Norwegian University of Life Sciences

Master's Thesis 2021 30 ECTS

Norwegian University of Life Sciences
Faculty of Landscape and Society (LANDSAM)

How can social protection programmers or social safety nets contribute to strengthening small-scale farmers' resilience to food insecurity: An analysis of households in rural Malawi

Privilege Kandira

Msc in International Relations
Faculty of Landscape and Society (LANDSAM)

How can social protection programmers or social safety nets contribute to strengthening small-scale farmers' resilience to food insecurity: An analysis of households in rural Malawi

Privilege Kandira

Norwegian University of Life Sciences

Ås, Norway

Msc in International Relations

Faculty of Landscape and Society (LANDSAM)

Department of International Environmental and Development Studies, (NORAGRIC)

August, 2021

The Department of International Environment and Development Studies, Noragric, is the international gateway for the Norwegian University of Life Sciences (NMBU). Eight departments, associated research institutions and the Norwegian College of Veterinary Medicine in Oslo. Established in 1986, Noragric's contribution to international development lies in the interface between research, education (Bachelor, Master and PhD programmes) and assignments.

The Noragric Master theses are the final theses submitted by students in order to fulfil the requirements under the Noragric Master programme "International Environmental Studies", "International Development Studies" and "International Relations".

Noragric Department of International Environment and Development Studies P.O. Box 5003 N-1432 Ås Norway
Tel. +47 64 96 52 00 Fax: +47 64 96 52 01 Website: http://www.nmbu.no/noragric

Declaration

I, Privilege Kandira, declare that this thesis is a result of my research project and findings. Because the project was part of the TRANSFORM project at NMBU methodologies and results data is similar, in possible cases the information used is cited. Other Sources of information are not a product of my own work is referenced and cited. This report is my own original piece of work and has not been previously submitted to any other university for award of any type of academic degree.

Signature..Kandira.....

Place..NMBU Ås.....

Date..31/08/2021.....

Table of Contents

Contents

Abstract

Small-scale farmers are essential players in achieving food and nutrition security and sustainable livelihoods for the world. 84% of the worlds' estimated 608 million farms are small scale farms (*family farms*), operating less than 12% of the agricultural land yet manage to produce a third 35% of the world's food. However, the disproportionate effects of climate change are much more affecting these small-scall farmers; threatening the goal to achieve food and nutrition security. Increasing their resilience to climate change can help strengthen these small-scale farmers and achieve food and nutrition security staring from a household level. However, to do achieve this, it should be noted that social programmers and safety nets needs to be context sensitive, paying attention particular attention to the different factors (*particularly from the lowest level household level)* that threaten the small-scale farmers and food security. The goal of this study was to understand the complex realities on the ground through the exploration of differentiated vulnerabilities, capabilities, and challenges of rural Households in Malawi. The knowledge produced can then be used to make policy recommendations that can contribute to strengthening small-scale farmer's resilience to climate change and food and nutrition security. The study was carried out in 5 of Malawi districts (Dowa, Kasungu, Mchinji, Mzimba, and Rumphi). Data was collected in total from 1118 households out of the selected 11 extension planning areas. The study established that small-scale farmers' households are different in characteristics and demographics and that gender Inequalities still exist in rural Malawi. The figures showed that selected districts are dominated by male-headed households, and that they have more access to resources compared to their male counterparts. The study also showed that there are household differences in terms of food security, female-headed households are more vulnerable to food and nutrition than male-headed households. Moreover, the study revealed that households use different coping strategies, however there some which are more commonly used that other, such as reducing food portions at mealtimes and reducing the number of meals per day. The paper then concludes that to strengthen the small-scale farmers, policy makers and programmers should create targeted programmes and policies that respond and sensitive to these household differences.

Keywords: resilience, food and nutrition security, small-scale farmers, households, Malawi, social protection programmes, social programmers, safety nets.

Acknowledgements

First and foremost, I would like to sincerely express my deep gratitude to my supervisor Gry Synnevåg, for her guidance and support. This project would be without form and shape without her highly acknowledged experience. I would also want to acknowledge Lars Olav Eik Muhammad Azher Bhatti for giving me access to their Project and information.

I am also grateful to Norway for the Students at Risk-programme, I stand to confirm that the programme has far reaching consequences. This is in respect to its objective of empowering students who are placing themselves at significant personal risk due to their advocacy for human other civil rights in their local communities. The programme has provided me with a valuable opportunity to come to Norway and achieve the dream I had. Now a new journey starts in my life but it's not as same as yesterday, now I am better off than the day before, all acknowledgment goes to the People of Norway for their heart for a better world through the STAR programme.

I would also want to express appreciation to my Friends, Mazvita Domio, Happiness Chirowa and Jackson Ngilazi, thank you guys for believing that someone born and raise in the ghetto, deprived of opportunities and basic privileges can be a star. A big thank you to friends that I met by coincidence, however that became of professional mentors to me, a big thank you to you Dr Moses Limuwa, Mr Tererai Obey Sithole and Mr Avoid Masiraha.

Dedication

This thesis is dedicated to the people of Malawi and my family,

and it is

'In memory of Joseph Kandira'.

Who have been intrinsic sources of motivation and inspiration.

Abbreviations

DF - *the Development Fund of Norway*

DFID - *Department for International Development*

DoDMA- Malawi Department of Disaster Management Affairs

FISP - *Farm Input Support Program*

GoM - *Government of Malawi*

HIS - *Integrated Household Panel Survey*

IFAD - *the International Fund for Agricultural Development*

IPC - *The Integrated Food Security Phase Classification*

MEP&D - Ministry of Economic Planning and Development

MNSSP II - *Malawi National Social Support Programme II*

MoAFS - *Ministry of Agriculture and Food Security Malawi*

MVAC - The Malawi Vulnerability Assessment Committee

NCA - *The Norwegian Church Aid*

NMBU - *Norwegian University of Life Sciences*

NORAD - Norwegian Agency for Development Cooperation

PROGRESA -*Programa de Educación, Salud y Alimentación*

SLA - Sustainable Livelihood Approach

SLF - *Sustainable Livelihood Framework*

TRANSFORM - *The Sustainable Food Systems for Rural Agriculture Transformation and Resilience*

UN - *United Nations*

UNDP - *United Nations Development Programme*

VSL - *Village Savings and Loan Scheme*

Table of Figures

CHAPTER ONE: Introduction

1. Introduction

Malawi's economy and livelihood depends on agriculture, its rapidly growing population is dependent on subsistence rain-fed agriculture (MoAFS, 2006). This makes the agricultural production systems more susceptible and vulnerable to climate change related shocks. That are with consequences of continued food and nutrition insecurities. Social programs implemented have not yet made a significant impact in building resilience to external shocks that affects (Haug & Wold, 2017). Social protection programs are designed to reduce socio-economic risks, vulnerability, extreme poverty, and deprivation. They can as well be used to inform and improve agricultural production by recognising context specific challenges and differences, thereby strengthening local food systems. Therefore, linking social protection programs and social safety nets with agricultural food systems, can be used to transform, and building resilience of households and communities against climate change and food and nutrition insecurity.

Malawi is a low-income country and least developed country (FAO, 2020), its agricultural food production systems have been suffering shocks from climate change induced shocks such as floods and droughts. Recently a report published by The Integrated Food Security Phase Classification (IPC) indicates that nearly 1.9 million people in Malawi are food insecure (IPC, 2020). In its fifth Integrated Household Survey (IHS5) report the government of Malawi found out that 84.7% of its population are engaged in subsistence and rain-fed agriculture with the majority of about 94% living in rural areas (IHS5, 2020); more so 99% of its national food production is dependent upon subsistence rain fed food production (GoF, 2011) resulting in low productivity and lack of predictability (DoDMA, 2016). Additionally, most of its small-holder farmers are women and gender inequality are a cause of concern as 25 percent of Malawi's households are female-headed and forms a larger portion of agricultural labor supply (GoF, 2011).

Globally the impacts of climatic shocks are disproportionately distributed, much of the affected are in the developing world. About 75% of the affected by climate change are living in rural areas and are small-scale farmers who mostly practice either subsistence farming or are smallholders. As these communities and societies produce 80% of the food produced in the developing world as they use and manage more than 80 percent of farmland (FAO., 2018) (IFAD, 2010) (Shenggen, Joanna, Michiel, & Alex, 2013). In a bid to address these challenges

in Malawi, the Government of Malawi and different stakeholders have tried to implement different projects and policies aimed at increasing productivity and empowerment, but they have not been that effective in transforming these communities (Haug & Wold, 2017). One of the reasons is that social protection programs are still being viewed as parallel to agricultural policies which are implemented by different authorities and usually perceived to be competing for resources (Tirivayi, Knowles, & Davis, 2016). To increase the adaptative capacities of these communities and societies such as small-scale farmers there is need for the creation and strengthening of policies and programs that allow the development and maintenance of sustainable food systems to meet the growing food demand, insecurities, and poverty. There is need to create and support policies and strategies that improves the production and management of these food systems in a more efficient and sustainable manner. These policies and programs need to be context specific informed, while at the same time paying particular attention to differences and disparities between different groups of people, gender, and geographical regions.

The purpose of this project is to establish how targeting household level differences through social protection programmes can help to strengthen small-scale farmers' resilience to climate related shocks and food insecurity. The paper attempts to do this by examining and assessing the differences of risks and vulnerability of households to food insecurity, between districts and different household types (*Male and Female-headed -Households*) regarding household characteristics, food security and livelihood coping strategies. The knowledge produced will result in a deeper understanding of the difference between vulnerabilities and capabilities of scall-scale farmers. This is important for the understanding of both covariant and idiosyncratic risks and help in the building of synergies and interaction between social protection programs and agriculture and food security. Documenting evidence of the differences between different groups and communities, benefits informing policy makers and social programmers on how social protection programs can complement agricultural systems with interventions that are context sensitive to achieve optimum results in ending food and nutrition insecurity.

2. Problem statement

With most of Malawi's population engaged in subsistence and rain-fed agriculture, 94% are living in rural areas (IHS5, 2020). The impacts of climatic shocks continue to affect the status food security in Malawi (Holmes, Costella, Bailey, Kruczkiewicz, Poulter, Sharp, & Scott, 2017), but rural livelihoods are being affected more as they have limited capacities and

abilities to respond to these shocks (Joshua et al., 2016). Various policies and programmes have been implemented to transform these livelihoods (Hunga & Culas, 2019). However, some of the policies and programmes implemented have been designed considering covariate risks that affect communities more than idiosyncratic risks at household level leaving a food security gap that is not sustainable (Hunga & Culas, 2019) (Makoka, 2008). It should be noted that there are household level embedded different risks, vulnerabilities, capabilities, and challenges (*idiosyncratic risks*) between these rural households which intern affects individual coping capacity to food insecurity and climate change related shocks (Tirivayi et al., 2016).

Thus, to transform local food systems to become more sustainable and resilient, it should be realized that safety nets and social protection programs have a significant role to play (Tirivayi et al., 2016), and they need to be sensitive to small-scale farmers and in this case those in rural Malawi. Programs and policies should be designed in a way that protects and promote small-scale farmers. Hence this paper will seek to understand vulnerabilities, risks, sensitivity, and the exposure of small-scale farmers to food insecurity situation through exploring the household unit in rural Malawi, and in particular look at differences between male headed and female-headed households in five different districts? By focusing on these household differences, the study can make policy recommendations that consider differences and inequalities at household and district level, where social protection can focus to strengthen small-scale farmer's resilience.

3. Objectives and Research Questions

a. Overall Objective and Research Questions

The main objective of this study is to understand the complex realities on the ground through the exploration of differentiated vulnerabilities, capabilities, and challenges of rural Households in Malawi, to make policy recommendations that can contribute to strengthening small-scale farmer's resilience to climate change and food and nutrition security.

b. Specific Objectives of the study

- *to analyse differences between district* and male and female households with regard to households' characteristics and food security

i. To analyse differences in households' characteristics.
ii. To analyse the differences in food security.
iii. To analyse if farmers have different access to resources and financial assistance.

iv. To analyse differences in livelihood coping strategies.

c. Research questions addressed: -

i. Are There differences between districts and male and female households with regard to households' characteristics and food security?

ii. Do farmers have different access to resources and financial assistance?

iii. *How are small-scale farmers reacting to Food Shortages?*

CHAPTER TWO: BACKGROUND AND LITERATURE REVIEW

1. Socio-economic Profile of Malawi

Malawi ranks 174 out of 189 on the Human Development Index, it is among the last 20 ranked lowest countries (UNDP, 2020). Malawi's population is estimated to be 18.6 million, predicted to double by 2038 (WB, 2021). According to the country's national statistics the majority of about 84.4 percent live in rural areas, which a fraction of 15.6 percent living in urban areas and that of the 84.4 percent, 29 percent of the households are females headed. More so the report established that most agricultural Households are in rural areas 92.8 percent with also the majority being female-headed 88.6 percent (IHS5, 2020). The International Monetary Fund report in 2017 established that 50.7 percent of the population are living below the poverty line while 25 percent are in extreme poverty and the poverty rate has been steady at 50.7 percent since 2011 (IMF, 2017). Poverty levels in the country have been attributed to, among others low productivity in the agriculture sector, limited employment in other economic sectors, rapid population growth and limited coverage of safety net programs (IMF, 2017).

Located in Sub-Saharan Africa, Malawi is a landlocked country whose economy and livelihood depends on agriculture as it accounts for 36% and 87% and 65.3% of GDP and of total employment and total source of income respectively as of 2006 (MoAFS, 2006) (MVAC, 2020), hence agriculture is an essential component Malawi's economy and for food and nutrition security. More than 1.9 million people in the country live on USD 380 per annum per capita gross national income (GNI) and 70% of the population lives on not more than USD 1.08 per day (Bhatti, Godfrey, Ryan, Kachiwala, Hovdhaugen, Banda, Limuwa, Wynn, Ådnøy, & Eik, 2021). This makes the country amongs one of the poorest countries, with a nearly a quater of the population considered 'ultra poor' *"...earning less than the estimated costs of a diet providing minimum recommended calorie intake, and about half of all children suffering*

from acute or severe malnutrition." (The UN News, 2013). The country's economy is limited in diversification and heavily dependent on rain fed subsistence farming (DoDMA, 2016), making it more susceptible to climate induced shocks such as droughts and floods (Bhatti et al., 2021). From the 2000s to 2015 Malawi managed to alleviate itself from the food crisis. The Malawi government achieved this through the implementation of various input subsidies programs for instance the Farm Input Support Program (FISP) which came it to force in 2005 (Haug & Wold, 2017) giving subsidies vouchers (seed and fertilizer) for smallholder farmers.

2. Food and Nutrition Insecurity in Malawi

In terms of food and nutrition security within the identified districts, the Integrated Food Security Phase Classification (IPC) indicates that nearly 1.9 million people in Malawi are food insecure, and the selected Districts fall within phase 2 with about 4,314,745 People under stress (IPC, 2020). Therefore, the selected districts would be sensible for research as they are part of the most vulnerable and most food insecure in Malawi. The above (FISP) success story was short lived as it failed to build enough resilience regarding the 2015-2016 flooding and drought because of the impacts of climate change and poor agricultural reforms (NORAD, 2020). Recently a report published by The Integrated Food Security Phase Classification (IPC) indicates that nearly 1.9 million people in Malawi are food insecure, where the EPA areas of the TRANSFORM Program fall within phase 2 with about 4,314,745 People under stress (IPC, 2020). According to the IHS5 the percentage of people who are very low Food Secure has almost doubled from 32.5 percent in the period 2010-2011 to 62.9 percent in the 2019-2020 period (IHS5, 2020). Of which women and children are the most prone and vulnerable to food insecurity, women are prone due to their limited access to productive resources and assets (DoDMA, 2016).

Recently Malawi's state of food security was affected by climatic factors caused by cyclone IDAI, approximately 975,600 people were affected by these floods with 60 deaths and 672 injuries reported this resulted in the Government declaring a State of Disaster in 13 districts (MVAC, 2020). Malawi in prone to the consequences of climate change related shocks, negatively impacting its agricultural and food systems. it makes building and strengthening of resilience a key priority area as these changes threatening food and nutrition security, and livelihoods. This calls for safety nets and programs to high-risk groups and strategies that increases stability, resistance, and resilience of livelihood systems according to the 5-phase classification of food and nutrition security by FAO (FAO, 2006).

Moreover, being susceptible and vulnerable to climatic shocks such as floods and droughts vulnerability is exacerbated by low household incomes, and seasonal dependence on rainfall for production. This effect is attributed to low ownership of assets as another major contributing factor in reducing the ability to cope with shocks. Because of poor livelihoods exposure to climatic shocks even moderate shocks have dire consequences (GoF., 2018). These challenges call the need for capacity building and resilience building by using social protection program and safety nets to facilitate an increase in assets ownership. This requires for an approach that goes beyond short-term and emergency consumption responses and requires an approach that is long-term. Building resilience in the poor people by creating productive assets, skills and livelihoods that are shock sensitive. (GoF., 2018). Seasonality and climate shocks that occur during lean seasons have allowed a sense of predictability in Malawian humanitarian crises though with variations and this have resulted in a bit of effectives of humanitarian responses (social protection programs/nets) (Longhurst & Wheeler, 2019). However, efficiency and sustainability of these responses presents a challenge as this is partly because of lack of access to productive assets and the continues recurrence of these climatic shocks (GoF., 2018), thus this project intend to find out how to use social protection program for building resilience and sustainability in the long run.

3. Existing gender challenges to climate change and food insecurity In Malawi

Climate vulnerability have gendered consequences, impacts and challenges. This means that the challenges presented by climate change and its vulnerability affects both men and women but in different ways at different levels (Kakota, Nyariki, Mkwambisi, & Kogi-Makau, 2011). The dynamic nature and context specific of climate vulnerability manifesting itself along cultural, social, gender and poverty lines. This results in women representing a larger proportion of the affected comparatively to men. Particularly its impacts on small-scale farmers have consequences that trickles down to household food insecurity. Hence understanding of these gendered climate vulnerabilities are crucial for sound building resilience. This aids in the creation of policies and programs that are specifically designed to protect farmers and household by targeting to aggress these vulnerabilities as women are constrained by structural gender in equalities and the fact that women are among the poorest and highly dependent on natural resources in the developing world (Nelson, V., Meadows, K., Cannon, T., Morton, J., & Martin, A., 2002).

A study of Chikhwawa and Ntcheu districts in Malawi by Kakota et al. (2011), showed that exposure and sensitivity to climate risks vary between men and women. Difference in gender roles, sources of livelihoods and access to resources were among the cited factors that influencies the difference in gender vulnerbility. The study also showed that each gender responds differently to climate risks, as men have more opportunities and access to resources than women (Kakota et al., 2011). These results are confirmed in another study that tested the differences in the adoption of climate smart agriculture and level of adaptive capacity by Kakota, Synnevag, Maonga & Mainje, (2020). The study establishd that the gender gap still exist in the adoption of agricultural technologies. As 30% women showed to have adopted Climate Smart Agriculture (CSA)comparative to 70% of men the this indicated that adoption capacities of agricutural technologies are difference among men and women. The articule cited same determinant of low adaptive capacity of women attributing to high input demand and cost of inputs, labour requirement and lack of credit opportunities and income (Kakota et al., 2020).

Structural gender inequalities and differences to climate variabilities in agriculture have consequences on household food security as women and men have different access to resources and opportunities. Thus, gendered vulnerabilities to climate variability in agriculture inversely affects food and nutrition security at household level. Kakota et al., (2020), indicated that the rate of adoption of CSA was lower in female-headed households compared to man-headed households as female-headed households lack of inputs and Income; access to drought-resistant varieties and fertiliser; and Limited access to income, information, training, extension services and restricted access to water (Kakota et al, 2020) (Kakota, Maonga, Synnevag, Chonde, & Mainje, 2017).

The same results were highlighted by (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015) in their study to which looked at household vulnerability to food insecurity and its determinants in two semi-arid districts in Malawi. The study shown that female-headed households were more vulnerable and susceptible to food insecurity than male-headed households because of low access to resources such as income, household size, land size and access to climate information Kakota, T., et al. (2015) . All these findings are critical in the design and implementation of developmental programmes, as they stand to guide and in form the formulation and implementation process. In this sense social protection programs in agriculture can be used not only for gender main streaming but ensuring effective policy design and implementation, equitable distribution and access to resources, this study intends to have policy implications of household food security of small-scale farmers.

4. Building Resilience in Malawi

There have been various initiatives in Malawi intended to build resilience in Malawi by different stakeholder such as the, FISP and cash transfer programmes by the government of Malawi and the "The R4 Rural Resilience Initiative" by the World Food Programme and Oxfam America. Commenting on the FISP, Haug and Wold, (2017) points out that though the program managed Malawi to alleviate itself from the food crisis from 2000s to 2015, the programme failed to build the necessary resilience to withstand serious flooding and drought evidenced with the 2015-2016 flooding and drought. Regarding to the "The R4 Rural Resilience Initiative", Monserrath Ximena Lascano Galarza in investigating the impacts of food assistance on resilience to food insecurity of the beneficiary households of the programme in Malawi establishes that enhancing resilience does not always translate into an improvement of well-being, as resilience building resilience can be a trade of with other social aspect such as food and nutrition security itself, thus suggest that resilience-building initiatives should consider all dynamics, timing and context of the beneficiary communities for an efficient programmes design and implementation without trading off other social aspects (Galarza, 2020). While other studies establish that that nutritional outcomes are affected by household resilience capacity as there is a positive relationship between resilience capacity and household dietary diversity and food consumption in the presence of shocks. Thus making access to basic services, assets and adaptive capacity crutial to resilience building and food security (Murendo, C., Kairezi, G,. and Mazvimavi, k., 2020). Hence it is the purpose of this paper to find out how can resilience building be done in a more efficient manner using social protection programs for balanced and effective development.

5. Evidence of Impacts of Social Protection Programs From other developing countries

Lessons can be derived from other countries that linked social protection programs to agriculture. Studies from Latin America show that social protection programs have encourages investments in agriculture and increases productive assets accumulation and increased productivity (Tirivayi et al., 2016). For instance, the Mexico's Programa de Educación, Salud y Alimentación (**PROGRESA**) programme resulted in the accumulation of livestock, an increase in land use and production (Todd, Winters, & Hertz, 2009) (Gertler, Martinez, & Rubio-Codina, 2012). Similar results can be drawn from the Bolivian (**BONOSOL**) pension programme that resulted in expenditure in farm inputs, livestock accumulation and as well increased productivity (Asfaw & Davis, 2018).

Additionally, social protection programs can increase dietary consumption and improve food and nutrition security, examination of the PROGRESA program by (Todd et al., 2009), their study established that a substantial number of households' dietary consumption of nutritious foods increased from consumption of their own production. In terms of nutrition security, the program is also credited to have increased and improved the protein per calorie intake (Rubalcava, L., Teruel, G. & Thomas, D., 2009). More so previous studies in Malawi showed that social protection programs can be used to address gender and household inequalities as the female-headed households that participated in the Malawi social cash transfer scheme program accumulated more assets that their male counterparts (Tirivayi et al., 2016) (Covarrubias, K., Davis, B., and Winters, O. , 2012). However, these programs can have various and different impacts in different areas and regions because of various reasons. The RPS programme in Nicaragua is a good example as the study by Maluccio (2010) established that the program had no impact on asset accumulation such as livestock and land ownership (Maluccio, 2010). Thus, highlighted in the problem statement it is squarely important to assess and examine how can social protection programs be used to build small-scale farmers' resilience to produce policies and programs that are context sensitive and tailored to target the most vulnerable.

6. Policy review Malawi

Confronted by a myriad of challenges, The Government of Malawi has enacted several policy guidelines. Prior to the existing Malawi National Social Support Programme II (MNSSP II), the Government of Malawi put into effect the first National Social Support Programme which was supposed to run from 2012-2016. The policy operationalised its National Social Support Policy, which outlined Malawi's strategy for social protection. The policy document contained Malawi's vision of enhancing the quality of life for those affected by poverty and hunger, and not merely sought to deal with hunger but also to improve the resilience of those who are vulnerable to risks and shocks. Four strategic objectives where outlined, and these where:- To provide welfare support to those that are unable to construct a viable livelihood; To protect the assets and improve the resilience of poor and vulnerable households; To increase the productive capacity and asset base of poor and vulnerable households to move them above the poverty line; and To establish coherent and progressive social protection synergies by ensuring strong positive linkages to influence economic and social policies, and disaster management. These where to be achieved through different priority areas NSSP policy priority

areas are namely: (i) provision of welfare support, (ii) protection of assets, (iii) promotion through productivity enhancement, and (iv) linkages and mainstreaming (MEP&D, 2012).

NSSP was a comprehensive framework that entailed different activities and actions to achieve social protection. These activities ranged from Social Cash Transfer Programmes, Public Works Programmes, School Meals Programmes, Micro-finance Programmes and Village Savings and Loans Programmes. In evaluation on the activities a review by the Ministry of Finance, Economic Planning and Development (MoFEPD) Poverty Reduction and Social Protection Division, found out that though the policy over emphasized economic development the policy had little focus on social and human development. There were few linkages between MNSSP programmes and agricultural, resilience, and livelihood interventions, despite evident policy level overlaps. Consequently, this has been attributed as a result of lack of coordination between policy stakeholders and the resistance of communities towards "double dipping" thereby hindering the spreading and distribution of benefits evenly within/between communities. Thus, creating the need for alignment between various social protection and this was to be achieved among other things, through systematically mapping social protection agriculture, resilience, and livelihoods interventions and detail objectives, approach, targeting criteria, coverage, and (potential) relationships and overlaps with other interventions (MoFEPD, 2016).

NSSP was succeeded by various policy formulation and activities such as The **National Agriculture Policy (NAP)** of (2016) which was set to achieve sustainable agricultural transformation that will result in significant growth of the agricultural sector, expanding incomes for farm households improved food and nutrition security for all Malawians, and increased agricultural exports. The policy identified eight policy priority areas and among these Sustainable Agricultural Production and Productivity, Food and Nutrition Security, and Empowerment of Youth, Women and Vulnerable Groups in Agriculture, are identified (MoAIWD, 2016). To guide investment towards **NAP,** Malawi formulated the **National Agricultural Investment Plan (NAIP). NAIP** is a five-year investment plan towards the priority areas identified by **NAP** (MoAIWD., 2018). In response to climate change and climate related shocks **National Disaster Risk Management Policy** (**NDRM**) of (2015), the policy forms the bases and framework for mainstreaming disaster risk management systems (DoDMA., 2015). The policy gave birth to several National Disaster Risk Management

Technical Sub-Committees including subcommittees responsible for coordination and guidance of Agriculture and food security and the health and nutrition.

As a result, the **Food Insecurity Response Plan (FIRP)** was birthed with several plans implemented in different periods. the fist **(FIRP)** identifies food security, nutrition, agriculture, health, education and water and sanitation (WASH) as the key priorities for immediate assistance (DoDMA, 2016). Like any other country Malawi does not lack the policy social protection frameworks that intends to provide guidelines for social protection. However, challenges of lack of coordination at various policy and stakeholder levels are cited and lack of coverage, requiring more coherent social protection programmes and the need to map and harmonize those programmes. Thus, the recent National Social Support Programme II (MNSSP II), seeks to address these issues by adopting and building on the same vision and objectives of the first MNSSP but establish three Thematic Pillars that cover Strategic Objectives and Actions to strengthen the provision of social support in Malawi, and these are Consumption Support: Resilient Livelihoods and Shock-Sensitive Social Protection. All of these converge in trying to cover general strategic actions concerning public work, school meal programmes and, saving and loan group and micro-finance institution-related strategic actions through Systematic Strengthening (GoF., 2018).

Unlike the first MNSSP which over emphasize economic development, MNSSP II understands vulnerability in all its forms economic (Economic shocks and processes), social (marginalisation, exclusion, violence, abuse, and exploitation.), and agricultural vulnerability (reliance of rain fed subsistence agriculture). Thus, we see the enactment of different plans of actions. The recent in effect response plan is the **Lean-Season Food Insecurity Response Plan (LS-FIRP)** identifies Food Security and Nutrition clusters as the key priority clusters that need urgent attention (DoDMA, 2018). Another critical policy is The **National Multi-Sector Nutrition Policy (NMSNP) 2018–2022.** The policy serves as a as a guiding document for national nutrition response for different stakeholders including government (DNHA, 2018). Hence this paper will make use of these existing policies and to some extent assess their impact on rural communities.

CHAPTER THREE: THEORETICAL FRAMEWORK AND DEFINITIONS

1. Sustainable Development and The Sustainable Livelihoods Approach

Building resilience is critical for the people of Malawi particularly small-scale farmers as they are constituted by the poor and the marginalised. This target group is mostly important especially in this discourse of sustainable development. Due to the socio-political factors (such as marginalisation and inequalities), economic factors (over reliance on rain fed subsistence agriculture) coupled with climate change impacts (droughts and floods), Malawians are vulnerable and susceptible to climate change impacts. These groups are trapped in the vicious circle of hunger and poverty drawing back the achievements towards sustainable development.

Therefore, the research paper will use the SLA to analyse these different factors affecting small-scale farmers and discusses how can social protection programs use such understanding to strengthen the resilience of small-scale farmers in the reality of climate change induced disasters. Using the SLA at household level in understanding the environment that affects small-scale farmers helps development programmers to capture low level hidden factors that affect individual capacities and abilities. Understanding gained can therefore be used for the development of policies and programmes that are extensive in building resilience and sustainability in terms of food and nutrition security and improved livelihoods. Building resilience of small-scale farmers in response to climate change requires an approach that is sensitive to the complexities and interlinkages within food systems. To achieve the objectives of this thesis, this paper adopts the Sustainable Livelihood approach (SLF).

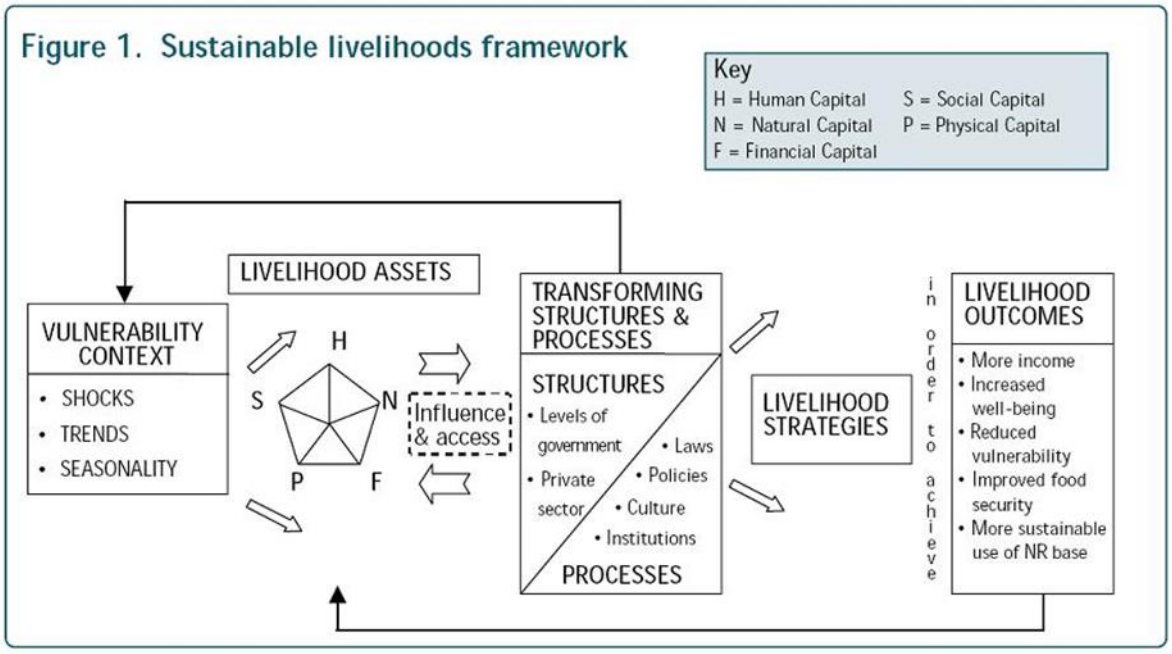


Figure 1: The Sustainable Livelihood Framework. Source (DFID, 1999)

The sustainable livelihood framework is a holistic approach for sustainable livelihoods, that was developed by the Department for International Development in 1999. It is an approach to development that places people at the centre of development particularly the poor and the marginalised in this case small-scale farmers, thereby increasing the effectiveness of development assistance (DFID, 1999). In the quest to achieve social transformation and sustainable livelihoods, the approach recognises the importance of *assets* as a need, which are in interaction with the *vulnerability context* (which are external environmental shocks, trends and seasonality) (DFID, 1999).

Consequently, the framework identifies five types of assets; human, natural, physical, financial, and social capital that are needed in the case of shocks, trends, and seasonality as vulnerability context for sustainability. These assets are facilitated by/through transforming structures and processes such as social protection programs and policies to achieve desired livelihood outcomes such as improved resilience and food security (Knutsson, P., Ostwald, M., 2006). Thus, this study will assess how social protection programs and policies have/can been used to capacitate small-scale farmers with assets that allows them to strengthen their resilience to the shocks and vulnerabilities induced by climate change.

2. Social Protection Framework

The study will bland the sustainable livelihood framework and the FAO Social Protection Framework (SPF). Similarly, to the SLF the FAO Social Protection Framework emphasizes the poor in achieving sustainable development by the recognition that social protection programs are a key strategy of achieving food and nutrition security and poverty reduction and the promotion of sustainable agriculture (FAO, 2017). The SPF stresses capacity building of poor communities to create enabling environments that are fair and equitable for agricultural and rural development. Which in turn will increase the resilience of these communities (FAO, 2017). In this sense social protection programs and policies becomes transformational and developmental tools to build people's resilience against climate change shocks. They are a tool to remove socio-economic barriers to facilitate the equitable access, availability, utilisation and stability to food and nutrition security (FAO, 2017) (FAO, 2018).

Linking social protection programs to agriculture and development recognizes the importance of social inclusion, gender equality and sustainability (FAO, 2017) (FAO, 2016). Social protection programs are tools to necessitate social inclusion and gender equality to allow equal access and opportunities to all without discrimination on any basis. Disadvantaged and marginalized communities often have limited access to opportunities exacerbating their vulnerabilities, they are excluded from assistance, protection, and insurance (FAO, 2016), in case of environmental and climatic shocks as the consequences are disproportionately distributed (FAO, 2017). Hence it becomes critical to capacitate these communities by allowing them to have access to resources and opportunities to build their resilience to the shocks and achieve food and nutrition security.

FIGURE 1 Embedding social protection within FSN, agricultural and rural development strategies

Figure 2: FAO Social Protection Framework. Source: (FAO., 2017)

3. Resilience Building

With the prediction of an increase in the frequency and intensity of natural hazards and disasters (IPCC, 2018), if it remains unchecked will continue to undermine the achievement and gains of sustainable development (Tozier de la Poterie & Baudoin, 2015) such as food security and poverty reduction (Bullock, Dhanjal-Adams, Milne, Oliver, Todman, Whitmore, & Pywell, 2017). This raises the need of efficient and strong policies and development programs that are aimed at vulnerability reduction and climate change adaptation (UNISDR, 2015), that are context sensitive, which inversely results in the building and strengthening resilient communities and societies to climate change (Tozier de la Poterie & Baudoin 2015). Resilience is a dynamic, evolving and have different applications and concepts. There has not been a clear distinction between transformative adaptation and resilience, with some taking resilience as a process and some taking it as an end itself (Brown, 2016).

In its narrow sense of understanding ecosystems, resilience is the ability of a system to return to a state of equilibrium after disturbance (Holling, 1973), implying a notion of resistance to change or some form of controlling it. This results in very rigid and inflexible systems that are incapacitated to deal with rapid and dynamic climatic changes that are

happening at differentiated temporal and spatial scales (Folke, 2016). However, the concept has broadened over the years, in socio-ecological systems to include flexibility and proactive responses to climate change shocks (Brown, 2016) (Folke, 2016).

Resilience has come to be taken as a theory of change in Social ecological systems and human development. Folke, (2006) defines resilience as "*… the ability of people, communities, societies, and cultures to live and develop with change, with ever-changing environments. It is about cultivating the capacity to sustain development in the face of change, incremental and abrupt, expected and surprising."* Folke, C. 2016). Coupled with Masten, Best, & Garmezy, (1990) defination of resilience as *"the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances".* Therefore, resilience is both the capacity of an individual, community, or system; a process and an outcome (Brown, 2016), it is the ability or capacity of systems to adapt or transform, shifting and creating new development pathways (Folke, 2016). Thus linking social protection programs and safety nets to resilence can be essential in assisting to build resilience of small-scale farmers so that they can be able to cope with the shocks and vulnerabilities of climate change.

4. Food and Nutrition Security

Food and nutrition security is a complex and dynamic concept that the paper intends to explore. Food and nutrition security is another intended goal for sustainable development anchored on building a comprehensive emphasis and understanding on/of different social, economic, political, ecological, and environmental processes and systems. Formally Food security, initially was narrowly defined as *"…availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices",* this was primarily concerned about quantity and volume (by increasing production) and stability through market mechanisms at a global level (FAO, 2013).

This conceptualization has changed as aforementioned that the notion of Food and nutrition security is dynamic. In 2003 FAO redefined the concept to mean "*a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"* (FAO, 2002). This broadened it to include issues to do with availability, access, utilization, and stability. Apart from quantity the emphasis now also includes quality of the food and access, as many people particularly the poor and marginalized do not have access to

quality and sufficient nutritious food (Pritchard, Ortiz, & Shekar, 2016) (FAO., IFAD., UNICEF., WFP and WHO., 2019).

More so the urgent need for FSN cannot be understated currently, given the global scale impacts of pandemics that can disrupt food systems at all levels. The devastating impact of the Covid-19 pandemic has raised alarm on the potential impacts of pandemics to FSN. The recent HLPE report establishes that Covid-19 is pushing people into poverty and hunger as it affects people's ability to purchase food, loss of access to fresh food, disruptions to the movement of farm labor, and causing disruptions on the supply side of the food chain. Thus, recalling policy makers, building on previous efforts to strengthen and consolidate conceptual thinking around FSN by prioritizing the right to food, to widen our understanding of food security and to adopt a food systems analytical and policy framework (HLPE, 2020). By so doing the concept has evolved once again building on the previous four elements of FSN, Agency and Sustainability are now added to make them six elements (availability, access, utilization, and stability to include agency and sustainability (HLPE, 2020). The interaction and attainment of these six dimensions in combination at all times ensure food and nutrition security. These dimensions are reflected and captured in the definition of FNS by HLPE that "…food security (is) a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." (HLPE., 2020). However, these dimensions of FNS are compromised by climate change and variability and other socio-economic and political factors (Kakota et al., 2011).

Agency is referring to the capacity of individuals or groups to make their own decisions about their food situation. While the latter sustainability is concerned about the long-term ability of food systems to provide food security and nutrition without compromising other (*economic, social, and environmental*) systems that could affect future FSN status. (HLPE, 2020). The addition of these two elements to FSN have significant meaning to this project as the paper seeks to strengthen resilience of small-scale farmers by trying to identify factors that affect household food and nutrition security. This is to produce social protection programs that empower (*give agency to*) small-scale farmers from a household level regarding their food status or situation in a way that is sustainable. This consideration of vulnerabilities and agency is important as they can be a good indicator or measurement of ability and capacity of these farmers to cope with changes.

More so dietary diversity which is the number of different foods or food groups consumed over a given reference period is also important for food security (Hoddinott & Yisehac, 2002). It is important to consider dietary diversity as it is related to nutrient up take and nutrient adequacy to people (Marie, 2002), hence diversity score can be used to measure or reflect individual or household nutrient adequacy and uptake (FAO, 2013). FAO categorizes dietary diversity in the categories, Lowest dietary diversity (≤ 3 food groups) (*Cereals, Green leafy* vegetables, and Vitamin A rich fruit); Medium dietary diversity (4 and 5 food groups) *(Cereals, Green leafy vegetables, Vitamin A rich fruit and Oil);* and lastly High dietary diversity (≥ 6 food groups) *(Cereals, Green leafy vegetables, Vitamin A rich fruit, Oil, Other vegetables, Fish, Legumes, nuts and seeds)* (FAO, 2013). Therefore, the study will use the Household Dietary Diversity Score (HDDS) to measure how much nutrients are available or consumed by individual households.

5. Social Protection Programmes

Social protection programs and social safety nets can be used to link resilience with agricultural food systems, and food and nutrition security as they can aid the transformation of food production systems that are sensitive to climate change induced shocks at every level by increasing the ability of producers to adapt and mitigate the adversities of climate change to facilitate FNS. They are insurance and protection programs aimed at protecting the poor and vulnerable (FAO., 2017). Hence in this sense social protection programs and safety nets can be used to increase the resilience of small-scale farmers which in turn will increase their access to food and income at the individual and household level. These social protection programs are socially based interventions and mechanisms that protect individuals, households and communities from climate change shocks and stresses by increasing their adaptive capacities and abilities (Pritchard et al., 2016) (Bullock et al., 2017).

As set of activities that have become fused to the development agenda they are used to *"provide income or consumption transfers to the poor; protect the vulnerable against livelihood risks; and enhance the social status and rights of the excluded and marginalized"* (HLPE., 2012). Social protection programs have preventive, protective, transformative, and promotive characteristics, that allows the reduction and avoidance of risk vulnerabilities to climate change. While at the same time they protect and enhance livelihoods thus improving food security of the poor and marginalized through social inclusion (FAO, 2017). However, with the increase in intensity and frequency of climate change shocks, the current challenge is

how to effectively meet the immediate emergencies in the short term while at the same time building resilience in the long term against climate change induced disasters (FAO., 2017). While climate change induced disasters have short-, medium- and long-term impacts and consequences, for longer-term responses FAO suggest linking response strategies to social protection programs for preparedness, thus this paper will investigate how these social protection programs can be used for preparedness of small-scale farmers against climate change shocks in the long run to achieve food and nutrition security and improved livelihoods.

CHAPTER FOUR: MATERIALS AND METHODS

1. Background

This thesis is produced as part of a four-year research program "The Sustainable Food Systems for Rural Agriculture Transformation and Resilience" (TRANSFORM) program funded by the Royal Norwegian Embassy (RNE). The (TRANSFORM) program is a four-year program being implemented in five of Malawi's rural districts; Mchinji, Dowa, Kasungu, Mzimba South, Mzimba North and Rumphi districts covering 11 selected extension planning areas (EPAs). The program was implemented and coordinated by three Norwegian organizations namely the Norwegian Church Aid (NCA), the Development Fund of Norway (DF), and Norwegian University of Life Sciences (NMBU).

The overall objective of the program is "*to strengthen local food systems and to demonstrate sustainable improvement of food and nutrition security, resilience to climate change and income among agriculture-dependent rural households*". The program also sought "*to establish benchmarks for impact and outcome level indicators of the TRANSFORM program*" (TRANSFORM, 2020). Guided by The Norwegian Action Plan on food security to ensure increased food security, the program intended to achieve five specific objectives which are the following: -

- Collect quantitative data of crop and livestock production, access to market and other indicators through the implementation of a household survey.
- Conduct qualitative assessments on the status of participatory community adaptation plans and early warning systems, early childhood care and development through FGDs and KIIs.

- Assess the improvement of social integration among farming households and the issues on gender equality in the division of work and after production and sell of agriculture proceeds from the market.
- Assess the policy and regulatory environment guiding the agriculture and climate resilience sectors in Malawi.
- Produce baseline values for key Program indicators at impact, outcome, and output levels in line with the TRANSFORM Program results framework.

2. Area of study

The study was conducted in 5 districts of Malawi where the Sustainable Food Systems for Rural Agriculture Transformation and Resilience (TRANSFORM) program is being implemented by partner organizations (*Norwegian Church Aid (NCA), The Development Fund of Norway (DF) and The Norwegian University of Life Sciences (NMBU*). Designed to complement the Government of Malawi's efforts to transform its agricultural sector. The program is targeting 180,000 agriculture-dependent rural households and identifies five key districts in Malawi, Mchinji, Dowa, Kasungu, Mzimba and Rumphi (NCA., DF., NMBU, 2000). A study on these targeted Districts areas allows the project to identify strategic and key areas that developmental programs should focus or consider, to increase resilience. Figure 1 is a map of Malawi showing the geographical area where the survey was conducted. More so The Integrated Food Security Phase Classification (IPC) indicates that nearly 1.9 million people in Malawi are food insecure, and the selected Districts fall within phase 2 with about 4,314,745 People under stress (IPC, 2020). Therefor the selected districts would be sensible for research as they are the most vulnerable and most food insecure.

Figure 3: Map of Malawi showing study districts in red stars (the program was implemented in Mchinji, Dowa, Kasungu, Mzimba South, Mzimba North and Rumphi district) Source: (Bhatti et al., 2021)

3. Research design

This project was a desk research and the data used in this paper was derived from the data collected by the TRANSFORM baseline report. Data used here was selected from the baseline report in relation to this current research main objective and research questions. This section outlines how the baseline report data was collected. The baseline data was collected through a Households Structured Survey, the study used the mixed methods approach for data collection, using qualitative and quantitative as complementary data collection tools to produce cross sectional data. Figure 3 illustrates the data collection process framework; however, this paper utilizes more of the data produced by quantitative methods. Household surveys were carried out on the targeted beneficiaries of the program. Were comparative data was collected through a structured household mobile data collection questionnaire and key informants' interviews. The questionnaire covered Household identification; Socio-demographics of households; Asset ownership, Household Income sources, Household food production and availability; Livestock production, Food consumption practice; Dietary diversity Scores; Marketing, Agro-processing and Value Addition, Climate Change Issues; Adoption of climate smart agriculture technologies; Access to credit/loans, VSL and Water, Sanitation and Hygiene (WASH).

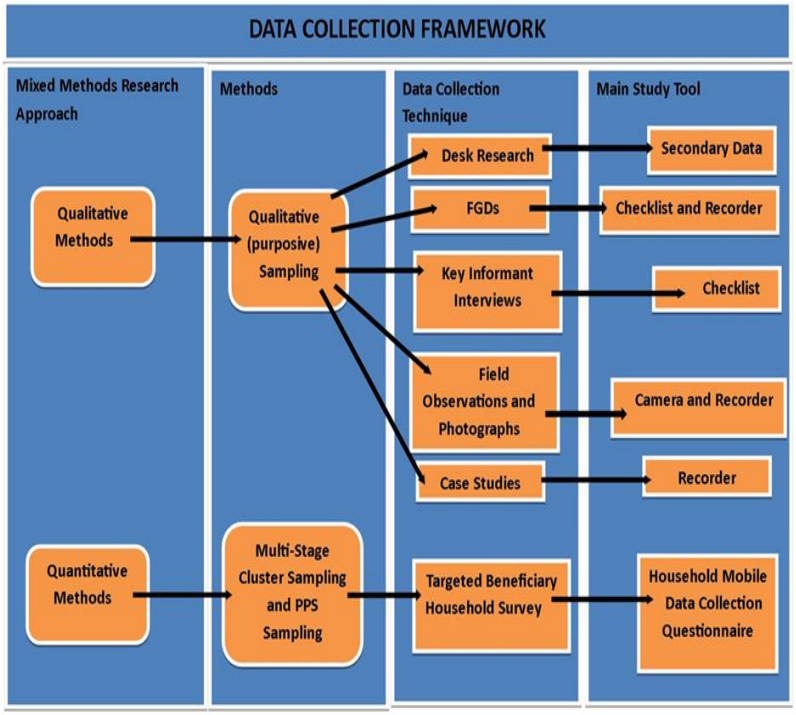


Figure 4: Data Collection Process Framework

4. Sampling

To conduct the study on the targeted five key districts, 11 EPAs where purposefully selected and sampled from the targeted districts. Samples were collected using multi-stage sampling process to determine the sample of participants for the survey. Tools employed included simple random sampling, stratified and purposive sampling, this was to potentially target who were to be project beneficiaries spread across districts. The first stage involved

purposive sampling; data was collected from all the five districts where the project was to be implemented. The second stage involved organizing samples in groups, by employing stratified sampling technique Extension Planning Areas (EPA) where identified as strata.

Table 1 shows the EPAs sampled where villages within the targeted EPAs were selected on the bases of the probability proportion to size (PPS). From each targeted district at least a total of two EPAs were selected and sampled per district except for Nzimba, given its size it was subdivided into two Nzimba South and North resulting in a total of three EPAs to ensure full representation of the target geographical area. Simple random sampling was used in the final stage of the process where individual farm households (*study units*) were selected from participating villages for the household survey. Using lists of farm households which was obtained from the Agricultural Extension Development Coordinator (AEDC), appropriate individual participants to the survey where selected.

Table 1: Sample size for the study

District	EPA	Sections	Household interviews	EPA Staff	FGDs	KII	Farmer/Business Groups
Mchinji	2	4	205	1	4	6	2
Dowa	2	4	205	1	4	6	2
Kasungu	2	4	204	1	4	6	2
Mzimba (South & North)	3	6	307	1	4	6	2
Rumphi	2	4	197	1	4	6	2
Total	11	20	1118	5	20	30	10

The study unit to the study was the individual household, where the household unit was defined as individual farming family household. In simple terms the study considered a group of individuals living under one roof as a family with a household head as the unit of study. Given that this study was to capture and understand gender-related challenges, opportunities, vulnerabilities, and capabilities presented to small-scale subsistence farmers from the lowest

level by climate change and variability. The household where further categorised as Female-Headed Household (FHH) and Male-Headed Household (MHH)), for comparisons and to identify the existing gender differences. In summary out of the targeted Districts a total of 11 EPAs where selected, with a sample size determined by the following formula: -

$$\boldsymbol{n = \frac{D[(Z\alpha + Z\beta)^2 \times (P_1(1-P_1) + P_2(1-P_2))}{(P_2 - P_1)^2}}$$

Where: -

***N** = (is the desired sample size), **Zα** = (is the z- score for 95 % confidence interval), **Zβ** = (is the statistical power in this case valued at 80%), **P1**= (is the initial prevalence rate for food security), **P2** = (is the desired proportion of beneficiaries that the intervention would like to achieve), **D** = (is the design effect since the sampling method is not a simple random method).* A total of 879 households were selected for the interview. However, a total of 1068 households' interviews where planned, which were subdivided into 192 respondents per district expect for Mzimba which had 300 because of its sheer geographical size. This was to allow 10% missing values and non-response occurrences. Nevertheless, in the end the study managed to conduct at total of 1118 household interviews, comprising of male-headed households 912 (81.5%) and 206 (18.6%) female-headed households**.**

5. Data collection and Analysis

The study was done by Kirk Development Research and Training Consultants and utilized the KOBO Software for quantitative data collection and management. The software is a handy tool that is convenient for field data collection, processing and storage mostly used for humanitarian and developmental purposes. KOBO Software allows online server connection, and offline management of data providing researchers with quick means to gather, store and analyze field data. By using a preprogrammed questionnaire onto tablets (*mobile devices)*, data was collected and uploaded to the server for storage and further processing and analysis. However, to ensure precision and accuracy and to allow internal triangulation, the consultant carefully authored and validated the XLS forms obtained.

As for data analysis much the obtained XLS data files were exported and analyzed in SPSS Version 21.0, while some was also analyzed using MS Excel and Stata. Since quantitative research involves collection and processing/analyzing of numerical data (Bryman, 2012), data

was analyzed and presented through frequencies and percentages and cross tabulations supplemented by various tools such as tables, graphs and pictures for interpretation and readability.

CHAPTER FIVE: RESULTS

Descriptive statistics have been used in this section to understand and present data obtained from the study. Descriptive statistics have been applied also to illustrate the findings using simple statistics and graphs. The findings and the results from the study are summarized and categorized as i) Households Characteristics and Socio-Economic Context; ii) Access to resources; iii) Coping Mechanisms. Qualitative and quantitative data analyzed will be presented through graphs and tables to discuss the objectives of this study.

1. Households, Characteristic, and Socio-Economic Context

In understanding the households' characteristics and their socio-economic context, findings are presented as response to the following questions: - What is the nature of the demographics of the households; What is the nature of the social vulnerability and land holding size; What household/farmers are the most food insecure; How much and what do these farmers produce; On Household characteristics the findings will consider (Household headship type, age, and marital status, household size and dependency ratio). Household vulnerability to food security was assessed by household landholding size and availability of labour, literacy of household head and food availability.

a. Household and Characteristics

In grant total the study managed to reach 1118 households out of all the sampled 11 EPAs in the five targeted districts. In terms of household headship, the survey found out that most of the households sampled are male-headed, out of the sample size 912 (81.5%) households are male-headed and are female-headed 206 (18.6%). More so, in terms of the relationship of the respondent to the household head, 648 respondents where the actual household head, 441 respondents are spouses, 26 where the oldest child of the household head and lastly only 3 where a parent of the head. These indications suggest a patriarchal society where man are dominant and such societies are more likely to be dominated by norms that marginalizes women (Botreau, H. and Cohen, Marc, J. , 2019). And this could have implications on the food security status of females as they might face social and structural limitations that influence access or control of resources (Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011).

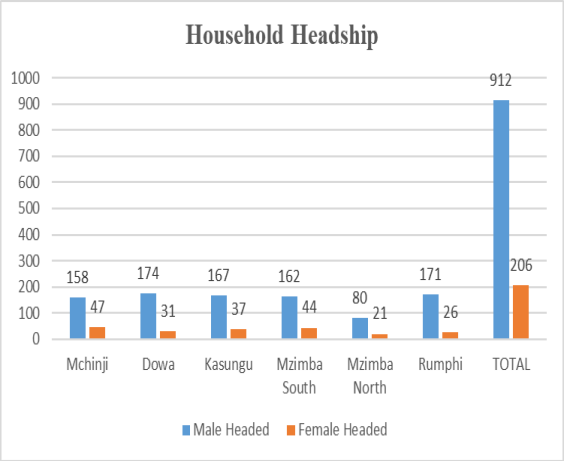


Figure 4: Gender of respondents

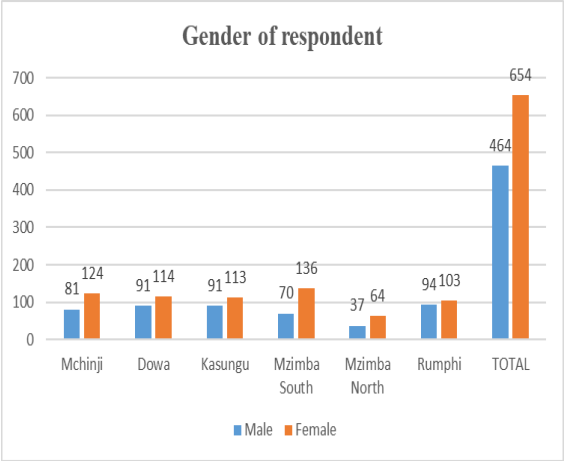


Figure 5: household headship

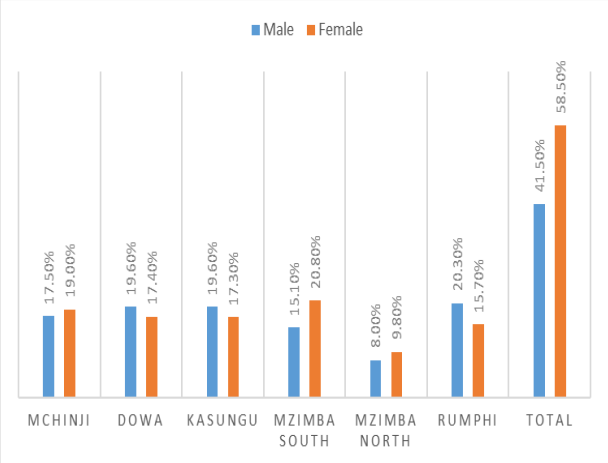


Figure 6: Gender of respondents in percentage

The results illustrated by fig 4, 5, and 6 show that many of the households reached where dominated by male-headed households across all districts. Given the fact that climate change affects women and man differently resulting in differences in capabilities and capacities in dealing with climate change *(Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015)*. This possibly creates a situation where males have more capacities and capabilities as they can earn more and have more opportunities compared to females. Hence as female headed households might be more vulnerable than their male counterparts' *(Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011)* programs and policies need to target more females for increasing household food security. This increases resilience of households through increasing females' capacities and capabilities to cope with food insecurity.

b. Socio-Economic Context

i. Household Size and Labour Availability

Age distribution of household head, data showed that the average age of a household head is 45.9 years with the oldest head being 90 years and 20 years the youngest across all districts. However, in age groups, most of the households' head fall within fairly in two categories 20-39 and 40-59 years in all districts except in Mzimba South and in Rumphi where there is a slight difference with the majority being within the 40-59 years category. And about almost a half of the first and second category falls within the 60 years and above. Fig 7 and 8 illustrates age distribution of age between districts, The data reveals that the majority of the sampled population falls within 20 years and 57 years with a fair distribution in all districts. This is fairly important for increasing resilience of small-scale farmers at the household level as the majority of the sampled population are withing productive age groups. Thus, this shows that there is availability of labor that can be useful if targeted by social protection to be used productive labor.

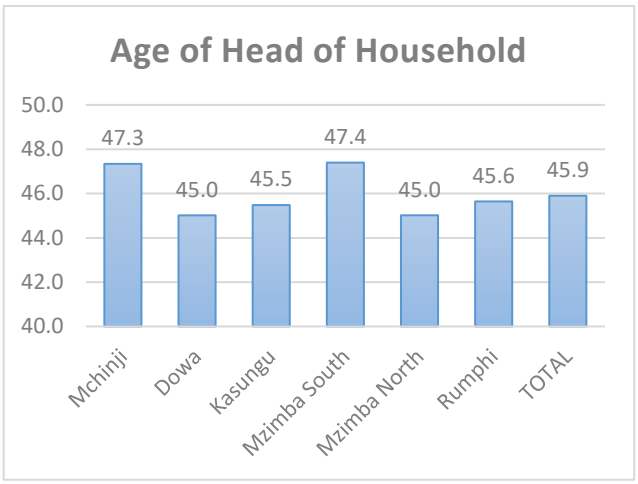


Figure 7: Age of Head of Household

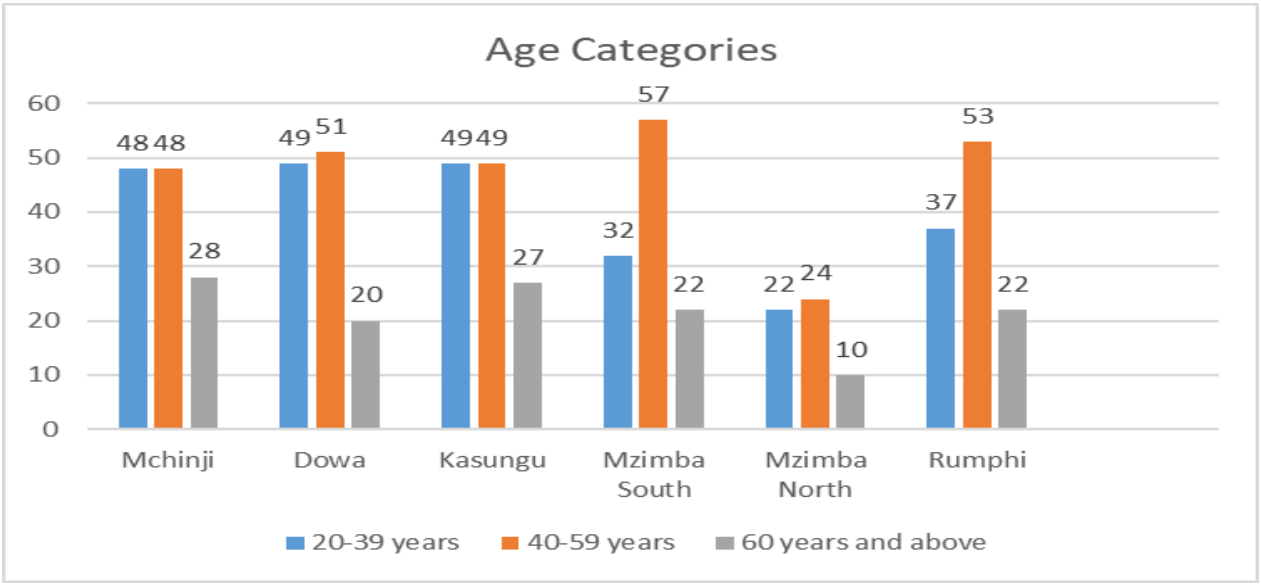


Figure 8: Age categories of Household head

ii. Household size and dependency

Data collected by the survey shows that in terms of household size the average household size is 5.7 members. The largest household would have 16 members and 1 member as the lowest. **SD** is 1.87 in Mchinji, Dowa 2.07, Kasungu 2.25, Mzimba South 2.02, Mzimba North 2.10, Rumphi 1. 91. Showing that the average size of the households varied slightly around 5.7 members between districts. In regard of household size distribution categorized by headship, the dominant member category across all districts and in both household, types are 3-5 members and 6-8 members. The highest number of 3-5 members were found in Rumphi with 82 families followed by 81 families for the 6-8 members for male-headed households. In terms of female-headed households the highest member category 3-5 members was in Mchinji with a frequency of 25 families followed by 20 families in Mzimba South for the 6-8 members category. For the 1-2 members group the frequency was low in all districts with a total of 29 male-headed households, though they are more if compared to 14 female-headed households in all districts. This implies that in all member groups male-headed households are more compared to female-headed households. These results where similar for the 9 or more members 79 male-headed households where recorded compared to the 11 female-headed households recorded. Considering age and family size might have policy implications in terms of labor availability and affect the dependency ratio. In relation to FNS labor availability can be translated to farm labor for increased production while dependency ratio affects the availability of FNS within the household. This shows that for smaller families there are more labor constrained and that they have a higher demand for labor to work on their farmland. These differences are important to note as they show which households need labor supplements.

Targeted household showed that in terms of dependency ratio was low and similar in all districts for all male-headed households and female-headed households. The dependency ratio a critical socio-economic indicator that can be used to indicate the ultra-poor to focus policy on them. The dependency ratio is the compares the relationship between the total sum of children (0-14. years old) and older persons (65 years or over) to the working-age population (15-64 years old). This serves to indicate effects of change on the population structures, highlighting trends in social support needs (IHS5, 2020). By comparing the number of those who are economically active to those that are economically dependent policy makers can identify possible areas which need social protection and security.

Figure 9: dependency ratio by district

Table 2: dependency ratio by household headship

	Dependency Ratio by household headship		
	MHH	FHH	TOTAL
Non working age group	2683	545	3228
Working age group	2599	529	3128
RATIO	1.03	1.03	1.03

The data illustrated by fig 9 and table 2 shows dependency ratio by districts and by household headship. The data showed a low dependency ratio in both cases of 1,0. This means that for every household it has a low burden and implying a low dependent population. The data shows that every household has at least 1 household member (either a child or elderly), to support either economically or to provide food and social support. These results are consistent with the (IHS5) report which had the Dependency ratio at 1.2. Though low on dependency ratio, protection policies can use this evidence to increase the resilience and capacity to self-help for those who are economically active to make them responsible for their food and nutrition security at household level (Barrow, 2003) thus keeping the dependency ratio at minimal. More so on household characteristics the data showed that nearly 21.8% of the sampled households support orphans and 14.1% supports the disabled. With a distribution of about an average of 2 orphans per female-headed households and 1.9 orphans per male-headed households. Similarly, for hosting the disabled the data showed that the highest number of host households were recorded in Mchinji39 (24.7%), followed by Kasunguand Mzimba South which had both 31 (19.6%), Rumphi 24 (15.2%), Dowa 23 (14.6%) and lastly Mzimba North 10 (6.3%).

iii. Literacy, labor, and Land Holding Size

The below Fig 10 shows the aggregates of literacy of household heads presented in percentage and distribution respectively; the survey revealed that in all districts only 648 (58%) have managed to acquire primary education while 244 (22%) managed to acquire secondary education. Only 76 (7%) of the sample size managed to reach tertiary education. Comparatively the number of those household head that reached the tertiary education is lower than those that are not literate which represented 150 (13%). Further categorizing these distributions in terms of gender as presented in table 3, only 9 (4.4%) female-headed households managed to reach

tertiary education compared to the 67 (male-headed households) of their male counterparts. On the other hand, 44 (21.4%) of male-headed households are not literate compared to their male counter parts that are only 11.6%.

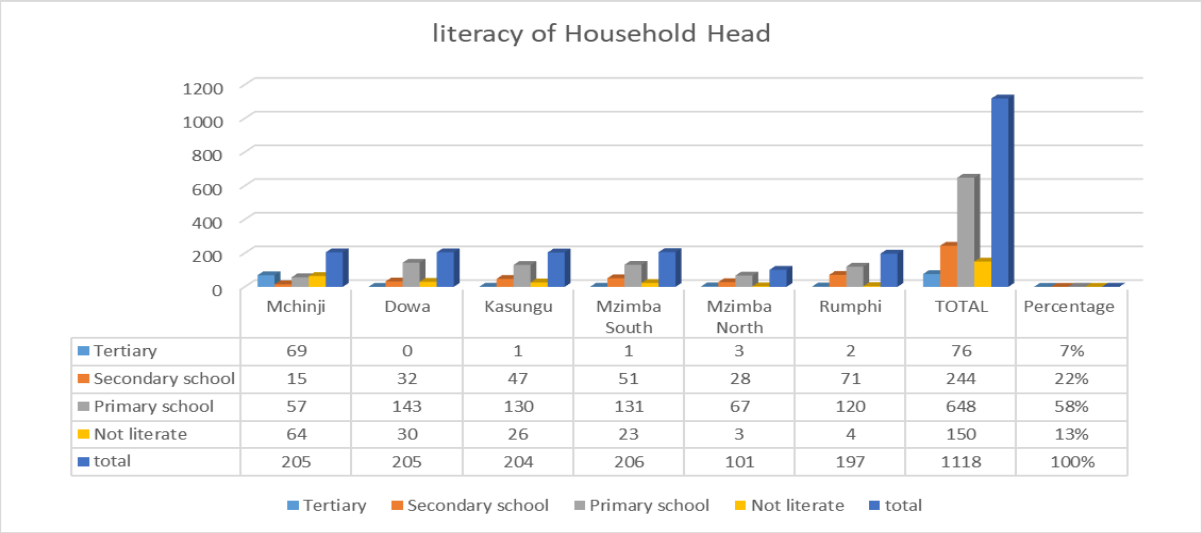


Figure 10: Literacy of Household Head

However, for both female-headed households and male-headed households the majority managed to acquire at least some form of education primary education or secondary education. These similar trends are also captured by the IHS5 showing that male-headed households are more literate compared to female-headed households in rural Malawi. Thus, for impactful social protection policies there is need to promote and protect the less literate as it might be more difficult for them to provide protection by themselves.

Table 3: Literacy by Household Headship

	Literacy by Household Headship				
	MHH	**FHH**	**TOTAL**	**MHH %**	**FHH%**
Tertiary	67	9	76	7.3%	4.4%
Secondary school	215	29	244	23.6%	14.1%
Primary school	524	124	648	57.5%	60.2%
Not literate	106	44	150	11.6%	21.4%
total	912	206	1118	100.0%	100.0%

In terms of the ability of the household to hire labor and their land holding sizes, the data showed that the total average land holding size per household was 2.7Acres. Mzimba South recorded the highest with an average mean of 3 acres per household followed by in their respective order, Kasungu 2.9, Dowa 2.8, Rumphi 2.7, Mchinji 2.5 and Mzimba North 2.3 acres

per household. Statistical calculations revealed that male-headed households hold the largest land sizes with an average mean of 2.9 acres compared to 2.2 acres record of female-headed households.

Table 3: mean difference of land holding size by HH

Land holding size by HH type
Welch Two Sample t-test
data: a15landsize by a2hhtype
t = 5.3333, df = 398.74, p-value = 1.619e-07
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
0.3861936 0.8371244
sample estimates:
mean in group MHH mean in group FHH
2.852193 2.240534

Tested to show if there are differences in land holding size and household headship type. When comparing the sample means a lower p-value was obtained showing that indeed there are differences in landholding sizes by household headship *(t = 5.3333, df = 398.74, p-value = **0.0000001619***). This means that female-headed households have lower land holding size and remain constrained and vulnerable to climate variabilities in terms food and nutrition security and agricultural production compared to their male counter parts. These results are consistent with the study on gender vulnerability to climate variability and household food insecurity by (Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011) in other districts of rural Malawi (Chikhwawa and Ntcheu districts). This calls for social protection policies and programs to focus attention on the female-headed households' vulnerabilities as land availability is influenced by land holding sizes a critical component of FNS that social protection programmers should take into consideration.

On the household ability to hire farm labor the survey revealed that most of the sampled households do not hire labor. Data showed that only 205 (18.3%) household hire farm labor and 913 (81.7%) does not hire labor. Availability of labor is another major critical component of agricultural food production especially in critical farming times. More so the availability of labor also influences the type of farming methods on the farmland, some farming methods are labor intensive and small-scale farmers might shun away from practicing them due to lack or

inadequacy of labor to work on the farm resulting in low farm output particularly female-headed households (Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011).

c. Food and Nutrition Security

i. Household Food security

To this survey maize was used as an indicator of food security considering that it is a staple food in Malawi. The survey showed that for the (2018/2019) season, 876 households (78.3%) all districts represented, which is the majority did not produce food that could last the whole year as shown in Fig 11. Only 242 household managed which translate to only 21.7% of the sampled households. The majority stated that their harvest did not last more than 8 months, only 27% could produce food that could last for more than 9 months and more, the other 20% responded that their food could last for about 2 months or less could, 24%, about 3-5 months and 43% stated that their food could last for about 6-8 months. The major reason cited to be the cause of the shortage amongst the respondents of about 65% was that they could not grow enough food to last them till the next harvest. The other 15% stated that it was because that they had to distribute some of their harvest to their relatives.

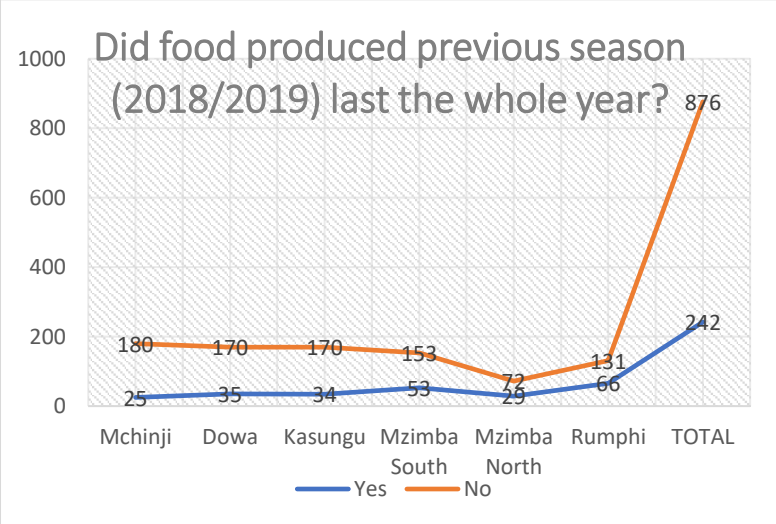


Figure 11: Lean season food status

The numbers show that the number of respondents who their food could not last till the next season was in Mchinji with 180 respondents (21.0%), followed by Dowa 170 (19.4%) respondents, and Kasungu had 170 (19.4%) households. And these figures are consistent when respondents were asked about food reserves to meet family needs, the three districts had the highest number of respondents who did not have enough food reserves to meet family needs. Thus, it is within these districts that are the most food insecure. It is within the same districts that had a high number of respondents that resorted to working in other people's farms (ganyu) for food or income to compensate for their shortage. Respondents who resort to ganyu where high in Mchinji with 157 respondents, followed by Dowa with 148 and Kasungu with 140 respondents. However, the majority in all districts 830 households could buy from local market

or either rely on ganyu to get food (699 respondents) but about 2% rely of hand outs and free food distribution. The number was also high in Mchinji with 14 respondents followed by Mzimba South, and these might need immediate attention as they might be acutely food insecure.

On food availability throughout the year as shown in Fig 12, the figure shows distributions, the left y-axis show percentage by HH type, and the right axis show total percentage of the responses by districts. Many households reported that towards the end of the lean season (a period between planting and harvesting) months are the most critical months where they are mostly food insecure as they are faced with weaning stock supplies. 63.86% respondents reported February to be the most critical month for food shortage, followed by January with a representation of 16.28% and lastly 10.91% referred March to be their most critical month where they encounter food shortage. In terms of food availability during the critical months by household type the data shows that male-headed households are the most likely to encounter food shortages compared to female-headed households as they represent the majority of the sampled households. In January 13.1% male-headed households where more food insecure compared to 3.1% female-headed households, in February there were 52.6% male-headed households compared to 11.3% female-headed households and in March 19.3% male-headed households were more food insecure compared to their Female counter parts with 1.6% representation. More evidence to support that is shown in table 4, when asked to respond to their food security status 84% of those who answered they answered that they were food insecure and only 16% considered that there was food secure. Of the 84% who responded that they were insecure 70.4% were male-headed households and only

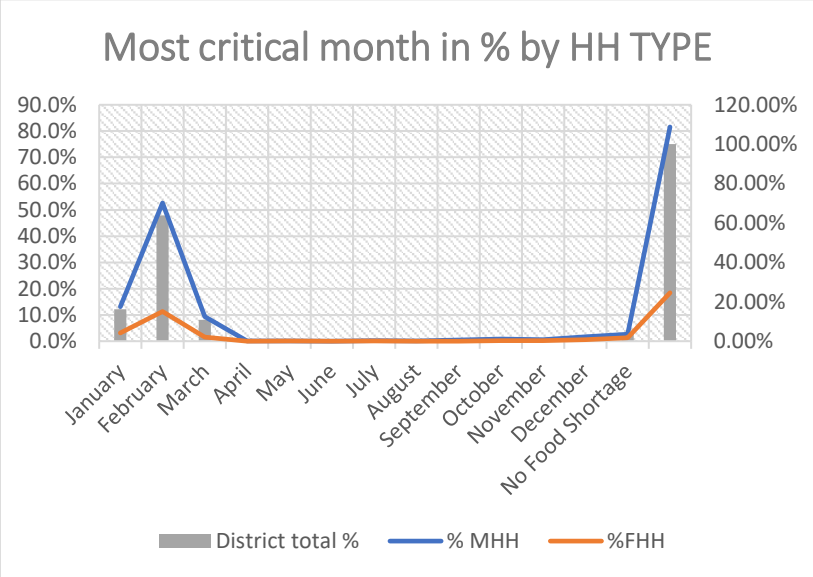


Figure 12: Most critical month in % by HH type

13.9% were female-headed households. However, this evidence is contrary to the findings by other studies and other factors in this study.

Table 4: food security status responses

	Mchinji	Dowa	Kasungu	Mzimba South	Mzimba North	Rumphi	TOTAL	MHH	FHH
Food Secure	2 (0.7%)	6 (2.2%)	6 (2.2%)	6 (2.2%)	4 (1.5%)	19 (6.9%)	43 (16%)	33 (12.0%)	10 (3.6%)
Food Insecure	30 (10.9%)	29 (10.6%)	31 (11.3%)	49 (17.9%)	33 (12.0%)	59 (21.5%)	231 (84%)	193 (70.4%)	38 (13.9%)
	MHH	FHH	TOTAL						
Food Secure	33 (12.0%)	10 (3.6%)	43 (16%)						
Food Insecure	193 (70.4%)	38 (13.9%)	231 (84%)						

Table 5: t-Test: Paired Two Sample for food shortage during critical months

t-Test: Paired Two Sample for Means		
	MHH	*FHH*
Mean	279.6666667	59.66666667
Variance	71764.33333	3372.333333
Observations	3	3
Pearson Correlatior	0.997786056	
Hypothesized Mean	0	
df	2	
t Stat	1.814694023	
P(T<=t) one-tail	0.105617375	
t Critical one-tail	2.91998558	
P(T<=t) two-tail	0.211234751	
t Critical two-tail	4.30265273	

Table 5 shows statistical calculations for the difference in shortage between household type. The H_1 was described as "*there is no difference in food shortage between male-headed households and female-headed households" and H_0 was defined as "there are differences in food shortage by household type".* The results showed that the mean of the sample size of the male-headed households was higher than female-headed households. With obtained p-value higher than 0.05 significant level. This means that H_0 is retained, Thus the results show that there are differences between households, yet the mean values show that male-headed households have more shortage than female-headed households. In terms of food reserves during the critical months shown by the number of maize bags (staple food),most of the respondents 844 (75.5%) responded that they don't have enough reserves during the critical period, only 274 (24.5%) responded that they would have. The number of those who responded that they don't have enough reserves was recorded in Mchinji with 173 (20.5%) followed by Dowa 170 (20.1%), Kasungu 167 (19.8%), Mzimba South 151 (17.9%), Rumphi

119 (14.1%) and lastly Mzimba North with 64 (7.6%). Thus, in terms of food reserves of households, households in Mchinji are more food insecure compared other districts.

However, as mentioned these results are contrary to previous studies and other evidence in this study. The findings are counter intuitive as results obtained in this study show that man have more advantage than females in terms of literacy access to resources and land holding size yet in terms of food shortage, they are the ones with high number of households that are food insecure. Similar evidence in support that man have more advantage and adaptive capacity compared to their female counterparts was also obtained by similar studies in rural Malawi (Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011) (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015) (Kakota, C. T., Synnevag, G., Maonga, B., and Mainje, M., 2020). This contradiction in results could be because of bias and limitations emanating from self-reported data. Subjective food shortage measurements that are experience based and that are based on respondents' direct responses (from direct interviews) to food shortage questions can be misreported and biased due to hidden unobservable desirability concerns that could either be economic and social (Getaw, T., Gashaw, T, Abate., and Tadiwos, Z., 2020).

ii. Household Dietary diversity

In terms of nutrition and dietary diversity the data indicated that there is a fair number between respondents that knew the government recommended six food groups which are - Vegetables (leafy greens, kale, tomato, carrots); Fruits (apples, oranges, lemons); Legumes and Nuts (groundnuts/peanuts, beans, peas, cowpeas/black-eyed pea); Animal Foods (meat, eggs, milk); Fats (cooking oil, soybeans, groundnuts/peanuts, can also include milk); Staples (grains, maize, rice, cassava) (MoAFS., 2006). In part of the definition of Food and Nutrition, utilization is one of the components of food and nutrition security and it covers dietary diversity and nutritional uptake (HLPE., 2020). Using Household Dietary Diversity Score (HDDS) the study measured dietary diversity. The approach measures the number of different food groups consumed at a given time as an indicator of food access and quality diet (Swindale, A., and Bilinsky, P., 2006). This reflects the socio-economic status and the ability of individual households sampled on nutrient adequacy.

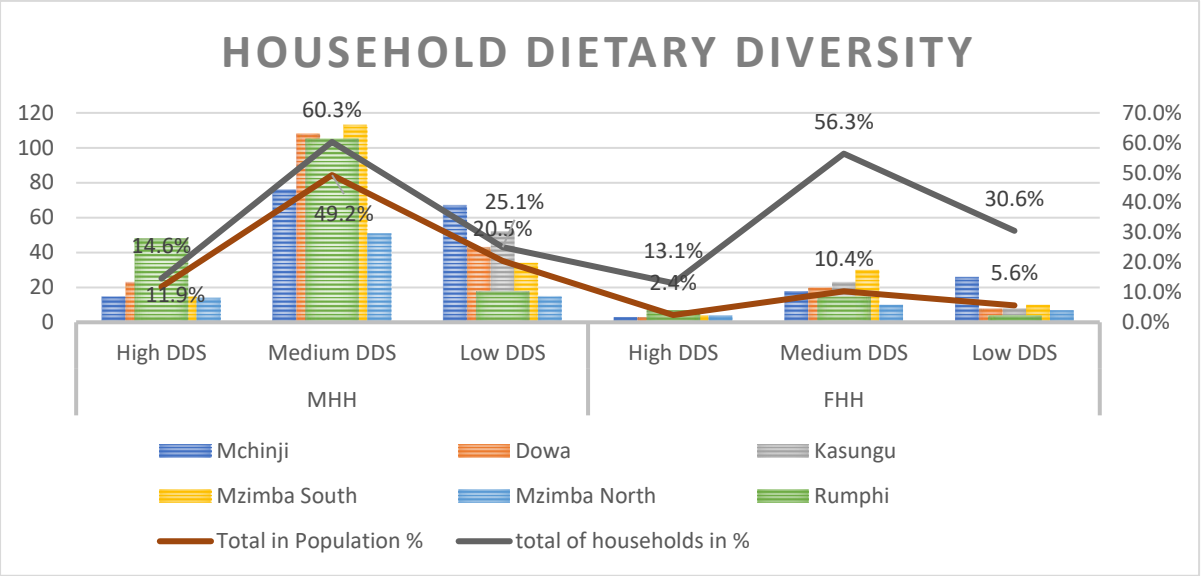


Figure 13: household dietary diversity

Fig 13 shows household dietary diversity between households and districts. The study categorized dietary diversity according to FAO DDS thresholds Lowest dietary diversity (≤ 3 food groups) Medium dietary diversity (4 and 5 food groups) High dietary diversity (≥ 6 food groups) (FAO, 2013). The survey finds out that the majority of male-headed households fall within the medium category in all districts representing 60%, followed by 26% in low dietary diversity and very few 14% falls within the high diversity category. The results show a similar trend for female-headed households, with 56% female-headed households in the medium category, 31% in low dietary diversity and 13% falling in the high diversity category. This is illustrated in Fig 14, comparing male-headed households to female-headed households. The results suggest that in both high and medium categories male-headed households are more likely to have a higher dietary diversity compared to female-headed households. While at the same time on the other hand in the low dietary category the results suggest that male-headed households are the majority compared to female-headed households implying that if it is the case of lower dietary diversity, they are more likely to have lower dietary diversity than females. In all categories male where the majority by 49% to 10% are in the medium category, followed by 20% to 10% in the Low diversity category and lastly 12% to 2% in the high dietary diversity category. This shows that female-headed households have low representations in all groups. Hence implying that they are more constrained than their male counterparts and have limited access to dietary diversity and nutritional uptake.

2. Access to resources

i. Income and Financial Assistance

Livelihood assets/resources are central to the idea of transforming livelihoods, interacting with the vulnerability context, and transforming structures, assets/resources can enable the vulnerable to make choices and activities that can create a sustainable livelihood outcome in this case achieving food security and building resilience. These assets are categorized as human, social, natural, physical, and financial capital (DFID, 1999). In a separate study the survey established that in terms of income, that it mainly comes from crop production, livestock sells and casual labor (off-farm activities) (Bhatti, et al., 2021).

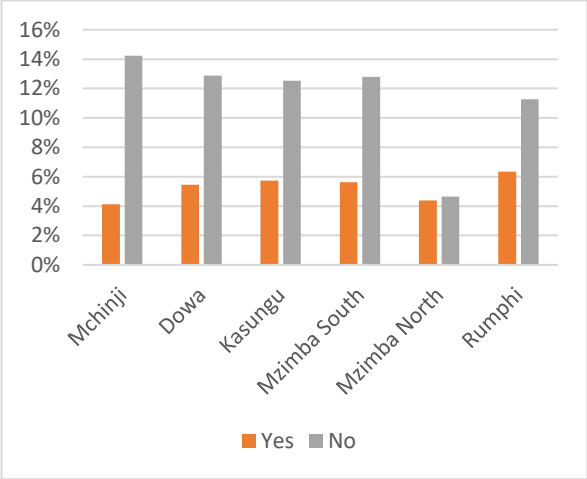


Figure 14: Access to any form of credit in the past 12 months

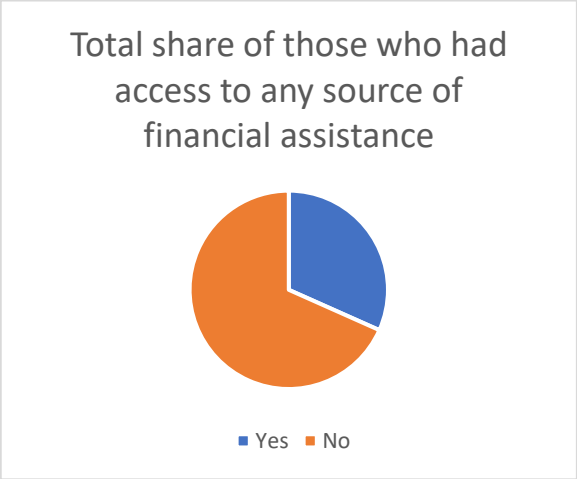


Figure 15: total share of access to financial assistance

Fig, 14 & 15 show the share of the population on access to financial assistance. In terms of access to financial assistance the survey established that almost three quarters 68.3% of the sample size had not had access to financial assistance only 31.7% had received credit for the last annual in all districts. The data shows that the number of respondents was high in Mchinji 159 (14.2%) respondents followed by Dowa 144 (12.9%), Mzimba South 143 (12.8%), Kasungu 140 (12.5%), Rumphi 126 (11.3%) and was low in Mzimba North 52 (4.7%). This shows that in all districts there is lack of access to financial resources/assistance and there is need for social protection programmers to open lines of credit and provide access to financial capital.

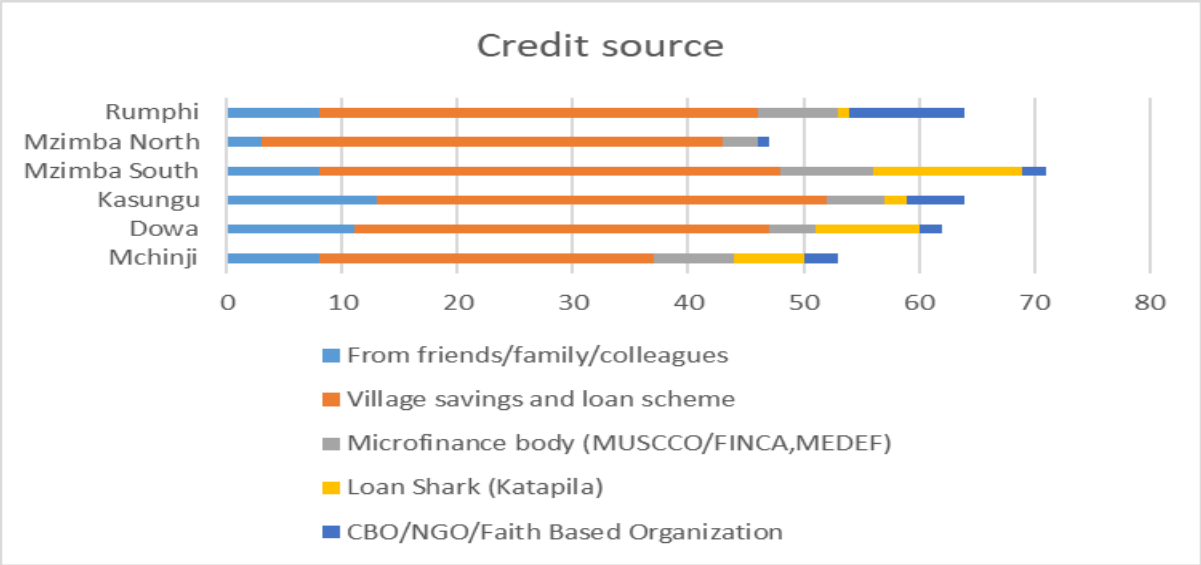


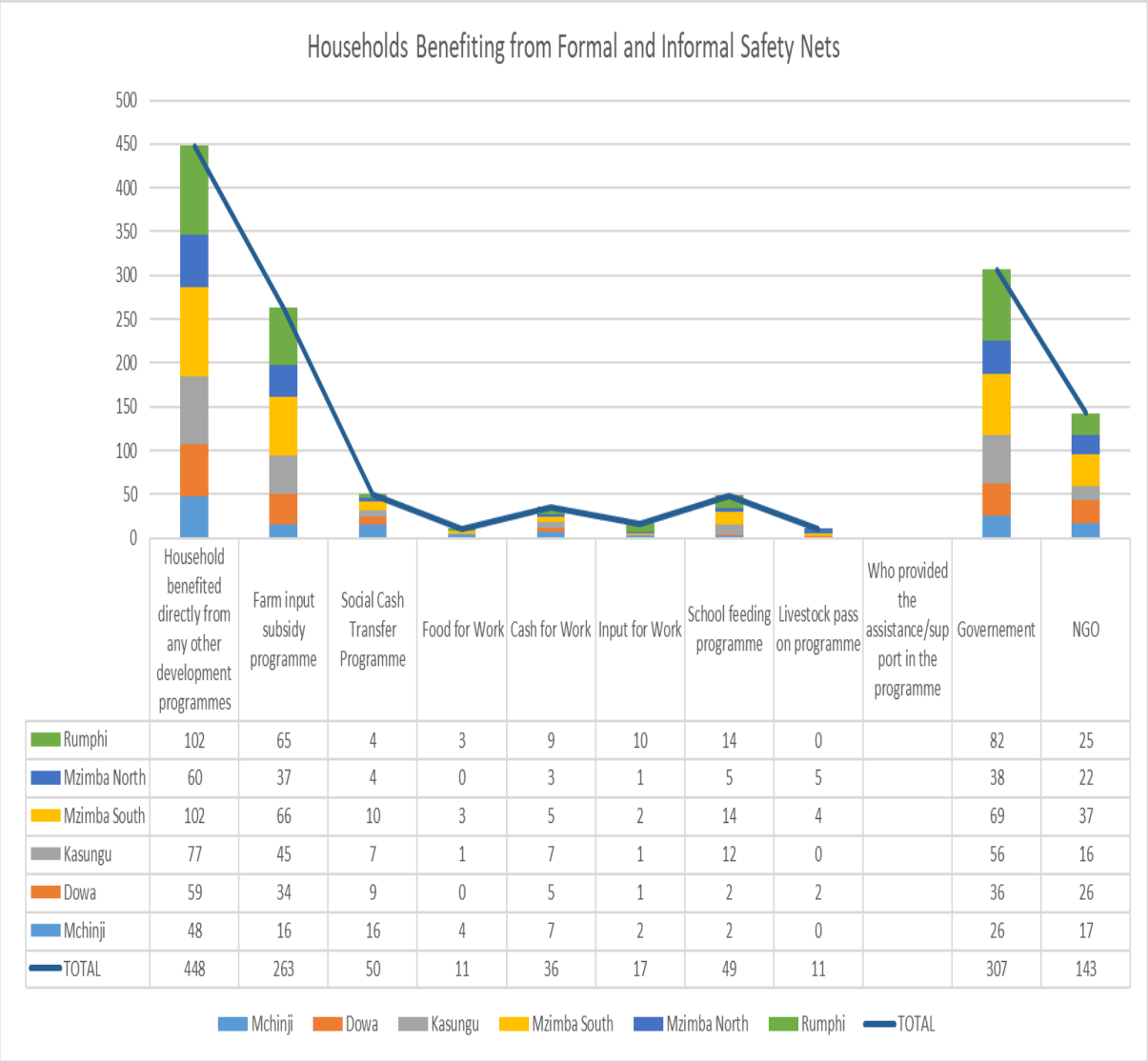
Figure 16: Credit Sources

Fig 16 shows the proportional representation of credit source across all districts. The data shows that of those who responded, village savings and load scheme have a larger share of the credit sources with a larger number of people (222 respondents) using the service in all districts. This is followed by support from friends/family/colleagues (51 respondents), Microfinance body (MUSCCO/FINCA, MEDEF) (34 respondents), Loan Shark (Katapila) (31 respondents) and CBO/NGO/Faith Based Organization (23 respondents) respectively. This means that given the share number of people who did not manage to have access to any credit source compared to the share size of the people covered by these credit facilities and services there is need for support to increase the capacity in serving and providing financial assistance to these households across all districts. This is important as access to financial access increases the capacity of these small-scale farmers/household to sustainably produce and have direct access to food thereby reducing vulnerability and increasing their resilience (DFID, 1999) (FAO, 2008) (Khandker, S, R., and Koolwal, G, B., 2014). As the data shows that out of a sample size of 1118 respondents 617 where members of Village savings and loans (VSL) and 501 were not. Of the 617 respondents that responded that They are members, 500 members received a share for the VSL and the majority of them 309 respondents bought fertilizers.

ii. Access to safety nets and Inputs

Regarding safety nets and inputs, which are development programs and projects that are designed to offer social protection and support to communities and societies. Fig 17 is showing social safety nets and development programmes distributions within the selected. The study established that households have access to various safety nets and programs: - Farm input subsidy program; Social Cash Transfer Program; Food for Work; Cash for Work; Input for Work; School feeding program and Livestock pass on program. 448 household had received directly from any form of social protection program or developmental program, with most of the households have benefited from Farm input subsidy program 263 respondents. Followed by Social Cash Transfer Program with a representation of 50 households, School feeding program 49 respondents, cash for work 36 respondents, input for work 17 respondents and lastly Food for Work and Livestock pass on program with 11 respondents each. Mzimba South and Rumphi had the highest number of households that have benefited directly from any other development program within these districts with 102 households each. And the rest were below 100 households in Mchinji 48, Dowa 59, Kasungu 77 and Mzimba North with 60 household.

This means that taking into consideration the number of the overall respondents per each district the data shows that less respondents are benefiting from any form of development program or most of the households are not having access to developmental programs. Overall, the study finds out that the number of households that are benefiting from any form of social protection programmes are very few and this calls policy makers to take into consideration these low figures and try to increase them within these districts.



	Household benefited directly from any other development programmes	Farm input subsidy programme	Social Cash Transfer Programme	Food for Work	Cash for Work	Input for Work	School feeding programme	Livestock pass on programme	Who provided the assistance/support in the programme	Governement	NGO
Rumphi	102	65	4	3	9	10	14	0		82	25
Mzimba North	60	37	4	0	3	1	5	5		38	22
Mzimba South	102	66	10	3	5	2	14	4		69	37
Kasungu	77	45	7	1	7	1	12	0		56	16
Dowa	59	34	9	0	5	1	2	2		36	26
Mchinji	48	16	16	4	7	2	2	0		26	17
TOTAL	448	263	50	11	36	17	49	11		307	143

Figure 17: Access to social protection and safety nets

Coping Mechanisms

The results showed that 841 (75.2%) households out of 1118 had encountered food shortages for the past 12 months. This was with a high number of respondents in Mchinji 180 (21.4%) followed by Dowa 169 (20.1%), Kasungu 164 (19.5%) and Mzimba South 150 (17.8%). These households have developed coping and adaptation strategies to deal with food shortages and these include consumption and livelihood coping strategies. Consumption based strategies deals with household food consumption behavior when confronted by food shortage, and livelihood-based strategies are concerned about long-term actions implemented by households relating to income, expenditures, and assets (Sassi, 2021).

In consumption-based strategies similar coping strategies trends were noticed between all districts. The data showed that the most frequent strategies significantly included reduce food portions at mealtimes, reduce number of meals per day, skipping entire day without eating, reducing adult consumption, going to bed on an empty stomach, relying on less expensing or less preferred type of foods and borrow food or relying on help from relatives. Reducing food portions at mealtimes and reducing the number of meals per day are the most used coping strategies, used by 627 (56%) and 647 (58%) households respectively. Many households that resorted to reducing food portions at mealtimes was high in Dowa with 4.4% followed by Kasungu 4.2% respondents and, Mchinji and Mzimba South 3.8%. And in terms of reducing the number of meals per day Dowa was the highest with 4.2% of the respondents followed by Kasungu with 4.2% respondents and Mchinji with 3.6% respondents. Other consumption-based strategies were least practiced, and these included Skipping entire day without eating was represented by 22% of the households, reducing adult consumption 20%, Going to bed on an empty stomach 29%, Rely on less expensing or less preferred type of foods 20%, and borrow food or rely on help from relatives 16% was the least practiced consumption based coping strategy.

In terms of livelihood coping strategies the data showed that most of the households resorted to casual labor in exchange of food in all districts with 25% of the households and some households (12%) resorted to selling of household assets. Some of these effects can be seen as negative or irreversible coping strategies that could reduce households' resilience to food shortages in the long run (Ansah, Gardebroek & Ihle, 2021) as it involves giving up their basic livelihoods in exchange to secure basic household food needs. This means that households end up trading their productive assets to meet short term food shortage needs thereby compromising

their little capacity to meet their future food needs. Hence there is need for protective policies that ring fence these basic households' productive assets by trying to cover for the short-term food shortages. The other livelihood based coping strategies had least numbers of members that practiced them this included, cut down fruit trees (e.g., mango trees) and sale of firewood 28 3%, Uncontrolled cutting down of trees for sale as firewood or charcoal 2%, School children staying at home due to lack of food 7%, Break up of marriages 1%, and getting capital (loans with high compound interest) 6%. However, there were very few households, only 3 households that had abandoned households' plots to become tenants in tobacco estates and these households were in Mchinji, Kasungu and Rumphi.

To conclude this section results will be summarized as, regarding household's characteristic and socio-economic characteristics, the survey highlighted that most households in the studied districts are food insecure particularly the last three months of the lean season. Though the number of vulnerable households vary with districts, some households and districts are constrained more than other districts for instance in the case of food reserves some households run out of reservoirs early than others. This could be due to the size of the family and harvest obtained as of the previous harvest. The results also established that in some cases there are differences between male headed households and female headed households. Such is the case with literacy, the results showed that there is a high number literate male-headed household compared to female-headed household, and this can have significant impact on the adoption of agricultural practices that could necessitate food and nutrition security at household level. And in some cases, the data showed similarities for instance the dependency ratio was low and the same in both household type, however in terms of being economically active the results showed that the number of the non-working group was higher in both male and female-headed households compared to the working group.

Moreover, in terms of access to resources the findings indicate that both female and male headed household in all districts are limited in access to financial assistance as results showed that 68.3% of the households had not had access to financial assistance only 31.7% had received some form of credit in the last annual in all districts. Most of their assistance comes from village savings and loans (VSL) and that agricultural production, livestock sells, and casual labor remain their main livelihood sources. Hence social protection programs should take into about both these diversities, differences and similarities between households and districts in reducing vulnerabilities to food security and increase their resilience. Therefore,

policy that provides financial support and protection to all households in these districts is likely to improve the food security situation in rural Malawi. Additionally in terms of access to inputs and safety nets the findings showed that households have access to various safety nets and development programs such as Farm input subsidy program; Social Cash Transfer Program; Food for Work; Cash for Work; Input for Work; School feeding program and Livestock pass on program. However only a few households (443) which is only 40.1% had benefited from these programs. Therefore, there is need for policy to increase the provision and support of small-scale farmers' households through safety nets and developmental program if Malawi is to increase their resilience and improve their food security situation.

CHAPTER SIX: DISCUSSION AND RECOMMENDATIONS

This chapter will discuss the findings of the study using the sustainable livelihood framework. As mentioned before that the SLF is a tool or way of thinking about the intentions, scope and priorities of developmental activities and programmes (Serrat, 2017). The framework is tool that can be used to gain understanding of the environment that surround and affect communities and societies for achieving sustainable livelihoods. Using the approach to analyse these environments it presents the main factors that affects people's livelihoods (DFID, 1999). As livelihoods are shaped by a multiple of interacting factors, gaining such understanding provides guidance for developmental activities such as building household resilience to climate change and increase food security.

b. Household Vulnerabilities

To understand he context one ought to understand the people in relation to the situation that they live in. Household vulnerability discusses the individual household in relation to the environment that it exists in, while at the same time looking individual conditions or situations since environmental factors such as trends such as population and economic, shocks such as natural and economic and seasonality for instance of prices, production, health and employment opportunities (DFID, 1999), affects individuals differently (Akongo, T. and Chonde, C., AG 2020) and affects more the poor and marginalized such as women and children in developing countries (Goh, 2012). The study established that the five selected districts are patriarchal characterised by male dominance. The data showed a huge proportion of male-headed households compared to female-headed household out of the sampled population. More evidence that supports that the districts are patriarchal is that while the population is male dominated there were fewer male respondents.

This kind of a social structure have some implications, it results in differentiated vulnerabilities which can determine household or individual coping capacities to climate change and food security (Segnon, A, C. et al.,, 2020). Such social structures characterized by gender inequalities also results in opportunities inequalities (Botreau, H. and Cohen, Marc, J. , 2019) This is evident for example in the literacy levels by household headship type, the findings of the study show that of those who attained any form of education the majority are males (88,4%) compared to (78,6%), and of the illiterate the majority are females (21,4%) and males (11,6%), more so that females barely reaches secondary and tertiary education. Despite an increase in school enrolment in rural Malawi IHS5, (2020), These findings show that in the focused districts male household heads are more literate than female householdheads. Literacy if fairly important for building resilince building as the study by Di Falco, (2018) shows that literacy has a significant impact on adaptation to climate change and food security, particularly environmental literacy (Johnston, 2020) on adoption of farming technics and methods (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015). Hence this calls for social protection programms that can protect and promote these vulnerable female-headed households. While at the same time recognizing the differencies between those that are literate beween male-headed households and female-headed households which is the larger proportion of the population can be usefull to developmental programs. As those that are already literate are a starting point for policies and programs, and targeting them for inclusion in social programmes. This does not only improve their capacities but also that can strenthen them and increase their resilience to produce more given that to some extents they can receive and comprehend agricultural production information which can easily be translated into production such as support in the adoption of new farming technologies.

Differentiated effects and impacts of climate change and food security can also be on the bases of household size and dependency ratio. The study established differences between households and districts with an average of 5,7 members across districts and between households, however male-headed households had a higher number of larger families. And the dependency was low and similar between MHH and FHH households. However, since the higher number of family size are that are larger (6-8 members and 9 or more members) are male-headed and in Mchinji, Dowa, Kasungu, Mzimba South, social protection food programmes should be designed in a way that prioritises these households particularly those that have a larger portion of those that are within the non-working age group as households

with more residents tend to be more vulnerable (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015).

More so it is important for developmental programmes to consider household size as it has effects on the supply of labour and land that could be cultivated (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015), capitalizing on the household working group. Hence increased resilience can be attained though the creation and implementation of social programmes that capitalises on household level characteristics in terms of increasing production. Such household level targeted programmes yield momentous positive outcomes. As discussed in the literature review significant lessons can be drawn from **PROGRESA** in Mexico**,** the program demonstrated that targeted social protection programmes at household level are much more effective and efficient in transforming poor communities (Skoufias, 2005). For instance, social protection programmes such as cash transfers can be administered based on household size and the number of family members (Center, 2016), same with production based social protection programmes can be administered on the bases of household size and the number of the working group (Hoddinott J., & Mekasha T, J. , 2020). This maximises the intended objectives of the programmes as this can be an efficient way of delivering social protection while at the same time the method allows targeting specifically of those that of the working group there by increasing their resilience.

Moreover, understanding the vulnerability context, seasonal shifts should be taken into consideration as they have a cause-and-effect relationship livelihoods status and outcome (DFID, 1999). Seasons such as farming/agricultural seasons have the same cause-and-effect relationship with livelihoods status particularly food availability and security. The study established that households in the selected districts are also affected by seasonal shifts regarding food security and that there are differences within these households in terms of how they're affected. Households have shown that food insecurity is critical during the lean season where reserves would have depleted or reduced and that this affects districts and males and females differently.

This evidence confirms similar findings by Malawi IPC acute food insecurity august 2020 analysis that food insecurity in rural Malawi peaks with the lean season *(January, February, and March)* and it is characterised by household food gaps and shortage (IPC., 2021). Malawi's currently published **Lean-Season Food Insecurity Response Plan (LS-FIRP),** emphasize targeting response by providing an average household of 5 people with a

50kg bag of maize and it prioritised certain districts for a response (*Balaka, Chikwawa, Blantyre, Chiradzulu, Machinga, Mangochi, Salima, Kasungu, Mzimba and Nsanje and scale up*). However, the response was not gender sensitive on the food availability cluster, by solely relying on household size for the response, the strategy would miss out significant embedded or hidden household differences. Since the vulnerability context interacts with the households differently, there also differences in responses and outcomes (Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W., 2011).

In this case this would require the response plan also to distribute food aid apart from household size but at by household type and other characteristics such as household income and food available in reserves. As this study established that in terms of food availability despite the differences in districts, a high number of households that encounter food shortages were female-headed household during the lean season this is because males have better opportunities (Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W., 2015) which influences better coping strategies (Kakota, C. T., Synnevag, G., Maonga, B., and Mainje, M., 2020)compared to females. Thus, social protection programmes such as lean-season food transfers should take note of these differences and hidden factors, to protect those that are still left out or those that would still need particular attention.

c. Livelihood assets and resources

Livelihood assets are important in achieving sustainable livelihoods that are resilient, as they can be converted to livelihood outcomes (DFID, 1999). Households can use their human, social, natural, physical, and financial capital to achieve livelihoods outcome such as food security (Ellis, 2000). They can be used individually or in combination to achieve these outcomes, in this case these assets can be used to achieve food availability and access to food (Yazdanpanah, M., et al., 2021). The findings of this study had shown supporting evidence that the poor or the vulnerable have limited assets and resources. And that female -headed households tend to be more constrained and limited compared to their male counter parts in rural Malawi (Haug & Westengen, 2020). The study establishes that female-headed households have limited human capital (Literacy levels and labour availability), physical/natural capital (land holding size), financial capital (access to resources), these results were similar in all districts though there are variations in numbers. These limitations result in constrains in coping strategies that can manifest in reduced in agricultural productivity thereby compromising food security as a livelihood outcome (WB., 2018).

The study further revealed that rural households in the selected districts though to a limited extent, households have financial assistance for Village savings and loan scheme, from friends/family/colleagues, Microfinance body (MUSCCO/FINCA, MEDEF), Loan Shark (Katapila) and CBO/NGO/Faith Based Organization, respectively. The village savings and loan scheme were the dominant credit/loan source and on average households have access from a Microfinance body such as (MUSCCO/FINCA, MEDEF). The least accessible financial method was from CBO/NGO/Faith Based Organization. However only 32% of the households of the sample population responded to be receiving financial assistance which is a very small proportion. Efforts to build small-scale farmers' resilience to shocks that could result if food insecurity through the building of the household asset base and access to resources have yielded positive results as the PROGRESA programme in Mexico resulted in the accumulation of assets such as livestock, land and farm equipment accumulation of livestock, leading to land use and increased production (Todd et al., 2009) (Gertler et al., 2012). The PROGRESA programme presented a model to the world and governments on how they need to be designed for redistributing income and assets that allows capacity building of the poor (Skoufias, 2005).

Malawi has a couple of such programs such as conditional cash transfers. Conditional cash transfers in Malawi are diverse targeting different aspects of livelihoods such as health, education, and gender, one good example is the Social Cash Transfer (SCTs) introduced in 2006 to improve food security among poor households through expenditure dedicated to food (Miller, C, M. et al., 2011). However there has been no social program that directly target the poor on the bases of their different vulnerabilities and link it directly to agricultural production (Tirivayi et al., 2016). Though such a strategy has resulted in expenditure on assets such as agricultural assets, it is among secondary beneficial outcomes not the primary objective of policy (Miller, C, M. et al., 2011). Thus, for Malawi to achieve small-scale farmers' resilience it needs to facilitate the building of household asset base and increase access to resources. This increases the farmers' adaptive and transformative capacities in the sense that they can produce more and sells more, such outcome allows the accumulation of many positive secondary outcomes increased income, increased food availability and it increases farmers asset base assuming that they invest back to farming. It needs social policies and programmes that are directly targeted at increasing agricultural production by using individual households' differences in vulnerabilities. Policies and programmes that integrate social protection with food security and agriculture by building the asset base of households provides different type of resources. This allows the increase of small-scale farmers' ability and capacity to produce

food for themselves while at the same time their asset base will ac as a safety net in terms of shocks.

d. Livelihood strategies

The interaction between the vulnerability context and livelihood assets through transformative structures and processes adapts livelihood strategies to achieve livelihood outcomes (*resilience and food security*) (DFID, 1999). This research paper identified the types of strategies both common consumption and livelihood coping strategies, employed by local households in coping up with external shocks that constrains their food security situation. The study also establishes differences in use by different households' type, some are more common in other districts than others. The data show that among the commonly used consumption strategies (*Reduce food portions at mealtimes, reduce number of meals per day, skipping entire day without eating, reducing adult consumption, going to bed on an empty stomach, relying on less expensing or less preferred type of foods and borrow food or relying on help from relative*). Reducing food portions at mealtimes and reducing the number of meals per day are the most used coping strategies with different practice frequencies per district.

Regarding livelihood coping strategies households resorted to casual labor in exchange of food and selling of Sell household assets. In some instances, these livelihood strategies can lead negative outcomes in the long-term such as reducing the resilience and capacity of the households to respond to environmental shocks. His happens when the sell productive assets no spend more time in off farm work reducing time for them to work in their own fields or low diet consumption (Ansah et al., 2021) therefore increasing the negative impacts (FAO, 2017). Such effects have been observed by Ellis, (2000) and establishes that asset depletion plays a role in maintaining food security.

A study on the interactions between coping strategy choices and household food security in Ghana make similar observations and recommends that governments and organizations should offer support to these households through the provision of safety nets that help poor households of its asset base (Ansah et al., 2021). This study makes similar recommendation and advice for the implementation of The Productive Safety Net Programme (PSNP) such as in Ethiopia (Abduselam Abdulahi Mohamed, 2017). The Ethiopia PSNP combining cash, food transfers and assistance to build assets for the poor households (MOA, 2014). The programme despite its own limitation the program has to some extent improved the food security of poor households (Welteji, Mohammed & Hussein, 2017). Thus, for Malawi

the projected outcomes would entail improved food availability and dietary diversity as supportive policies at household level transforms and improves the adaptive capacity of small-scale farmers in food production.

CONCLUSION

This paper sought to find out how can social protection programmes programs be used to strengthen small-scale farmers' resilience. The study pursued the objective by seeking understanding of the complex realities on the ground through the exploration of differentiated vulnerabilities, capabilities, and challenges of rural Households in Malawi. Hence the paper investigated the differences in district and households' type regarding households' characteristics and food security. The paper's objectives were pursued though three main research questions - Are There differences between districts and male and female households regarding households' characteristics and food security? Do farmers have different access to resources and financial assistance? How are small-scale farmers reacting to Food Shortages? Knowledge and understanding gained was used to make social protection programmes and policy recommendations that can contribute to strengthening small-scale farmer's resilience to climate change and food and nutrition security.

I. Are There differences between districts and male and female households with regard to households' characteristics and food security?

The small-scale farmers' households are different in characteristics and demographics. The figures showed that selected districts are dominated by male headed households Inequalities still exist in rural Malawi, and this requires the strengthening of gender mainstreaming policies in the rural Malawi. This also show that designed social protection programs should be sensitive to the social structures and close the still existing gender gap. In terms of age the study showed that average age is 49.5 with the majority being in the age of 20 and 59. Age is squarely important to consider in designing developmental programmes as it is a factor which determines labour availability which forms the bases of Productive Safety Net Programme that require working labour. In terms of household size and dependency ratio the study noted some differences in household sizes however with similarities in the dependency ratio. Household sizes varied between districts (average 5.7 members) while the dependency ration between MHH and FHH? was the same 1.3.

Data also showed differences in literacy rates, male tend to be more literate than females hence male headed households are more literate than female-headed households. However, most of the population acquired some form of education. This could be a starting point for strengthening resilience of small-scale farmers, social programmers can capitalize such form of education for the adoption of farming strategies that can increase their resilience to environmental shocks. Productive Safety nets can use their knowledge and translated into activities that can increase their production output saving them from suffering huge negative outcomes because of climate induced shocks such as floods and droughts. While at the same time using protection programs to protect those that are illiterate or invest in education of that population to helps boost their adaptive capacity.

Regarding food and nutrition security the study established that there are also differences to food security, with variations between districts and household types. Data showed that some households are severely food insecure that others and most of the acutely affected households are male headed households. However, this is counter intuitive and contradicts with other studied in similar places where female-headed households are acutely affected because of less opportunities and privileges compared to their male counter parts. This study also provides such evidence on other variables that such as access to resources and assistance that man? MHH are in a position on advantage compared to FHH. This inconsistency to be because of self-reported data and error in research prone to interviewee biases due to hidden unobservable desirability concerns that could either be economic and social.

Additionally, the study revealed differences in shortage in food availability at household level and showed the critical times where households are faced with critical food shortage. Households face different levels of food shortage at different times of the year. The results showed that food shortage is more severe during the lean season, the time between planting and harvesting where their food reserves are hugely depleted. Many farmers reported that their harvest could not last till the following growing season, most of the farmers' harvest could only last for 6-8 months mostly because of their harvest was not enough to support them till the next season. These findings are important to the timing of programmes to protect vulnerable households during these critical times. The study identified February to be the month that households face critical food shortages followed by January and march. Thus, policies and programmes that are timed during these months and targeted to protect the most affected and disadvantaged such as female-headed households is like to effectively transform the livelihoods

of those that are most food insecure thereby increasing the resilience of these farmers from the household level.

II. Do farmers have different access to resources and financial assistance?

They are already existing social programs in Malawi that offer support small-scale farmers from various development actors, however there are significant differences in terms of access to these resources and support and that such support is limited. The study established that many of the farmers don't have access to resources. The number of those who don't have access to financial resources was high in other district compared to other districts and this is high Mchinji followed by Dowa, Kasungu and Mzimba South. The study showed various sources of financial assistance and that most farmers rely on village saving loan schemes. However, the results indicate that there is very little financial support from both The Government and development agents such as NGOs. Further analysis of data revealed that there are differences in the use of the received resources, majority of the farmers use acquired loans and savings to buy food and inputs (fertilizer). Of those that bought fertilizers they were high numbers in Mzimba South and for food it was in Kasungu.

Moreover, there is evidence that there are existing safety nets distributed in the sampled districts. The data showed that farmers receive mostly from Farm input subsidy programme and followed by Social Cash Transfer Programme, Food for Work, Cash for Work, Input for Work, School feeding programme, Livestock pass on programme respective to their order of distribution. However household show differences in distribution and access to safety nets, and that less than 50% of the sampled population has access to these safety nets. The low in values in distribution calls for the strengthening of such provisions and support. Also, that the identified variations and differences in proportion of distribution between districts make an appeal to the social programmers (the government and development actors) to prioritize the use of targeted financial support through microfinancing and resource support such as the provision of inputs withing and between these districts.

III. How are small-scale farmers reacting to Food Shortages?

Households and districts have shown both differences and similarities in their responses to food shortages. Different households engage in both different consumption based and livelihood base coping strategies, and the data established that are the most preferred coping strategies across all districts. However, though some coping strategies seems viable in the short

term in the long term there might be the sources of future constraints to food security. These action such as selling of livelihood productive assets and engaging in off-farm activities (such as casual labor for food). This might have future consequences for these households as they might be required to spend more time on casual labor leaving them with a time constraint to work on their own fields therefore reducing farmers' future coping capacity. Hence policy needs to be context sensitive and supportive. Mostly target to protect those that are more likely to engage in negative coping strategies and to promote positive coping strategies that can further strengthen their resilience to food insecurity.

Opportunities for further study

This study provides strong evidence that is worthy further exploring in the same context and sense. The study revealed some challenges in measuring and having precise data on concepts such as food security. And further the exploration has revealed that though climate change affects all there are hidden factors at household level or individual level that results in different and disproportionate effects of climate change and food insecurity. Thus, if programmes and policies are designed in a one size fits all fashion, this can generate developmental gaps or continued disproportionate impacts of climate variability. Thus, it would be interesting in the future to look at finding objective Food security measurements and indicators that can be a true reflection of the actual food security situation and that can show hidden idiosyncratic risk. More so the study has shown that small-scale farmer uses different coping strategies in order to adapt to the changes and some might have negative consequences in the long run such as selling of productive assets. Hence it is also interesting in the future to look at these coping strategies and their consequences in the long run to avoid negative self-reinforcing feedbacks

References

Abduselam Abdulahi Mohamed, F. (2017). Food Security Situation in Ethiopia: A Review Study . *International Journal of Health Economics and Policy, 2*(3), 86-96.

Akongo, T. and Chonde, C. (AG 2020). Gendered Adaptation and Coping Mechanisms to Climate Variability in Eastern Uganda Rice Farming Systems. In B. R. Singh, *Climate Impacts on Agricultural and Natural Resource* (pp. 61-92). Switzerland: Springer Nature.

Ansah, I. G. K., Gardebroek, C. & Ihle, R. (2021). Shock interactions, coping strategy choices and household food security. *Climate and Development, 13*(5), 414-426.

Asfaw, S., & Davis, B. (2018). Can Cash Transfer Programmes Promote Household Resilience? Cross-Country Evidence from Sub-Saharan Africa. In L. M. Lipper, *Climate Smart Agriculture Building Resilience to Climate Change* (pp. 227-250). Rome, Italy: Springer International.

Barrow, C. J. (2003). *Environmental change and human development* . Oxford : Oxford University Press.

Bhatti, M. A., Godfrey S. S., Ryan H. L., Kachiwala, C., Hovdhaugen, H., Banda, L. J., Limuwa, M., Wynn, P. C., Ådnøy, T., & Eik L. O. (2021). Diversity of Sources of Income for Smallholder Farming Communities in Malawi: Importance for Improved Livelihood. *Sustainability*(13), 9599.

Botreau, H. and Cohen, Marc, J. . (2019). *Gender Inequalities and Food Insecurity: Ten years after the food price crisis, why are women farmers still food-insecure?* Oxford: Oxfam.

Brown, K. (2016). *Resilience, Development and Global Change.* New York: Routledge.

Bryman, A. (2012). *Social research methods* (4 ed.). Oxford: Oxford University Press.

Bullock, J. M., Dhanjal-Adams, K. L., Milne, A., Oliver T. H.,Todman L. C., Whitmore, A. P. & Pywell, R. F. (2017). Resilience and food security: rethinking an ecological. *Journal of Ecology*(105), 880–884.

Center, C. P. (2016). *Malawi Social Cash Transfer Programme Endline Impact Evaluation Report.* University of North Carolina at Chapel Hill and University of Malawi.

Covarrubias, K., Davis, B., and Winters, O. . (2012). From protection to production: Productive impacts of the Malawi social cash transfer scheme. *Journal of Development Effectiveness, 4*(1), 50-77.

DFID. (1999). *sustainable livelihoods guidance sheets.* London: Department for International Development.

Di Falco, S. a. (2018). Managing Environmental Risk in Presence of Climate Change: The Role of Adaptation in the Nile Basin of Ethiopia. In L. e. Lipper, *Climate Smart Agriculture Building Resilience to Climate Change* (pp. 497-526). Gewerbestrasse: springer and FAO.

DNHA. (2018). *National Multi-Sector Nutrition Policy 2018–2022.* lilongwe: Department of Nutrition, HIV and AIDS.

DoDMA. (2016). *2016/2017 Food security response plan.* Malawi: Malawi Department of Disaster Management Affairs.

DoDMA. (2018). *2018/2019 LEAN SEASON FOOD INSECURITY RESPONSE PLAN.* Lilongwe : Department of Disaster Management Affairs.

DoDMA. (2015). *NATIONAL DISASTER RISK MANAGEMENT.* Lilongwe : Department of Disaster Management Affairs.

Ellis, F. (2000). *Rural livelihoods and diversity in developing countries.* Oxford: Oxford University Press.

FAO. (2002). *The State of Food Insecurity in the World 2001.* Rome: The Food and Agriculture Organization of the United Nations.

FAO. (2006). *Integrated Food Security Phase Classification Technical Manual.* Rome: The Food and Agriculture Organization of the United Nations.

FAO. (2008). *An Introduction to the Basic Concepts of Food Security.* Rome: by the EC - FAO Food Security Programme.

FAO. (2013). *Guidelines for Measuring Household and Individual Dietary Diversity.* Rome: Food and Agriculture Organization of the.

FAO. (2013). *Trade Reforms and Food Security Conceptualizing the Linkages.* Rome: The Food and Agriculture Organization of the United Nations.

FAO. (2016). *Strengthening coherence between agriculture and social protection to combat poverty and hunger in Africa Framework for Analysis and Action.* Rome: the Food and Agriculture Organization of the United Nations.

FAO. (2017). *Social protection framework promoting rural development for all.* Rome: the Food and Agriculture Organization of the United Nations.

FAO. (2018). *The State of Food Security and Nutrition in the World 2018: Building climate resilience for food security and nutrition.* Rome: The Food and Agriculture Organization of the United Nations.

FAO. (2020). *The State of Food Security and Nutrition in the World 2020.* Rome: FAO.

FAO, IFAD, UNICEF, WFP and WHO. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.* Rome: FAO.

FAO. (2017). *Social protection for resilience building supporting livelihoods in protracted crises fragile and humanitarian contexts.* Rome: the Food and Agriculture Organization of the United Nations.

FAO., IFAD., UNICEF., WFP and WHO. (2019). *The State of Food Security and Nutrition in the World 2019.* Rome: the Food and Agriculture Organization of the United Nations.

Folke, C. (2016). Resilience. *Ecology and Society,, 21*(4), 44.

FSIN & GNAFC,. (2020.). *Global Report on Food Crises 2020 September update: in times of COVID-19.* Rome: the Food Security Information Network (FSIN) and Global Network Against Food Crises.

Galarza, M. X. (2020). Resilience to Food Insecurity: Theory and Empirical Evidence from International Food Assistance in Malawi. *journal of Agricultural economics, 71*(3), 936-961.

Gertler, P. J., Martinez, S. W. & Rubio-Codina, M. (2012). Investing cash transfers to raise long-term living standards. *American Economic Journal: Applied Economics, 4*(1), 164-92.

Getaw, T., Gashaw, T, Abate., and Tadiwos, Z. (2020). Biases in self-reported food insecurity measurement: A list experiment approach. *Food Policy*, 0306-9192.

GoF. (2011). *Malawi Agricultural Sector Wide Approach (ASWAp) 2011-2015.* Lilongwe: Malawi Government.

GoF. (2018, march). *Malawi National Social Support Programme II (MNSSP II).* lilongwe: Department of Economic Planning and Development.

Goh, A. H. (2012). *A literature review of the gender-differentiated impacts of climate change on women's and men's assets and well-being in developing countries. CAPRi Working Paper No. 106.* Washington DC: International Food Policy Research Institute.

GoM. (2011). *Malawi Agricultural Sector Wide Approach (ASWAp) 2011-2015.* Lilongwe: Malawi Government.

GOM, I. (2017). *Fourth Integrated Household Survey Malawi 2016-2017.* Lilongwe: Government of Malawi.

Haug, R. and Westengen, O. (2020). Policy and action for food and climate uncertainities in malawi. In B. e. Singh, *Climate impact on Agricultural and Natural resource sustainability in Africa* (pp. 331-346). Nature Switzerland: Springer.

Haug, R. and wold, B. K. G. (2017, August 9). Social Protection or Humanitarian Assistance: Contested Input Subsidies and climate adaptation in Malawi. *IDSBulletin: Transforming Development Knowledge, 48*(4), 1-12.

HLPE. (2013). *Investing in smallholder agriculture for food security. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security.* rome: High Level Panel of Experts on Food Security and Nutrition.

HLPE. (2017). *Nutrition and food systems. .* Rome: the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security.

HLPE. (2020). *Food security and nutrition: building a global narrative towards 2030.* Rome: The High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security.

HLPE. (2012). *Social protection for food security. A report by the High Level Panel of Experts on Food.* Rome: High Level Panel of Experts on Food Security and Nutrition.

HLPE. (2020). *Food security and nutrition: building a global narrative towards 2030.* rome: the Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security.

Hoddinott J., & Mekasha T, J. . (2020). Social Protection, Household Size, and Its Determinants: Evidence from Ethiopia. *The Journal of Development Studies*, 1818-1837.

Hoddinott, J. & Yisehac, Y. (2002). *Dietary Diversity as a Household Food Security indicator.* washington DC: Food and Nutrition Technical Assistance Project FHI 360.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics*, 1-23.

Holmes, R., Costella, C., Bailey, M., Kruczkiewicz, A., Poulter, R., Sharp, K., & Scott, L. (2017). *Towards A Shock Sensitive Social Protection System for Malawi.* London and the Hague: ODI and Red Cross Climate Centre.

Hunga, G. H. & Culas, R. J. (2019). Impact Of Agricultural Policies On Crop Productivity And Food Security In Malawi, 1964-2014. *International Journal of Food and Agricultural Economics (IJFAEC), 7*(3), 175-199.

IFAD. (2010). *Rural Poverty Report 2011. New realities, new challenges: New opportunities for tomorrow's generation.* Rome: the International Fund for Agricultural Development.

IHS5, M. G. (2020). *The Fifth Integrated Household Survey (IHS5) 2020 Report.* Zomba: National Statistical Office.

IMF. (2017). *MALAWI ECONOMIC DEVELOPMENT DOCUMENT: IMF Country Report No. 17/184.* Washington DC: IMF.

IPC. (2020). *IPC ACUTE FOOD INSECURITY ANALYSIS NOVEMBER 2019– MARCH 2020.* The Integrated Food Security Phase Classification (IPC).

IPC. (2021). *Malawi ipc acute food insecurity august 2020 analysis.* IPC.

IPCC. (2007). *: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge : Cambridge University Press.

IPCC. (2018). *Global warming of 1.5°C.* Geneva Switzerland: IPCC. Retrieved 03 07 , 2020, from https://www.ipcc.ch/sr15/

IPCC. (2019). *: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.* In Press.

Johnston, J. D. (2020). Climate Change Literacy to Combat Climate Change and Its Impacts. In A. A. Leal Filho W., *Climate Action. Encyclopedia of the UN Sustainable Development Goals.* Cham: Springer.

Joshua, M. K., Ngongondo, C., Chipungu, F., Monjerezi, M., Liwenga, E., Majule, A. E., Stathers, T., & Lamboll, R. . (2016). Climate change in semi-arid Malawi: Perceptions, adaptation strategies and water governance. *Jamba., 8*(3), 255. doi:https://dx.doi.org/10.4102%2Fjamba.v8i3.255

Kakota, C. T., Synnevag, G., Maonga, B., and Mainje, M. (2020). Gender Differentiation in the Adoption of Climate Smart Agriculture Technologies and Level of Adaptive Capacity to Climate Change in Malawi. In S. A. Singh B., *Climate Impacts on Agricultural and Natural Resource Sustainability in Africa* (pp. 507-526). Cham: Springer.

Kakota, T. V., Maonga, B. B., Synnevag, G., Chonde, C., & Mainje, M. (2017). Harmonization of extension messages on climate smart agriculture in Malawi: Do we speak with one voice, and to whom? *Journal of Agricultural Extension and Rural Development*, 255-261.

Kakota, T., Nyariki, D., Mkwambisi, D., and Kogi-Makau, W. (2015). Determinants of Household Vulnerability to Food Insecurity: A Case Study of Semi-Arid Districts in Malawi. *Journal of International Development, 27*(1), 73–84.

Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W. (2011). Gender vulnerability to climate variability and household food insecurity. *Climate and Development, 3*(4), 298-309.

Khandker, S, R., and Koolwal, G, B. (2014). *Does Institutional Finance Matter for Agriculture? Evidence Using Panel Data from Uganda. Policy Research Working Paper; No. 6942.* . Washington, DC.: World Bank.

Knutsson, P., Ostwald, M. (2006). A Process-Oriented Sustainable Livelihoods Approach–A Tool For Increased Understanding of Vulnerability, Adaptation and Resilience. *Mitigation and Adaptation Strategies for Global Change*.

Limuwa, M, Majid., and Synnevåg, G. (2018). A gendered perspective on the fish value chain, livelihood patterns and coping strategies under climate change - insights from Malawi's small-scale fisheries. *African Journal of Food, Agriculture, Nutrition and Development*, 13525-13544.

Limuwa, M. M. (2019). *Small scale fishing communities' perceptions of climate change and its impact on livelihoods, gender roles and adaptive capacity : a case of Lake Malawi.* Ås: Norwegian University of Life Sciences.

Longhurst , D. & Wheeler, R, S. (2019). *IDS WORKING PAPER: Malawi Shock-Responsive Social Protection (SRSP) Case Study.* Brighton: Institute of Development Studies.

Makoka, D. (2008). *Risk, Risk Management and Vulnerability to Poverty in Rural Malawi.* Göttingen, Germany: Cuvillier Verlag.

Maluccio, J. A. (2010). The impact of conditional cash transfers on consumption and investment in Nicaragua. *The Journal of Development Studies, 46*(1), 14-38.

Marie, T. R. (2002). *Is dietary diversity an indicator of food security or dietary quality? A review of measurement issues and research needs.* washington D.C: Food Consumption and Nutrition Division, International Food Policy Research Institute.

MEP&D. (2012). *Malawi National Social Support Programme MNSSP.* Lilongwe: Republic of Malawi Ministry of Economic Planning and Development.

Miller, C, M. et al. (2011). The impact of the Social Cash Transfer Scheme on food security in Malawi. *Food Policy, 36*(2), 230-238.

MOA. (2014). *Productive Safety Net Programme Phase IV Programme Implementation Manual.* Addis Ababa: Ministry of agriculture Ethopia.

MoAFS. (2006). *Food Security Policy.* MINISTRY OF AGRICULTURE AND FOOD SECURITY MALAWI.

MoAFS. (2006, August). Food Security Policy . *Food Security Policy August 2006*. Lilongwe, Malawi: Republic of Malawi MINISTRY OF AGRICULTURE AND FOOD SECURITY .

MoAIWD. (2016). *National Agriculture Policy.* Lilongwe : Ministry of Agriculture, Irrigation and Water Development.

MoAIWD. (2018). *National Agricultural Investment Plan (NAIP).* LIlongwe: Ministry of Agriculture, Irrigation and Water Development.

MoFEPD. (2016). *A Stakeholder-Driven Review of the Design and Implementation of the Malawi National Social Support Programme (2012-2016).* lilongwe: Ministry of Finance, Economic Planning and Development.

Murendo, C., Kairezi, G,. and Mazvimavi, k. (2020). Resilience capacities and household nutrition in the presence of shocks. Evidence from Malawi. *World Development Perspectives, 2020*, 2452-2929.

MVAC. (2020). *The Malawi Vulnerability Assessment Committee (MVAC) Bulletin No. 16/19 Volume 1: Food Security Forecast for the 2019/2020 Consumption Year.* Malawi: The Malawi Vulnerability Assessment Committee(MVAC).

NCA., DF., NMBU. (2000, MAY). TRANSFORM. *Sustainable Food Systems For Rural Resilience And Transformation (Transform) Program: INCEPTION DOCUMENT*. Lilongwe, Lilongwe, Malawi: Royal Norwegian Embassy.

Nelson, V., Meadows, K., Cannon, T., Morton, J., & Martin, A. (2002). Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations. *Gender and Development, 10*(2), 51–59.

Nicholls, N., at al. (2012). Changes in climate extremes and their impacts on the natural physical environment. In C. a. Field, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* (pp. 109-230). Cambridge, UK, and New York, NY, USA,: Cambridge University Press.

NORAD. (2020, 08 01). *Facts about Malawi*. Retrieved from Norwegian Agency for Development Cooperation: https://norad.no/en/front/countries/africa/malawi/

Pritchard, B., Ortiz, R., and Shekar, M. (2016). Routledge Handbook of Food and Nutrition Security. New york: Routledge.

Rubalcava, L., Teruel, G. & Thomas, D. (2009). Investments, time preferences, and public transfers paid to women. ECON DEV CULT CHANGE, 57(3): . *Econ Dev Cult Change, 57*(3), 507-538.

Sassi, M. (2021). Coping Strategies of Food Insecure Households in Conflict Areas: The Case of South Sudan. *Sustainability, 13*, 8615.

Segnon, A, C. et al.,. (2020). Differential household vulnerability to climatic and non-climatic stressors in semi-arid areas of Mali, West Africa, Climate and Development. *Climate and Development*. doi:https://www.tandfonline.com/action/showCitFormats?doi=10.1080/17565529.2020.1855097

Serrat, O. (2017). The Sustainable Livelihoods Approach. . In O. Serrat, *Knowledge Solutions* (pp. 21-26). Singapore: Springer.

Shenggen, F., Joanna Br., Michiel K., & Alex H. (2013). *From Subsistence to Profit Transforming Smallholder Farms.* Washington, DC: International Food Policy Research Institute.

Skoufias, E. (2005). *PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico.* Washington D. C: INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE.

Swindale, A., and Bilinsky, P. (2006). *Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (v.2).* Washington, D.C.: FHI 360/FANTA. .

The UN News. (2013, July 22). *Malawi must reassess its agricultural policies to break cycle of poverty – UN expert*. Retrieved 08 30, 2021, from UN News Global perspective Human stories: https://news.un.org/en/story/2013/07/445192

Tirivayi, N., Knowles, M., & Davis, B. (2016). The interaction between social protection and agriculture: A review of evidence. *Global food security, 10*, 52-62.

Todd, J. E., Winters, P. C. & Hertz, T. (2009). Conditional cash transfers and agricultural production: Lessons from the Oportunidades experience in Mexico. *The Journal of Development Studies, 46*(1), 39-67.

Tozier de la Poterie, A. & Baudoin, M. (2015). From Yokohama to Sendai: Approaches to Participation in International Disaster Risk Reduction Frameworks. *Int J Disaster Risk Sci*, 128–139.

TRANSFORM. (2020). *Baseline Study for Sustainable Food Systems for Rural Agriculture Transformation and Resilience (TRANSFORM) Program.* Plot No. 47/2/378, Lilongwe: Kirk Development Research and Training Consultants.

UNDP. (2020). *The next frontier Human development and the Anthropocene.* New York: The United Nations Development Programme.

UNISDR. (2015). *UNISDR ANNUAL REPORT.* Geneva: United Nations Office for Desaster Risk Reduction.

WB. (2021, March 18). *The World Bank In Malawi*. Retrieved from The world bank : https://www.worldbank.org/en/country/malawi/overview

WB. (2018). *systematic country diagnostic. Breaking the cycle of low growth and slow poverty reduction. Malawi country team report.* Washington, DC: World Bank.

Welteji, D., Mohammed, K. & Hussein, K. (2017). he contribution of Productive Safety Net Program for food security of the rural households in the case of Bale Zone, Southeast Ethiopia. *Agriculture & Food Security, 6*(53). doi:https://doi.org/10.1186/s40066-017-0126-4

Wheeler, D. (2011). *Quantifying Vulnerability to Climate Change: Implications for Adaptation Assistance.* Washington, DC: Center for Global Development.

Yazdanpanah, M., et al. (2021). The Impact of Livelihood Assets on the Food Security of Farmers in Southern Iran during the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health*, 5310.

Appendix 1: QUESTIONNAIRE

Group 2	PART A. HOUSEHOLD INFORMATION - DEMOGRAPHICS AND VULNERABILITY INDICATORS	A2. Type of Household A3. Is the respondent already a Beneficiary for any of the partners (NCA/DF/NMBU)?. A4. Age of the Respondent A5. Gender of Respondent (0=Male 1=Female) A6. Relationship of Respondent to Household Head Other relationship (Specify) A7. Marital Status of the Household Head A8. Do you have persons with disability in the household? 8B. If Yes, how many persons with disability are in this household? A9. Total Size of Household (Number) A10. Number of members (less than 5 Years) A11. Number of members (6 to 14) years A12. Number of members (15 to 64) years A13. Number of members (greater than 64) years Total HH size (Auto-Sum)	
Group 3		A15. How big is your landholding size?	

		A16. Literacy levels for the Household Head? A17. Does your household hire any labour to work in your field? A18. Was any child in the HH referred to a Nutrition Rehabilitation Centre? A19. If Yes, how many children? A20. What role do you play in the village/community? 1. Community Child Care Giver 2. Lead Farmer 3. VSL Group Leader 4. Farmer Field School Leader 5. Club/Association/Cooperative member 6. VCPC member 7. VDC/ADC member 8. Member of youth club 9. Other Specify	
Group 4	SECTION B: LIVELIHOOD SOURCES		

Group 5	PART C: INCOME SOURCES	• Type/source • Totals • Use	
Group 13	PART E. HOUSEHOLDS FORMAL AND INFORMAL SAFETY NETS	F1. **Have you or anyone in your household benefited directly from any other development programmes in this area?** F2. **If yes, which programmes have you or anyone in your household receive support from?** 1. Farm input subsidy programme 2. Social Cash Transfer Programme 3. Food for Work 4. Cash for Work 5. Input for Work 6. School feeding programme 7. Other Specify F3. **Who provided the assistance/support in the programme**	
Group 15	PART G. FOOD SECURITY AND	G1. **Did all the food that you produced last season (2018/2019) last the whole year?**	

	NUTRITIONAL ISSUES	G2. **If No, how long did the food you produce last growing season last?** G3. **If the food does not last the year, why does your household run out of food before the next harvest**? 1. Does not harvest enough. 2. Sold a lot. 3. Exchange with other things 4. Distribute to other relatives. 5. Other Other (specify) G7. **In the event of running out of food, how do you normally get your staple?** 1. Buy from local market. 2. Rely on ganyu to get food. 3. Rely on free food distribution. 5. Other Other (specify) G8. **Which is the most critical month when it comes to food shortages in your household?** G9. **During the critical month, does the household have enough food reserves to meet family needs?**	

		G10. **If Yes, how many bags of the staple food does the household usually have during the critical month?** G11. **Are you aware of the six food groups recommended by Government?** G12. **If Yes, how many food groups are you able to mention?**	
Group 17	PART J: CONSUMPTION BASED COPING STRATEGIES	I1. **Did your household encounter food shortage during the past 12 months?** J1. **In the past 7 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:** 2. Reducing food portions at mealtimes 3. Reducing the number of meals per day 4. Skipping entire days without eating 5. Reducing adult consumption so children can have something to eat. 6. Going to bed on an empty stomach 7. Relying on less expensive or less preferred types of food	

		8. Borrowing food or relying on help from relatives or friends	
Group 18	PART I. LIVELIHOOD BASED COPING STRATEGIES	I3. **In the past 12 months, if there have been times when you did not have enough food or money to buy food, how often has your household had to:** 1. Sell household assets such as land, breeding stock (livestock), ox-drawn cart, fertilizers, seed 2. Members of the households go to work in other people's fields in exchange for food, leaving their own fields unattended to at critical times like planting, harvesting weeding etc. 3. Cut down fruit trees (e.g., mango trees) and sale of firewood. 4. Uncontrolled cutting down of trees for sale as firewood or charcoal. 5. School children staying at home due to lack of food. 6. Break up of marriages. 7. Abandoning households' plots to become tenants in tobacco estates. 8. Getting katapila (loans with high compound interest) 9. Other irreversible/undesirable coping strategies	

Group 24	PART O: ACCESS TO CREDIT AND FINANCIAL SERVICES	O1. **Did you access any credit from any source in the past 12 months?** O2. **If Yes, where did you get the credit from?** 1. From friends/family/colleagues 2. Village savings and loan scheme 3. Microfinance body (MUSCCO/FINCA, MEDEF) 4. Loan Shark (Katapila) 5. CBO/NGO/Faith Based Organization 6. Other Specify O3. **If you got a loan/credit from a VSL, is any member of your household a member of any VSL group?** O4. **How much credit did you get during the past 12 months?** O5. **Are you a member of any VSL group?** O6. **Have you received training on VSL?** O7. **Did you share any money from your VSL group in the past 12 months?** O8. **If yes, how much money did you get from the VSL shares?**	

		O9. **How dId you use the money you got from VSL share?** 1. Expand Business. 2. Invested in a new Business. 3. Bought fertilizer. 4. Bought seed. 5. Bought farm implements. 6. Helped to recover from drought/floods. 7. Paid school fees 8. Paid Hospital Bills 9. Bought Food. 10. Other Specify	

Appendix 2: research Objectives and questions

Main Objective: To analyse differences between districts and male and female HH with regard to household characteristics, food security and livelihood coping strategies.

<table>
<tr><td>OBJECTIVES</td><td colspan="2">• Are There differences between districts and male and female HH with regard to HH characteristics and food security?</td></tr>
<tr><td rowspan="2">A. To analyse differences in HH Characteristics: -
1. demographics of the households
2. land holding sizes.
3. Vulnerability
B. To analyse the differences in food security with regard to: -
1. Consumption
2. Critical food shortage times
3. Production and Income</td><td>SUB -RESEARCH QUESTIONS</td><td>DATA REQUIRED</td></tr>
<tr><td>▪ What is the nature of the demographics of the households? - PART A.
▪ What is the nature of the social vulnerability and land holding size? - PART A.
▪ Are there differences in land holding sizes? PART A.15/ Group 12-part D
▪ What household/farmers are the most food insecure? – Group 15 Part G
▪ How much do these farmers produce? And what type of produce? - Group 5 Part C</td><td>▪ PART A. household information - demographics and vulnerability indicators
▪ PART D: household assets
▪ PART F. Crop production, irrigation, and access to improved seed
▪ PART O: access to credit and financial services
▪ PART G. food security and nutritional issues</td></tr>
<tr><td rowspan="2">C. To analyse if farmers have different access to resources and financial assistance.</td><td colspan="2">• Do farmers have different access to resources and financial assistance?</td></tr>
<tr><td>SUB -RESEARCH QUESTIONS</td><td>DATA REQUIRED</td></tr>
<tr><td></td><td>▪ What are the main income sources? Which one is the most important? – Group 5 Part C, Group 4
▪ Are there disparities in access to financial assistance (loans and credit)? – Group 24 Part O
▪ Do farmers receive inputs and what type of inputs? Group 13 Part E, Group 14 Part 14 F3 and F6</td><td>▪ PART C: income sources
▪ Group 4
▪ PART O: access to credit and financial services
▪ PART E. households formal and informal safety nets
▪ PART F. crop production, irrigation, and</td></tr>
<tr><td></td><td colspan="2">• How are small-scale farmers reacting to Food Shortages?</td></tr>
</table>

D. To analyse differences in livelihood coping strategies.	▪ Are there differences in how household use their social benefits? Group 24 Part O9 ▪ What are household/districts livelihood sources? Which one is the most important? - Group 4 ▪ Which are the most frequently used coping strategies on the bases of household type? Group 17 Part J and Group 18 Part I	▪ PART O9: access to credit and financial services ▪ PART J: consumption based coping strategies. ▪ Group 4. livelihood sources

Appendix 6: Data Used.

Are There differences between districts and male and female HH with regard to HH characteristics and food security?	
RESEARCH QUESTIONS	**DATA REQUIRED (*line number and question*)**
What is the nature of the demographics of the households? - PART A. What is the nature of the social vulnerability and land holding size? - PART A. Are there differences in land holding sizes? PART A.15	Line 8 to 52 (district, EPA, village, household information - demographics and vulnerability indicators)
What household/farmers are the most food insecure? And why? - Group 15 Part G	Line 544-565 (HH food security)
How much do these farmers produce? And what type of produce? – Group 5 Part C,	Line 63-235 (Crop/animal production and sales)
• ***Do farmers have different access to resources and financial assistance?***	
What are the main income sources? – Group 5 Part C, Group 6	Line 63-235 (income sources)
Are there disparities in access to financial assistance (loans and credit)? – Group 24 Part O	Line 752-768 (Access to Credit and Financial Services)
Do farmers receive inputs and what type of inputs? Group 13 Part E, Group 14 Part 14 F3 and F6	Line 484-503, (safety nets and access to inputs)
• ***How are small-scale farmers reacting to Food Shortages?***	

Are there differences in how household use their social benefits? Group 24 Part O9	Line 768-780 (Safety nets)
What are household/districts livelihood sources? Which one is the most important? - Group 17	Line 54-61 (Livelihood sources)
Which are the most frequently used coping strategies on the bases of household type? Group 17 Part J and Group 18 Part I	Line 589-629 (Livelihood and consumption coping strategies)