from the market while for 0.5% (n=381) of the respondents, the main source of food was food aid from kinsmen and relatives. It is worth noting that no respondent reported barter trade assisting for food

as the main source of food implying that the respondents were dependent majorly from their own production, even though in few instances they bought food from the market.

4.6 Number of meals in the households per a day in Busia County

The study sought to establish the number of meals the respondents took in their households per day. Respondents were therefore asked on average, the number of meals their families were taking per day. It emerged that more than four-fifths (81.6%, n=381) were taking three meals in a day indicating that majority indeed had access to food.

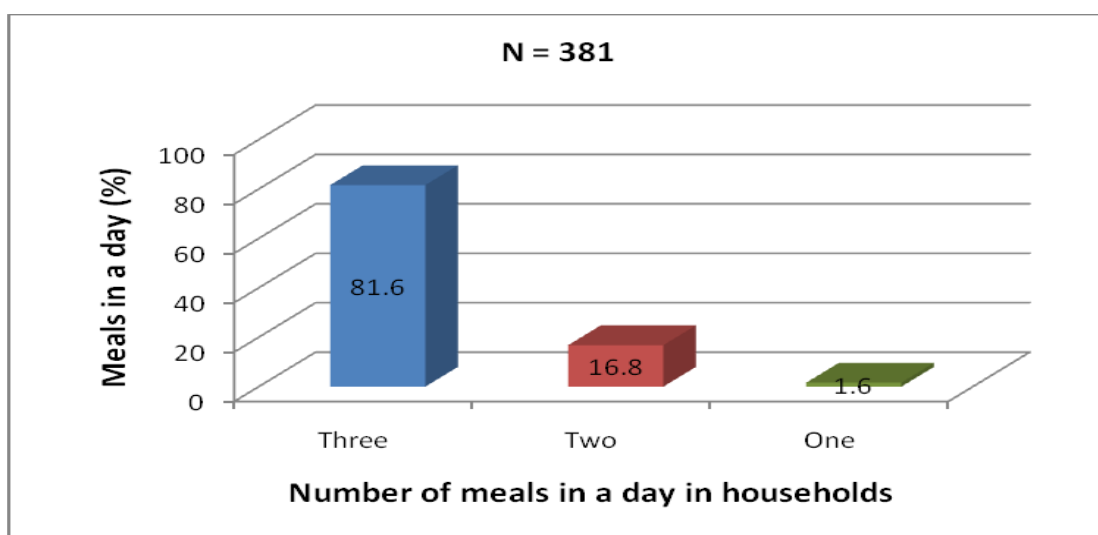


Figure 4.6: Distribution of respondents by number of meals in a day in Busia County

Source: Field Data, 2017

The availability, accessibility, and use of enough safe, nourishing food by all

members of a community or household to meet their nutritional needs is referred to as food security. Although the respondents indicated they were taking three meals in a day, the study did not specifically investigate the food varieties taken for the meals taken in a day. It was established during the FGDs that some families would take tea two times in a day and then take carbohydrates (ugali) and roughages (vegetables) at night. Despite respondents reporting taking three meals in day, the FGD indicated that the three meals did not necessarily meet the dietary or nutritious requirements for the body. Desk review (CNAP) - 2018/19-2022/23 indicated that Busia County faces significant nutrition deficiency challenges, particularly among children under five. While specific, recent data on the exact prevalence of deficiencies might be limited, several sources highlight the issue and ongoing efforts to address it. Malnutrition Studies suggest a high prevalence of malnutrition, including stunting, wasting, and micronutrient deficiencies, among children in Busia County (Ouma et al., 2017).

Factors contributing to malnutrition included poverty, food insecurity, poor sanitation, and limited access to healthcare (CNAP) - 2018/19-2022/23. The County government, in collaboration with organizations like Nutrition International, is implementing programs to improve nutrition. Due to their high nutrient requirements, women and children are said to be the main populations in Busia County affected by undernutrition, particularly during the first 1,000 days (from conception to a child's second birthday). In the county, stunting accounts for 22% of all malnutrition cases,

whilst underweight and wasting conditions affect 9.5% and 2.2% of children under five, respectively (Kenya Demographic Health Survey, 2014). This validates the fear mentioned in this research. According to the County Nutrition Action Plan 2018–2022, comparable data is provided.

4.7 Adequacy of the amount of food produced at household farm level in Busia County

The respondents were asked if in the past one year the food produced from their farms were adequate for the family consumption. The study observed that 51.4% of the respondents indicated that the amount of food produced from their farms were not adequate while 48.6% expressed of adequacy of the food for household consumption.

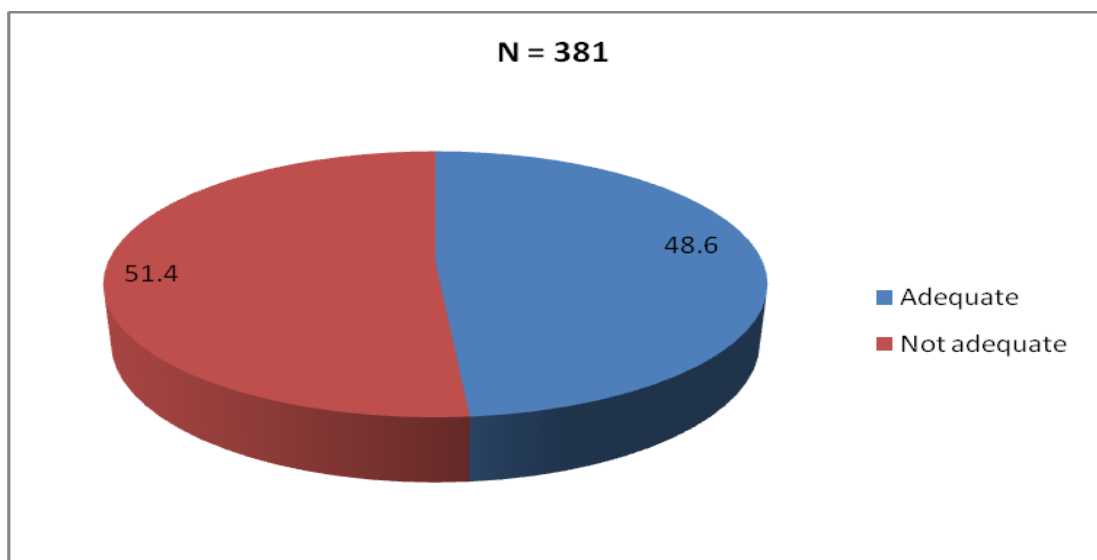


Figure 4.7: Adequacy of the amount of food produced at household level in Busia

Source: Field data (2017)

It's therefore evident that over a half did not have adequate food for the family indicating that half of the respondents was more likely to be food insecure. This finding agrees with (Masita D. K, 2012) Crop yields per hectare is less and inadequate to feed households. Although literature review from Busia County Fiscal Strategy Paper 2014 revealed that only 5% of the households in Busia County had food to last for 12 months, the findings from this study seems to suggest that over the years the communities in Busia have had a relative improvement in food availability.

The findings from the household survey and from deliberations during FGDs, it emerged that there was a general concurrence among all the participants that Busia County was considered to be food insecure. This corroborates with Namenya (2018) that, on average 55.3% of households were food insecure. When asked about the causes of food insecurity, a number of responses emerged and included drought, too much rain that results to leaching of fertilizers thereby resulting to poor yields from farming, poor food storage, and food being sold by the community to cater for household immediate needs like school fees. However, there have been various initiatives aimed at improving food security in Busia County, such as increasing access to agricultural inputs and extension services, promoting climate-resilient farming practices, and improving market linkages for farmers. These interventions, coupled with increased investment in the agriculture sector, are expected to improve the county's food security status over time.

CHAPTER FIVE
THE ROLE PLAYED BY WOMEN IN HOUSEHOLD FOOD SECURITY IN
BUSIA COUNTY, KENYA

5.1 Introduction

This chapter presents results from the field data analysis as per objective two of the

study. The chapter therefore presents findings and discusses years the respondents were involved in farming, women's role in decision making regarding farming, women's role on land acquisition for the household for food production, women's' role in food production, women's role in labor, Women's role in food preparation and storage of food, Women's role in food preservation and lastly the challenges experienced by women in household food security in Busia County.

5.2 The Role Played by Women in Household Food Security

The study sought to establish the role played by women in enhancing household food security in Busia County. World Bank. (2023). provides a comprehensive overview of women's roles in Kenyan agriculture. It delving into aspects of women's involvement, in land ownership, decision-making, and income control highlighting the significant impact of women's empowerment on food security outcomes.

5.2.1 Years involved in farming

Women's involvement in food security is important Ochieng et al. (2024). First, the study established the number of years the respondents had been involved in farming and food production in Busia County and the analysis are as shown in Table 5.1. Results show that most of the women (43.6%, n=381) had been involved in farming for not more than 10 years. About a tenth (10.5%) indicated that they had been involved in farming for a period of between 11 to 20 years, 19.2% had been involved in farming for 21 to 30 years. Nearly a tenth (9.7%) had been involved in farming

between 31 to 40 years. Those who indicated that they had been involved for over 40 years were 7.1%.

Table 5.1: Distribution of households by years involved in farming

Years women are involved farming	Frequency	Percentage
<10 years	166	43.6
11-20 years	78	10.5
21-30 years	73	19.2
31-40 years	37	9.7
Over 40 years	16	7.1

Total**381****100**

Source: Field Data, 2017

The study found that women engage in farming from under 10 years old to over 40 years old. This supports research by Ayieko (2015), which found that over 80% of Kenyan women live in rural areas and play a variety of roles in the rural economy, including small-holder farming, earning a living, and taking care of their families. The preparation and cultivation of land, seed selection, planting, weeding, harvesting, crop processing and preservation, cooking, and serving food to household members are all part of the role that women play in ensuring food security.

The focus group discussions also indicated that women, are largely the custodians of seeds since after crop harvesting, it is often women who are tasked with seed management, including storage, conservation, and distribution to a variety of spaces. Women also often play a complimentary critical role to men in pest and disease control. They are also involved in harvesting and marketing, although to a lesser extent, since those tasks are considered heavy and are often male-dominated (Njuki et al., 2021). Post-harvesting activities, such as crop processing and preservation, cooking, and serving food to household members, are almost entirely left to women. They are mostly the ones who primarily dry vegetables and mill or grind cereals. They also participate in a wide range of food preservation processes. Finally, it is the

women who make nutrition-related decisions within the households and are also the ones who prepare the food for consumption as the primary caregivers.

5.2.2 Decision making regarding farming in Busia County

Respondents were asked whether they were the decision makers regarding farming activities in their households. Results are as shown in Table 5.2. Analysis observe that when asked who was tasked with making farming-related decisions, more than two-thirds (64.1%, n=381) of the respondents cited that decisions regarding farming activities were mainly made by their husbands, followed by 29.1%, 5.8%, 1.0% participation by both husbands and wife, son and others respectively.

Table 5.2: Distribution of respondents by who makes decision regarding farming activities

Who makes decision	Frequency	percentage
Husband	132	64.1
Both husband and wife	60	29.1

Son	12	5.8
Others	2	1.0

Source: Field Data, 2017

These results are in line with those of Liru (2014), who lists a number of barriers that prevent women from making significant decisions on the management of their farms, including a lack of authority over land resources. The study also suggests that men were obstacles to food security because of their emphasis on economic pursuits other than farming. The women also reported that the men were primarily drawn to the sale of produce whose effect on household food security was minimal. Nearly a third (29.1%, n=381) reported that both the husband and wife made decisions, 5.8% (n=381) mentioned that farming decisions were made by their sons while 1% of respondents mentioned that decisions regarding farming were made by others.

O'Brien, K. (2020), concurs that women's limited involvement and influence in important decisions pertaining to household livelihoods is severely affecting their capacity to effectively provide food for the homes. Women's demands, interests, and difficulties are likely to be inadequately represented in the processes that create policy

when they do not hold significant decision-making roles. Women's capacity to play a meaningful role in determining household livelihood decisions directly affects how valuable they are in terms of producing food for their households.

It was further reported that women are the ones who predominantly undertake farming activities but when it is time for harvesting or selling of the produce, their husbands get more involved giving them no space to make any decision.

One interviewee remarked as follows:

“Men don’t produce food. Women work hard to produce food, and men just wait to sell the produce. This discourages the women. The men feel they are superior and so can just sell the food.” A female member of FDG, in Buyofu village on 21/ 7/2021

5.2.3 Types of land tenure for food production in Busia County

The study sought to establish the types of land ownership and how it was put into use in relation to food production in Busia County. The results are as shown in Figure 5.1. Analysis reveal that majority, about two-thirds (65.1%, n=248) of the respondents reported that their land for food production was inherited, 2.4% (n=9) reported that their land was leased, 32% revealed that their land was purchased while a marginal (0.5%, n=2) reported that they were squatters in the land used for household food production. The results show that women’s ownership of increases the chances of producing food for household. This agrees with (World Bank, 2023) which highlights

relationship between women's land rights and food security in Kenya. It indicates that women's secure land tenure can significantly enhance their ability to engage in productive agricultural activities, improve their livelihoods, and contribute to household food security

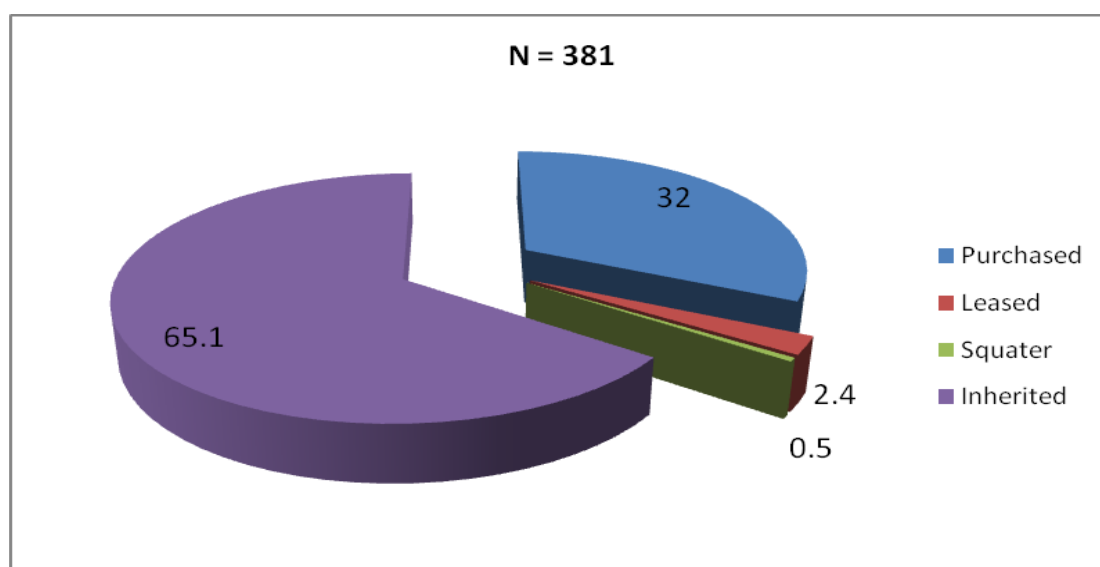


Figure 5.1: How land for food production was acquired

Source: Field Data, 2017

The study observed that ownership, use and management of land are among issues addressed by Chapter 5 of the Constitution Kenya, 2010. The Act enshrines women's right to own and use agricultural land within the country. During the research, the respondents were asked to respond on how land for household food production was acquired the results are shown in Figure 5.2. The study sought to establish how the land used for household food production was acquired. Most women do not own land, therefore cannot make major decisions with regard to its use for household food production.

Liru, (2014) states: *Women and children suffer disproportionately from shocks when their rights to household resources, including land, are mediated through men.*

The majority of land is owned by men, who also have a major say in how land is used to provide food for the home. This result bolsters with, (World Bank, 2023), who emphasized the importance of women as vital linkages in attaining food security and the importance of land in the household food security equation. Policies that support agriculture acknowledge the vital role that women play in the production of food. The degree to which women are able to engage in important decision-making processes—like using their land as collateral to get agricultural loans, offering extension services, marketing, training, and co-op membership—is impacted by restrictions on their land ownership. A male key informant remarked as follows:

“The land tenure system is also a challenge. A woman is a peasant on the land. It is the man, who decides what is to be planted on the land”- A male Key Informant, Nambale on 21/ 7/2021

The interview and focus group discussion on land ownership revealed that women's ownership and control over land use affects what households can produce, and how finally the proceeds are allocated within the household either towards household food consumption or allocated towards other purposes like school fees, family shelter or health services. Land ownership and control gives women better bargaining power within their families and also ensures that they play an active role in making decisions related to household food production and consumption. (Njuki et al., 2021) alludes that women's influence in production decisions for household consumption can result

in the production of more diversified crops and better household nutrition.

The ownership and use of land is further addressed by Kenya's Constitution 2010, Chapter 5, Article 62 states that "all land in Kenya belongs to the people of Kenya collectively as a nation, as communities and as individuals. Thus, land is classified as public land, private land and community land. This is further operationalized in the Land Control Act, which regulates agricultural land transactions to ensure that agricultural land is not subdivided into uneconomical units while ensuring that land is used in accordance with its intended purpose. The Land Control Act also addresses transactions relating to dispositions of land within an area designated for agricultural use under the Physical and Land Use Planning Act; as well as land used for agricultural purposes ("Controlled Transactions"). The Act has broadened the scope of control on land used for agricultural purposes, notwithstanding that the land is located within an area designated as a city or urban area, or the title to the land contains a restriction that the land may not be used for agriculture, which makes it unclear what using land for agricultural purposes shall comprise of.

5.2.4 Land under various enterprises in Busia County

The study sought to establish what proportion of land and to what usage in the study area. Results presented in Figure 5.2 show that a vast majority (99.2%, n=381) reported that they used land for kitchen gardening while another 87.8% (n=381) reported that they used land for food crops. 6.8% (n=381) of the respondents had their land under a cash crop, implying that majority of women in Busia County primarily

used their land for household food production.

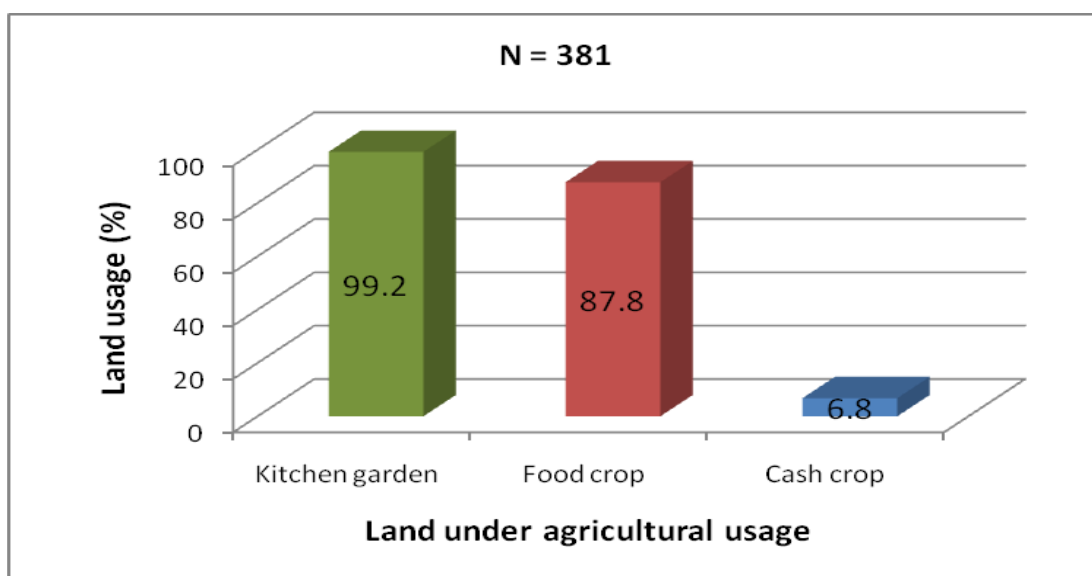


Figure 5.2: Land usage under Agricultural for food production

Source: Field Data, 2017

To acquire in-depth information, Interviews highlighted the extent to which land ownership affects usage for agriculture purposes since it is a factor of production. As such, ownership of land affects economic power and is also an attribute of social status. Land, for the women who own it, is a critical asset as it gives them the power to make direct decisions regarding food production and consumption. Since the decision of most women in the household tend to favor nutritional and general family welfare, women control and decision over land use can lead to more diversified crop production and improved household food and nutrition security (Njuki *et al.*, 2021).

5.2.5 Women's control over farming income

The study sought to establish women control of income from farming and the results

are as shown in Figure 5.3. Analysis show that 67.7% of the women had gained control of income from their farming activities while 32.3% of the respondents lacked control of the income from the sales of their farm produce in Busia County.

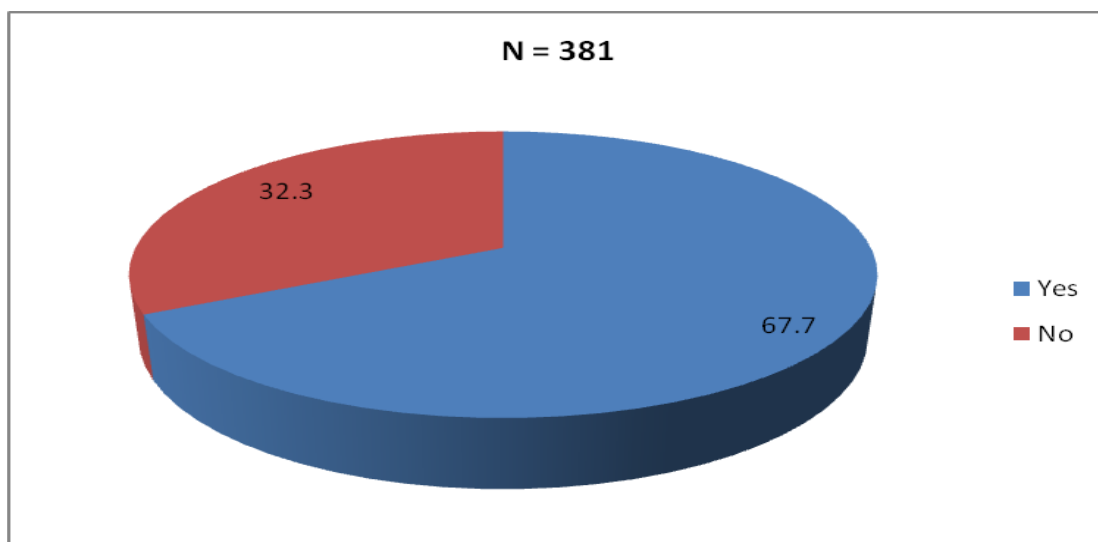


Figure 5.3: Control over farm income by women in Busia County

Source: Field Data, 2017

Findings established that more than two-thirds (67.7%, n=381) of women interviewed controlled income from farming individually or in conjunction with their husbands or other family members. Focus group discussions indicated that the income received from farming was not sufficient to meet their daily food needs. The purchasing power of an individual affects the individuals' decision making which also affects food security as much as the physical availability of food. The study set out to reveal the proportion of respondents who controlled income in the family. Being in a position to control income enables a woman to make decision and take action towards investing

in food production for the household consumption. This study concurs with Ouma, J. O., & Ochieng, P. O. (2022), who examines female-headed households in rural Kenya shedding light on the factors that influence women's control over income, including their roles in agricultural production, off-farm activities, and decision-making.

5.2.6 Reasons for engaging in farming

The study also aimed to find out the reasons women engaged in farming whether for income (business-oriented), food consumption-oriented (peasant farming) or both. Results in Table 5.3 show revealed that 59.8%, (n=381) of the respondents, indicated that farming was done for both food consumption and income-oriented goals whereas for 39.4% (n=381) of the respondents, farming was undertaken for food consumption related goals. Only 0.8% (n=381) reported that their farming was income driven. This resonates with World Bank, (2023), which highlights that women in rural Kenya are often driven to engage in farming due to economic necessity. They are responsible for household food security and may need to supplement family income.

Table 5.3: Reasons for respondents engaging in farming

Farming description	Frequency	percentage
Income-oriented	3	0.8

Consumption-oriented(food security)	150	39.4
Combined	228	59.8
Total	381	100

Source: Field Data, 2017

The findings indicate that 59.8 respondent women farmed for both food and income security. This study therefore resonates with Liru (2014) that farming efforts by women provide household food security and the surplus is sold for income. The study observed that it was not easy to dissociate and put the reasons independently given that food security involves both production and access meaning that one can sell for income and later use the same income to buy food for consumption. This was highly observed from the respondents that were highly involved in cash crop farming in Busia County. Three of the four Focus group discussions suggested that cultural norms and traditions frequently apportion women roles in agriculture, including tasks of weeding, harvesting, and processing. Additionally, women consider farming as a means of independence and empowerment.

5.3 Role of women towards food security in Busia County

5.3.1 Perception on women contribution food security in Busia County

Besides, a number of statements were read to the women and were required to state whether they agreed with the statements or disagreed or did not know and the results are as presented in Table 5.4.

Table 5.4: Perception on women contribution to food security

	Yes		No		Don't know	
Questions	F	%	F	%	F	%
Do women provide the bulk of labour in food crop production?	359	94.2	19	5.0	3	0.8
Does women's involvement in food crop production ensure enough food in the house?	369	96.9	11	2.9	1	0.2

Is less money is spent on purchasing food when women are involved in food production?	351	92.1	27	7.1	3	0.8
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Is less time is spent looking for food when women are involved in food production?	370	97.1	9	2.4	2	0.5
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Does the involvement of women in food crop farming reduce the importation of food to respondent's home area?	357	93.7	15	3.9	9	2.4
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Source: Field Data, 2017

From the results, an overwhelming majority (97.1%, n=381) agreed with that statement less time is spent looking for food when women are involved in food production. For 96.9% (n=381) of the women, they agreed with the statement that “women’s involvement in food crop production ensures enough food in the house”.

Findings from Mean standard Deviation indicated that majority of the respondents answered yes to the following questions:

- A) Do women provide the bulk of labour in food crop production?
- B) Does women's involvement in food crop production ensure enough food in the house?
- C) Is less money is spent on purchasing food when women are involved in food production?
- D) Is less time is spent looking for food when women are involved in food production?
- E) Does the involvement of women in food crop farming reduce the importation of food to respondent's home area?

The mean scores were 1.07, 1.03, 1.09, 1.03 and 1.08 respectively. According to (Njuki *et al.*, 2021), women's involvement in the food system can lead to increased food security and improved nutrition. The results therefore indicate that most respondents indicated that they agreed that women contribute to food security in Busia County. According to the standard deviation, the data also show that there were little differences or variations in the consensus about women's contributions to food security. According to Onyalo (2019), rather than emphasizing women's contributions to commercialized agriculture, which is dominated by men, the field should evaluate women's contributions to food security in the home and community. This will increase the visibility of women in agricultural production.

5.3.2 Contribution of Respondents labor in farming in Busia County

The respondents were asked about their participation in labour provision to household farming. The results in Table 5.5 indicated that, about a 12.8% contributed 100% of the labour to household farming, implying in this case that only women were involved in farming. Most of the women (28.3%, n=381) reported that they contributed 50% of the labour in the farm. Collectively, 39.6% (n=381) indicated that they contributed between 26% and 50% of their labour to the farm.

Table 5.5: Respondents labour contribution in farming

%Labour contribution	Frequency	percentage
5-25	51	13.4
26-50	151	39.6
51-75	97	25.5

76-100	82	21.5
Total	381	100

Source: Field Data, 2017

The study observed that women in Busia contribute intensively in sowing, weeding, fertilizer application, and threshing, while men take charge of tasks such as ploughing the farms and driving drought animals, the women's role is often restricted to work that requires low use of technological or mechanical devices. Women play an increasingly bigger role in the production of crops like vegetables and legumes. Since women spend a lot of time at home and in the field as compared to their male counterparts, they are the stewards of the farms and play a leading role in planting and weeding. The women thus contribute a lot to biodiversity and the transmission of indigenous and intergenerational knowledge that acts as a bridge between the past and the present (Njuki *et al.*, 2021). The study went further to ascertain whether there was a significant relationship between household food security and women contribution to the farm. The findings are as indicated in Table 5.6.

Table 5.6 Inferential Statistics for Women Contribution to household farming

percentage of labour you contribute to this farm	Pearson Correlation	.095	-.023	.138**	1
	Sig. (2-tailed)	.065	.657	.007	
	N	379	379	379	379

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

The findings therefore show that there is a statistically significant relationship between household food security and women contribution to farm.

5.3.3 Women's role in food preparation and storage

The study sought to establish the role of women in food preparation at the household level. When asked if they were the main individuals involved in food preparation, majority (87.9% n=335) of the respondents confirmed principal involvement in food preparation within their households signifying a major role played by the women not just in food production but processing and marketing as well. This finding is consistent with Kabeer, N. (2018) as well as O'Brien, K. (2020), who observation that,

despite women's undeniably crucial roles in childbearing, family feeding, and income control, there are signs that their status in subsistence economies is becoming more precarious.

The study therefore sought to establish the role of women in decision making regarding food storage. More than half (54.4%, n=381) of the respondents revealed that decision making regarding food storage was done by women. For 28.9% (n=381) of the respondents, decisions regarding food storage were done by the husband whereas 16.8% (n=381) revealed that decisions regarding food storage was the role of both the husband and wife. Food storage is a critical pillar towards ensuring that a household is food secure. There are several ways to achieve food security besides only producing food. It is also crucial to reduce food waste by using suitable food storage solutions, which guarantee that the food is consumed outside of its place of production and lasts for a longer length of time. This is the point at which choosing the appropriate food storage options is crucial.

5.3.3.1 Duration of food storage

The respondents were asked how long they stored their food produced. The results were shown in Table 5.7.

Table 5.7: Duration of food storage

	Don't Store		For 3 Months		For 6 Months		For 9 Months		For 12 Months	
	F	%	F	%	F	%	F	%	F	%
Vegetables	362	95.3	8	2.1	6	1.6	2	0.5	2	0.5
Maize	36	9.5	134	35.4	97	25.6	45	11.9	67	17.6
Beans	87	24.1	136	37.7	62	17.2	42	11.6	34	9.4
Cassava	119	34.2	106	30.5	56	16.1	18	5.2	49	14.1
Milk	326	97.9	4	1.2	2	0.6			1	0.3

Source: Field Data, 2017

Findings revealed that majority of women did not store the perishable agricultural products such as vegetables and milk as mentioned by 95.3% (n=381) and 97.9% (n=381) of the respondents respectively. Only maize (17.6%, n=381) and cassava (14.1%, n=381) was stored by respondents for a period of one year or more. Women are prominent economic actors in land related activities, with a major stake in crop husbandry, crop preservation, and processing and food preparation for both domestic consumption and sale. Indeed, food security depends not only on availability of sufficient food supply, but also on sustainability of access to food.

5.3.4 Women's role in food preservation

Respondents were further asked about their preferred methods of food preservation. An overwhelming majority (92.4%, n=381) cited that they preserved food using methods such as sun drying, hematic bags, and gunny bags. 90.8% (n=381) of the women reported that preserved their produce by drying. About a third (33.1%, n=381) preferred hematic bags while 14.4% (n=381) opted for gunny bags.

Discussions with respondents during FGDs revealed the extent to which women's input affected food security. Across all the FGDs, there was a general consensus that women were at the forefront in ensuring household food security. Respondents cited that children mainly depend on their mothers for their daily food needs as men often left the homes in the morning hours to pursue other economic activities and came

back evening or at times during the night. It was further evidenced that it is the women who go to farms, plant crops, harvest, and sell the produce to ensure that children are fed.

One discussant reported:

“Children demand for food mostly from mothers. Men don’t participate in farming. They avoid engagements in the farm. Men eat in hotels.” A female member of FDG, in Esidende village on 20/ 7/2021

Another man commented:

“Men disappear early and provide very little foods for their households. It is the women ensure their kids eat, go to farms, plant crops, ensure availability, harvest and sell crops.” A female member of FDG, in Igara village on 19/ 7/2021

Women’s involvement in on-farm and off-farm activities was noted. The on-farm activities performed by women reported included digging, planting, making furrows, sourcing for seeds, weeding and application of fertilizer, harvesting, and storage of produce.

5.4 Challenges experienced by women in household food security in Busia

County

This study also sought to establish any challenges affecting women role in enhancing food security in Busia County. The following key challenges as identified through KII interviews and FGD guides as shown in Table 5.8.

Table 5.8: Main challenges experienced by women in household food security in Busia County ranked

1 Cultural norms and beliefs
2 Unfriendly agricultural technologies and practices
3 Inadequate access to credit facilities
4 Other minor challenges included: pests, insufficient farm inputs, crop failure, theft of crop harvests from the farms, crop destruction by animals, sale of harvest by husbands and sons, and men restraining women from working in groups (members of women groups supporting each other) on their farms.
5 The off-farm challenges included lack of laborers and transport, lack of processing machines and unfavorable conditions including weather conditions.

Source: Field Data, 2017

5.4.1 Cultural beliefs and norms

Cultural beliefs and norms was ranked highly as hindering effective involvement of women in food production. Cultural restrictions on women's participation food production activities have left them particularly vulnerable in times of economic crisis. Such restrictions greatly limits the economic activities in which women may participate, and in extension, caps their economic power. It emerged that it is men who dictate what indeed happens in the house owing to their economic control. Some cultures require the presence of a man in a household or the woman must engage in

sexual intercourse with a man before any cultivation or farming is performed. This, the researcher noted, is a great hindrance for the women as they are not independent to make decision and act without external involvement.

One key informant remarked:

“Our cultural orientation is still a disadvantage to most of the women more so where the woman is a widow. A widow who doesn’t have a husband still needs the presence of a man to start the crop cultivation during the cultivation season. This means she must get a man to inherit her; this really is a hindrance to their independence and dignity” A male Key Informant, Naini on 20/ 7/2021

5.4.2 Unfriendly agricultural technologies and practices

Kenya’s food security and future growth depend on integrating new technologies to build increased access to irrigation with improved water management and water use efficiency however, small-scale farmers mostly women are unable to afford key inputs, mechanization and new technologies, such as artificial insemination, to achieve high productivity. For example, only 7% of small-scale farmers irrigate and just 2.9% of households use motorized equipment, (GOK, (2018). The potential of research and development (R&D) in Kenya is significant.

During the focus group discussions it was noted that many farming technologies and practices, such as the use of oxen or tractors for ploughing, are not women user-friendly. The design of ox-driven ploughs and the amount of physical strength required to operate the plough limits the extent to which women pay become

involved. They either have to hire men who own oxen or if a woman has oxen, then she has to engage men who then can handle the oxen and the technology itself to enable them plough their farms. (GOK, (2018), points out that if women farmers had the same access as men to improved agricultural inputs, such as fertilizer and seed, maize yields would increase by as much as 16% in Malawi, 17% in Ghana, and 19% in western Kenya.

5.4.3 Inadequate access to credit facilities

The challenge ranked as number two was, inadequate access to credit facilities. This resonates with (KIPPRA), 2019), access to agricultural finance is very low to the general population in Kenya, it is even lower for women (Nzomo & Muturi, 2014). Title deeds as collateral for borrowing in credit institutions is more common among men than women. The lack of ownership thus makes it harder for women to access the credit required to boost the household food production through agricultural production (Kenya Institute for Public Policy Research and Analysis (KIPPRA), 2019).

Women also lack sufficient access to credit facilities. One requires collateral to access credit; in most cases credit institutions require a title deed. The lack of ownership thus makes it impossible for women to access the credit required to boost the household food production through agricultural production. This finding is in line with Kabeer, N. (2018), which observed that women farmers do not have adequate credit and are not capable of purchasing required farm inputs or access appropriate technologies and labour, substantially reducing women's ability to invest in seeds, fertilizers or technology or adopt new agricultural techniques.

Women do not get opportunities to attend the trainings on good agricultural practices when they are organized as they are not given permission by their despite being the major household food producers. Such training sessions are often organized by non-governmental organizations or the agricultural extension department and are purposed to build their capacity on good agronomic practices. There are cases when they are not granted permission to put what they are taught to practical use by those who control access to land and other resources.

5.4.4 Other challenges

There were other minor, but not insignificant, farming and off-farm related challenges. Key among the challenges enumerated included: pests, insufficient farm inputs, crop failure, theft of crop harvests from the farms, crop destruction by animals, sale of harvest by husbands and sons, and men restraining women from working in groups (members of women groups supporting each other) on their farms. The off-farm challenges included lack of labourers and transport, lack of processing machines and unfavorable conditions including weather conditions. One man during a FGD narrated:

“In Busia, gender roles are, at present, reversed. The woman takes care of the children, goes to the farm and even makes decision on key household practices as the men are never there. It is the women who mostly lead the family. *(Focus group discussion with group in sidende, 20.7.2019)*”

This study found that women in Busia County are key players in household food security concurring with Wanjala, et al. (2017) and Karanja, & Muchiri, (2017). Overall, these studies demonstrate the important role played by women in achieving household food security in Busia County and highlight the need for policies and programs that support women's empowerment and increase their access to productive resources.

CHAPTER SIX
STRATEGIES FOR ENHANCING THE ROLE OF WOMEN IN
IMPROVING HOUSEHOLD FOOD SECURITY IN BUSIA COUNTY,
KENYA

6.1 Introduction

This chapter presents results as analyzed from the field data as per the third objective of the study. The chapter therefore presents findings and discussions on the strategies for enhancing the role of women to improve household food security in Busia County.

6.2 Strategies for enhancing the role of women in enhancing household food security in Busia County

The study sought to evaluate the existing strategies in enhancing role of women towards food security in Busia County. Results in Figure 6.1 show that majority of the respondents rated improved access to markets 40% followed by 33%, 18%, 9% for equal opportunities in income generation activities, access to social protection programs, and enhanced access to means of production respectively in the study area.

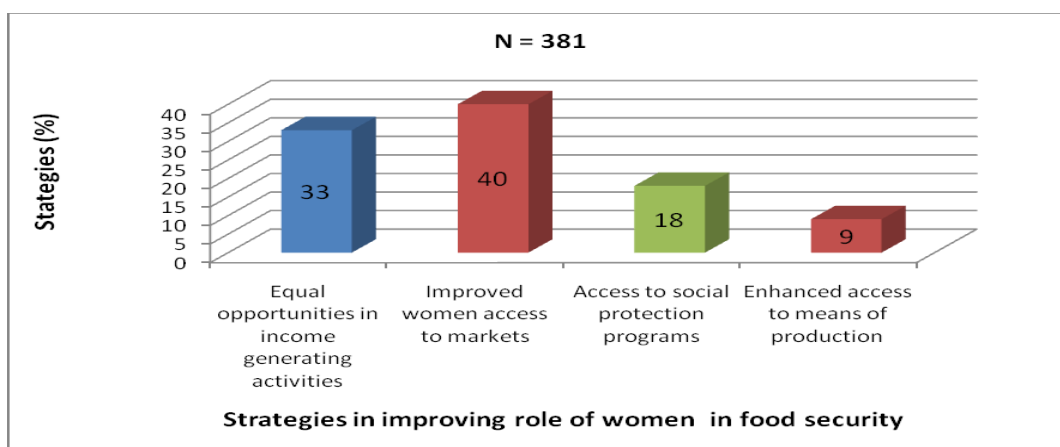


Figure 6.1: Strategies in improving role of women in food security in Busia county

Source: Field data (2017)

Findings therefore reveal that in Busia county, however the initiatives and efforts by different stakeholders in improving the role of women in food security, still a good percentage of respondents do not benefit from the existing strategy of enhancing access to means of production such as access to land and financial access from the financial facilities and other sources. These findings also resonate with KII that revealed that among the strategies that exist to improve the role of women towards food security were in Busia county were founded on sector goals in providing equal opportunities for vulnerable groups like youth, women, PWDs and older persons to improve their livelihoods.

This study examines women's access to factors of production focusing this factor was ranked as fourth important affecting food production and availability to household. Access to land and income diversification were mentioned as strategies of female-headed households in rural Kenya improve food security. Ouma, J. O., & Ochieng, P. O. (2022), sheds light on the factors that influence women's control over income, including their roles in agricultural production, off-farm activities, and decision-making as useful strategies to enhance food security in Busia County.

Enhancing women's access to adequate nutrition and labor market outcomes through investments in priority sectors and through income generation and participation were some of the other strategies mentioned during the interviews. Other strategies included expanding gender-sensitive social-protection programs in light of the high rates of financial and multidimensional poverty, promoting women's economic empowerment and embracing integrated approaches to combat poverty, involving non-state actors through multi-sectorial interventions, and investing in basic services that are more easily accessible, affordable, and available to improve human capital development and lower the likelihood of intergenerational poverty.

Regarding tactics to strengthen the contribution of women to improving household food security, the study found that various policy frameworks, including the Kenyan Constitution of 2010, gender policies, the Busia CIDP 2023–2027, the Kenya Climate

Smart Agriculture Strategy 2017–2026, and other national and county policies, served as a guide for county activities. In light of the fact that many developing countries are experiencing economic crises, food insecurity, HIV/AIDS, environmental degradation, and rising rates of urbanization, empowering women farmers is essential to bringing rural populations out of poverty. A summary of some of the enabling policies is provided in the Table on Policies for Women's Involvement in Food Security.

Reliably, other KII also related these strategies in fostering women role towards food security to the Kenya Climate Smart Agriculture Strategy 2017-2026. The policy has 3 pillars which include: Increasing food productivity; building resilience of farmers to bounce back in case of shocks; and mitigation. It was also reported that the county had embraced and further aligns its operations to the big 4 agenda 2018-2022 on food and nutrition security. It is a broad-spectrum ecosystem, biodiversity and food security policies, and mass education ensuring diversification and preservation of existing foods. According to one key informant, the county had a biodiversity policy where the communities and farmers are encouraged to plant drought tolerant crops which are nutritious and can do well in Busia. The crops being promoted included include Sorghum, millet, and certain herbs. Farmers were also being encouraged to do bulking where other farmers can get seedlings from them.

To improve food security, the county has given prominence to cereals production with a lot of support is going towards rice production in terms of improving infrastructure through provision of inputs like fertilizers, seeds, mechanization, and provision of milling equipment. A strategy for enhancing food security in the county is the demand driven agricultural services. This policy may not be helping the community and more so the women, since many rural women will not go to the extension workers to seek for services. The farmers are generally reluctant to visit the government offices demanding for specific services. It is thought that the extension workers who should visit or look for the farmers.

The county equally promotes the policy where it is expected to be food secure, and any surplus production is sold (*chakula mezani na pesa mfukoni*). The county gives some inputs like fertilizers and seeds to farmers. This support was termed as handout project by a key informant who declared that this initiative is not sustainable. Farmers don't take it seriously and it creates dependency syndrome. Findings further cited that the county offers credit facilities to farmers at low interest rates through the agricultural development fund following enactment of an act of Busia County.

Through various projects, the county has initiated on farm research, on the basis that farmers have knowledge which is normally neglected or not taken seriously by the leaders. The county leadership believes that if this knowledge is enhanced, it will yield more fruits. Thus, on farm trials have been initiated. The farmers set

demonstration sites and can invite neighbors and are able to observe differences between trials. The county has consulted research institution (ICRIST) to help with the trials. We linked ICRIST with farmers and farmers are able to set the trials on their own. They set several in the county. Farmers thus learned from their own research rather than introducing new /external research. Other initiatives undertaken in Busia County to empower women in food security include: Women's Groups and Cooperatives with the objective to provide a platform for women to share knowledge, access resources, and collectively address challenges. These groups empower women by providing them with a voice, access to credit, training, and market linkages (Ochieng., *et al*, 2024).

Enhanced Agricultural Extension Services aimed at improving technical support and training to women farmers on modern agricultural practices, pest and disease control, and climate-smart agriculture hence improved productivity and resilience to climate change (Ministry of Agriculture, Livestock, Fisheries and Cooperatives. (2023). The Central Bank of Kenya has facilitated access to credit and financial services for women farmers encouraging women to invest in their farms, purchase inputs, and expand their businesses (CBK, 2023). World Vision International has introduced Community-Based Initiatives to empower communities to take ownership of their development and implement sustainable food security strategies to foster social cohesion, strengthen community resilience, and promote women's leadership (World Vision International, 2023).

It was reported that the county has encouraged post-harvest reduction of losses through the use of hermetic bags which reduce storage losses. The grains are stored chemical free thus safe for use. I have worked on conservation agriculture where I encouraged minimum tillage which reduces soil erosion which ultimately improves soil fertility.

It further emerged that the county through the nutrition department provides information to the households on how they can improve food security at the household levels. The department of health and sanitation promotes kitchen gardens which help in fostering food security at the household level. This is done through encouraging the kitchen gardens where women can be able to control unlike the main farms where the men have more control. The teachers in primary schools are also sensitized who cascade the information to the children who then sensitize their parents to have kitchen gardens.

This is consistent with studies showing that families not only appreciated and knew about healthful foods, but also frequently traveled to far-off neighborhoods where such items were easily accessible (Alkon, 2013). These could include nutrition education, agricultural extension, and cookery classes where locals learn about the nutritional value of food and how to prepare it. Programs for education have the

potential to improve food access and lessen the negative health effects of malnutrition. Despite being an initiative that strengthens the position of women in the food production industry, the size of the kitchen gardens is typically quite small, therefore it does not promote large-scale production.

When asked whether the policies being implemented by the county recognize the role of women, it was reported that there is no specific policy highlighting women issues per se, although most of the World Bank projects (the Kenya Smart Agriculture Policy) requires women and the youth to be involved in projects. During focus group discussions, women were asked about existing strategies in place to enhance the role of women in household food security. Indeed, the women were not aware of any specific strategy that was being implemented either by the county government or the national government to enhance food security. When asked the best strategies that could be employed to help people cope with food insecurity, capacity building of farmers, planting early maturing crop varieties and crop diversification were predominantly cited by the women. Besides focus group discussion with men on existing strategies to enhance the role of women in household food security established that there were continuing efforts to practice conservation agriculture where the county encourages minimum tillage which reduces soil erosion which ultimately improves soil fertility thus increasing production for women led agricultural production.

Table 6.1 Policies for Women's involvement in food security

POLICY	OBJECTIVES	COMMENTS
The Kenyan Constitution 2010	The supreme document with both women's as well as food security interests.	Not challengeable except through a referendum despite gaps in implementation
Vision 2030	Creates a sustainable self-employment for women and youth engagement in agriculture. Offers devolved funds for women and community groups with high incidence of poverty.	There's need to engage to fill gaps in subsequent Medium Term Plan
Women Supportive Policies		
National Policy on Gender & Devt (2019); Women's Economic Empowerment Strategy 2020-2025; Ministry of Energy Gender Policy (2019); Ministry of Gender, Children and Social Devt Gender Policy(2011); Agricultural sector Gender Policy (2019); and County Gvt. Policy on Sexual and Gender based violence (2017)	- Provides supportive framework for rights-based approach, integrates & mainstreams gender into the Government development agenda; - Aims to empowerment & Supports women's access to resources & investments; Do capacity building through integrated approaches; Enable women utilize resources innovations, technology, value addition, business linkages and financial services - Enhances women representation in key development positions; institutions strengthening to coordinate gender responsiveness/ mainstreaming in agric sector - Capacity building women targeted for specific Affirmative funds & Access to Government Procurement Opportunities; - Eradicates cultural practices limiting women's access to resources - Promote equity, equality of women and men, & promote SGBV prevention programs / public education, interventions on equitable gender roles/ relations; positive social norms and attitudes; legal literacy and legal rights awareness.	There need for: - reviews as well as supporting - enforcement of implementation of the policies - domestication at county level
Food Security Related Policies		
The Agricultural	Takes cognizance of Kenya's agro	There need for:

Sector Development Strategy (ASDS) (MoALF,2018) The Agricultural Sector Growth & Transformation Program (ASTGS) 2019-29 Ministry Of Agriculture, Livestock, Fisheries & Cooperatives Agricultural Policy - 2021 National Irrigation Policy (2018) National Agriculture Sector Transformation and Growth Strategy (2019)	ecological diversity; Improve food diversity to meet dietary and nutritional needs, boost agro biodiversity, and support the creation and development of organic means of food production. To increase small scale farmer incomes, increase agricultural output and value addition, and boost household food resilience, particularly for women, youth, and PWDs. The promotion of effective programs that address the needs of vulnerable groups in the fisheries, livestock and crop production; guide the agricultural sector in attaining its goals in accordance with the Constitution of Kenya and Vision 2030 (GoK, 2021). Acknowledges the role of women in small-scale irrigation and including them in the planning and development of irrigation programs. It acknowledges the necessity of gender equality in the agricultural sector; ensure that women have access to resources; enhance women's participation in agricultural decision-making (GoK, 2019b).	1. reviews as well as supporting 2. enforcement of implementation of the policies 3. domestication at county level
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Table 6.1 shows an evaluation of policies that support women's involvement in food security. The table further analyses the gaps and achievements of the policies. Most of the policies need reviewing for effectiveness. Specific policies directly targeting women in Busia County are limited, broader national and regional policies have significant implications for women's roles in food security. Some of the important policies are: Land Reform Policies aimed at improving access to land for women who face challenges in securing land rights due to cultural and legal barriers. This limits their ability to engage in productive agricultural activities and contribute to household food security, World Bank. (2023).

Busia County needs to formulate policies supporting women farmer's access to credit to enable on-farms investment, inputs purchase, hence improve productivity. Central Bank of Kenya. Lastly policies supporting Social safety net programs can provide crucial support to vulnerable households, including those headed by women. Discussions with key informant respondents indicated that several of the policies are both poorly enforced and inadequately domesticated by county government to achieve intended purposes. This is supported by respondents view in FGD that they were not aware of existing policies that support women's involvement in food security. Recommendations can be made to ensure that policies and programs are designed to address women's specific needs and constraints. A gender-sensitive analysis of existing food security policies and programs can help identify gaps and biases that may hinder women's empowerment and food security. By understanding the impact of these policies on women in Busia County, it is possible to identify strategies to address the challenges they face and empower them to contribute to household food security.

CHAPTER SEVEN

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter provides a summary of the findings conclusion and recommendations. These are presented based on the key findings and in relation to the specific objectives of the study. Additionally, this chapter also suggests area for further study in relation to the topic of study.

7.2 Summary of findings

This research proposed to investigate the contribution of women in food security in Busia County. In relation to objective one which was to determine the household food security status of the Busia County.

On the sources of income, the respondents reported small scale business and casual labor 3.9%, remittance from relatives 0.8%. A proportion of 0.2% with no source of income; Main crops grown were 88.4% Maize, Bananas (1.1%), Cassava (5.3%), Sorghum (1.3%), Sugarcane (0.8%) and vegetables (1.3%); Main source of food majority 89%, from the farms, 10.5%, purchased, 0.5% from aid; With regard to number of meals in a day in the households, the study observed that majority at 81.6% had three meals per day followed by 16.8% and 1.6%, Two and one meals respectively per day; Then finally, the study concluded on this objective by observing that 51.4% of the respondents indicated that the amount of food produced from their farms were not adequate while 48.6% expressed of adequacy of the food for household consumption.

Objective two established the roles played by women in household food security in Busia County, this study revealed that 12.8% contributed 100% of the labor to household farming, implying in this case that only women were involved in farming, 28.3%, reported that they contributed 50% of the labor in the farm. Collectively, 39.6% indicated that they contributed between 26% and 50% of their labor to the farm; regarding women involvement on food preparation, 87.9% of the respondents indicated that women are highly involved while 22.1% indicated that both men and women are involved. On storage, findings show that 54.4%, of the respondents revealed that storage decision making was done by women, 28.9% by the husband where as 16.8% by both men husband and women; on the women participation on food preservation, 92.4%, indicated that food were preserved by women, 90.8% 9.2% showed that food preservation is done by both men and women.

On the third objective which evaluated the strategies in place to improve the role of women in household food security in Busia county, findings reveal that majority of the respondents rated improved access to markets 40% followed by 33%, 18%, 9% for equal opportunities in income generation activities, access to social protection programs, and enhanced access to means of production respectively in the study area as the strategies that are existing and towards their contribution to improving role of women in enhancing food security in Busia county.

7.3 Conclusions

This study concludes that:

(i) Food security is lacking in Busia County's Nambale and Teso South Sub counties. Due to the fact that household food security can be affected by a variety of variables, including conflict, natural disasters, poverty, disempowerment, and climate change, investments in the production and administration of maize farming practices are necessary. It is significant to highlight that women actively support food security in their homes and have created coping mechanisms to guarantee that their family have access to food during times of scarcity. To further increase food security in Busia County in particular and Kenya in general, such coping mechanisms must to be reinforced.

(ii) Women play a relatively important part in household food security although, when it comes to domestic farming operations, males continue to make the majority of the decisions. Without a doubt, women's incapacity to engage in and have an impact on important decisions pertaining to household livelihoods is likely to have a detrimental effect on their capacity to effectively provide food for the homes. The majority of women only have authority over their kitchen gardens and very little over the

cultivation of income crops.

(iii) The national and county governments' initiatives to strengthen the contribution of women to the enhancement of family food security in Busia County have not had the anticipated outcome. The main obstacles that women encounter in relation to land ownership and capital access, which play important roles in the equation for household food security, need to be aligned. These structural barriers, such as the agricultural sector's lack of control over land resources, keep women from utilizing their increasing authority as small-holding administrators. The three components of the strategy are: boosting food productivity; strengthening farmers' resilience to shocks; and mitigating the need for special policies that address leveraging women's role in ensuring food security. More studies should be conducted to help get a view on women contribution to household food security.

7.4 Recommendations

The following recommendations have been deduced from the study:

- i. Farming was the main source of food and income for majority of women and households indicating the magnitude of dependence on farming by women and

households in Busia County. Given that farm produce can be disrupted by many factors such as climate change, disempowerment, natural disasters and conflict; there is therefore need to invest in production and management of maize farming processes. There is also need to intensify promotion of diversification as well as climate smart technologies especially planting drought resistant, early maturing varieties as well as livestock breed selection.

- ii. There is a need to establish legal and policy frameworks to take into account multiple-use land rights, and particularly women's rights, as well as the different means by which women gain access to land including inheritance systems. In addition, the policies should promote women access to knowledge and capital so that they can be more effective in their activities that promote food security.
- iii. Moreover, there is need for multi-sectorial intervention since existing challenges related to food production, marketing, food storage, coping mechanisms during food scarcity and strategies to enhance role of women are multi-dimensional and multi-sectorial. It is therefore recommended that there be established institutional structures, systems and mechanisms that engage the relevant departments, ministries and other institutions for the implementation of the food security strategies and that harness an enabling environment to facilitate the full participation of the private sector, civil society and communities.

7.5 Suggestions for Further Research

The study identifies the following area for further research:

- (i) The study was limited to Nambale Sub County in Busia County which was a rural setting. Considering the extensive influence of women on household food security, there is need to conduct a comparative study on influence of women in food security in rural, urban and arid settings in Kenya.
- (ii) Most women in rural setting are faced with diverse challenges including cultural and gender-based factors that negatively affect their productivity with regard to food security. It is therefore recommended that an analytical study on influence of socio-cultural factors on household food security in rural Western Kenya be conducted to enable design of approaches that would cushion women from the effect of these cultural beliefs and orientations.

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APPENDICES

Appendix I: Consent Form

Title: Contribution of Women to Food Security in Busia County, Kenya

Researcher

Oscar A.O. Ekesa

Masinde Muliro University of Science and Technology Tel: 0722 580347

Procedure

Respondents to this study will be randomly picked from households living in Nambale Sub County and clustered into villages. Villages will be randomly picked and households selected procedurally and one adult female member of each household surveyed.

Benefits and Risks

The risks of this study are considered minimal. Emotional discomfort may arise due to discussing sensitive issues but any distress should be minimized by assurances that as a participant you can refuse to discuss any question, or withdraw voluntarily at any time without repercussions.

By participating in this study, it is anticipated you will gain by sharing your views about women's role in food security which may help find new ways to guide policy makers to tackle food insecurity in the county.

Confidentiality

All information given in the study will be kept confidential and will be used only for the purpose of the study. Your names or identity will not be used anywhere in this

study. The Principal Researcher will keep all data under lock and key for one year after the study and later destroyed.

Voluntary Participation

Participation in this study is voluntary and participants are free to accept or refuse to take part in the study and to withdraw at any time without repercussions.

Consent

I agree to participate in this study. I have a copy of this consent form, which I have read and understood clearly and everything clearly explained to me.

Respondents' Signature_____Date __

Research Assistant's Signature_____Date __

Appendix II: Household Questionnaire

This questionnaire is to be administered to sampled households who ideally should be adult females residing in Nambale Sub County. The respondents should be consenting adults (i.e., aged 18 years and above). Please ensure that you introduce yourself and the purpose of the assessment. **Introduction** – self-introduction and purpose of the study to be done by the research assistant.

My name is__and we are conducting this research on behalf of Oscar A.O. Ekesa, of MasindeMuliro University of Science and Technology to investigate the role that women play in household food security in Nambale Sub County. It is hoped that the findings of this study will be useful in guiding policy makers both at county and national government to get strategies to improve on the food security of Busia County and other similar counties in the country. Your honest responses are very important as they will purely be used for the study. Therefore, you are kindly requested to provide accurate information to the best of your understanding. We will not use your name anywhere during this interview and we will maintain confidentiality.

Do you have any questions?

Informed consent – Read, agreed and signed

Name of Research Assistant_Date __

Interview #__Time: From__To ____

Section A: Demographic information

Thank you. I believe we can begin the interview. First, I would like to get some

background information but not your name, which as stated earlier, will not be used.

1. Respondent's Age ____
2. Residential Area: Ward_____ Village _____
3. Education Level (what is the highest level you have reached? Tick as appropriate) ☐ None (didn't attend school) ☐ Didn't complete primary school
☐ Completed primary ☐ Some secondary education ☐ Completed secondary
☐ Completed college/university ☐ Others (please state)____
4. Marital Status (*please tick as appropriate*) ☐ Single ☐ Married ☐ Divorced ☐ Widow/widower ☐ Separated
5. Designation of respondent during the interview (*probe to establish if she is:*)
☐ Head household ☐ Spouse ☐ Child (must be over 18 yrs) ☐ Relative
☐ Worker Others (please state) _____
6. How many people are currently living in this household? (Probe and indicate the numbers)

Age Group	# of Male	# of Female
Children (below 13 years)		
Teens & Youth (13 – 25 years)		
Young adults (26 – 40 years)		
Older adults (41 – 60 years)		
Elders (over 60 years)		
Total		

Section B: Dimensions of food security

This section captures information on the three dimensions of food security (availability, access and utilization) and the various roles women play.

7. What is your understanding of food security? (Let respondent say in their own words)

8. For how long have you (as a woman) been engaged in farming? (Indicate in years + months)

9. Is farming your main source of income? (please tick as appropriate) ☐ Yes ☐ No

10. If no, what is your main source of income?
(Let respondent state)

11. What is the ownership of this land? (Please tick as appropriate) ☐ Leased/Rented ☐ Communal/inherited ☐ Purchased ☐ Squatter

12. How many acres is the land?_ (Acres)

13. How much land is under the following enterprises?

Farming enterprise	Acreage
Compound & kitchen garden	
Food crops (e.g., vegetables, cassavas)	
Cash crops (e.g., sugarcane)	
Fallow land	
Others (please state)	

14. What is the main crop grown? _____ Why is the main crop?

15. Are you the main decision maker regarding farming? ☐ Yes ☐ No

16. If no, who makes the main decisions? (Let respondent state)

17. As a woman, do you have any land under your control? ☐ Yes ☐ No

18. If yes, under which enterprise? ☐ Kitchen garden ☐ Food crop ☐ Cash Crop

19. Do you control any income from farming? ☐ Yes ☐ No

20. Has the income from farming been able to sustain the household food needs?

21. ☐ Yes ☐ No

22. How can you describe the farming you do? (Let respondent state and tick only one)

Type of farming	Tick
Income-oriented (farming as a business)	
Consumption-oriented (peasant farming)	
Combined (both income- & consumption)	

23. In your opinion, what percentage of labour do you contribute in this farm?

(Tell respondent the answers can range between 1% - 100%).

24. Please indicate your level of agreement with the following statements (please tick as appropriate)

Statements	Agree	Disagree	Don't know
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Women provide the bulk of labor in food crop Production			
Women's involvement in food crop production ensures enough food in the house			
When women are involved in food production, less money is spent on purchasing food			
When women are involved in food production, less time is spent looking for food			
When women are involved in food crop farming, there has been less importation of food			

25. What is your **main source** of food? (Only one option is allowed, tick as appropriate from respondent's answer) ☐ Farm produce ☐ Bought from market ☐ Food aid (friends/relatives) ☐ Barter assists for food ☐

☐ others (state)

26. Over the past one year, has the food produced in your farm been adequate for the family? ☐ Yes ☐ No

27. Who makes the **main** decision regarding food storage?

28. How long do you store the following foods you produce? (Please tick as appropriate for each food)

Food	Don't store	For 3 Months	For 6 months	For 9 months	For 1 year	Above 1 year
Vegetables						
Maize						
Beans						
Cassava						
Milk						

29. Do you use any methods for preservation of food? ☐ Yes ☐ No

30. If yes, which ones? (List the methods stated)

31. Are you the main preparer of food? ☐ Yes ☐ No

32. If no, who is? _

33. On average, how many meals does your family take per day? ☐ One ☐ Two [
] Three

34. Have you heard about food groups? ☐ Yes ☐ No

35. If yes, what is your understanding of food groups?

36. How do you ensure your family gets a balanced diet?

37. For the past one year, have you experienced any food shortage? ☐ Yes ☐
No

38. During times of food scarcity, what do you do to ensure there's food for your
family?

39. How effective has your food production (i.e., farming) in ensuring there's food
for your family?

☐ Very effective ☐ Effective ☐ Not effective ☐ Very ineffective ☐ Don't know

Section C: Respondents' perceptions

Challenges in this area?

40. What major challenges do women experience as producers of food?

41. What do you think needs to be done to improve farming practices in this area?

42. What do you think needs to be done to help women as producers of food in this area?

43. Any other comment?

Appendix III: Focus Group Discussion Guide

Welcome to this Focus Group Discussion and thank you for agreeing and finding time to participate. My name is Oscar A.O. Ekesa, a student at MasindeMuliro University of Science and Technology, undertaking research on the role that women play in household food security in Nambale Sub County. It is hoped that the findings of this study will be useful in guiding policy makers both at county and national government to get strategies to improve on the food security of Busia County and other similar counties in the country. Your honest responses are very important as they will purely be used for the study. Therefore, you are kindly requested to provide accurate information to the best of your understanding. We will not use your name anywhere during this discussion and everybody is encouraged to freely participate. There is no right or wrong answer and everybody's opinion will be respected. This discussion should take us roughly between 30-45 minutes.

For purposes of helping with my analysis, I kindly request to record our discussions, but again as explained, we will not use anybody's name. If it is okay with you, please allow me to turn on the recorder. Please note that the information you share will be treated with utmost confidentiality and will only be used for the purpose of this study.

Up to this point, are there any questions? Please feel free to ask any questions and seek for any clarifications.

If you are ready, we can start?

1. Can anyone tell us what they understand by the term food security?

2. What do you think causes food insecurity?
3. Is the county of Busia food secure or insecure? Why or why not?
4. What do you think can be done to ensure we are a food secure county?
5. Do women, in your opinion play an important role in food security? Why or why not?
6. What are the on-farm activities performed by women?
7. What can be done to empower women to help with issue of food security in this county?
8. Can someone share with us how families cope during food scarcity?
9. What do you think have been the best strategies to help people cope with food insecurity?
10. How can we design programmes to incorporate effective food security strategies in the county?
11. Any other comments?

Appendix IV: Key Informant Interview Guide

Good morning/afternoon Sir/Madam and thank you for agreeing and finding time to participate. My name is Oscar A.O. Ekesa, a student at Masinde Muliro University of Science and Technology, undertaking research on the role that women play in household food security in Nambale Sub County. It is hoped that the findings of this study will be useful in guiding policy makers both at county and national government to get strategies to improve on the food security of Busia County and other similar counties in the country. Your honest responses are very important as they will purely be used for the study.

It is my sincere hope that you will freely share with us your sentiments and experiences of food security in this county. Please note that the information you share will be treated with utmost confidentiality and will only be used for the purpose of this study.

Up to this point, are there any questions? Please feel free to ask any questions and seek for any clarifications.

If you are ready, we can start.

1. What is your understanding of food security?
2. What are the major policy issues in the county regarding food security?
3. In your opinion, do these policies recognize the role of women? Why or why

not?

4. What can be done to strengthen women's participation in food security issues in the county?
5. What other strategies should be employed to help with food security issues in the county?
6. Are there any measures you initiated as a leader to deal with food insecurity?

Appendix V: MMUST Approval Letter



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: sgs@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

16th February, 2021

Oscar Otieno Andrew Ekesa,
CDS/ G /04 /07
P.O. Box 190-50100
KAKAMEGA

Dear Mr. Ekesa,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Master's proposal entitled: *'The contribution of women to food security in Busia County, Western Kenya'* and appointed the following as supervisors:

1. Prof. Samuel S. China - SDMHA - MMUST
2. Dr. Nicodemus Nyandiko - SDMHA - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Disaster Management and Humanitarian Assistance Graduate Studies Committee and Chairman, Department of Disaster Mitigation and Sustainable Development. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Dr. Consolata Ngala,
DEPUTY DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix VI: NACOSTI Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 246376	Date of Issue: 06/October/2023
RESEARCH LICENSE	
	
This is to Certify that Mr.. Oscar Otieno Ekese of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Busia on the topic: THE CONTRIBUTION OF WOMEN TO FOOD SECURITY IN BUSIA COUNTY, KENYA for the period ending : 06/October/2024.	
License No: NACOSTI/P/23/30130	
246376	
Applicant Identification Number	Director General
	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
 - i. Endanger national security
 - ii. Adversely affect the lives of Kenyans
 - iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
 - iv. Result in exploitation of intellectual property rights of communities in Kenya
 - v. Adversely affect the environment
 - vi. Adversely affect the rights of communities
 - vii. Endanger public safety and national cohesion
 - viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix VII: Busia County Commissioner Research Authorization

REPUBLIC OF KENYA



OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION
State Department for Internal Security and National Administration

ccbusia@gmail.com

COUNTY COMMISSIONER'S OFFICE
BUSIA COUNTY
P.O. BOX 14
BUSIA (K)

When replying please quote
Ref. ADM 15/27/280
and Date

14th August, 2021

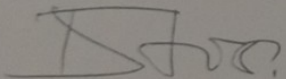
Deputy County Commissioners,
- Nambale
- Teso South
BUSIA COUNTY

RE: RESEARCH AUTHORIZATION
MR. OSCAR OTIENO ANDREW EKESA – CDS/G/04/07

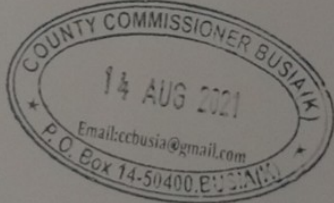
The above named is a bonified student of Masinde Muliro University of Science and Technology (MMUST). He has been authorized by the University to undertake research on “The Contribution of women to food security in Busia County, Western Kenya”.

This is to inform you that he has been authorized to carry out research in Nambale and Teso South for the period ending August, 2022.

Kindly accord them the due co-operation.



Philip Omuga
for: County Commissioner
BUSIA COUNTY



Copy to:

Mr. Oscar Otieno Andrew Ekesa
MASINDE MULIRO UNIVERSITY

Page 1

County Commissioner – Busia County