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Women's economic empowerment in agricultural production: a case study of Gergera Watershed Project

Identifying the constraints to women's economic empowerment in agricultural production and exploring the linkages to food security.

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Declaration

I declare that this is entirely my own work and has not been submitted for any other academic award in this or any other educational institution.

_____ 1st October, 2019

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Acronyms

A-WEAI- Abbreviated Women's Empowerment in Agriculture Index

FCS- Food Consumption Score

FGD- Focus Group Discussion

FTC- Farmer Training Centre

GDP- Gross Domestic Product

GPI- Gender Parity Index

HDDS- Household Diet Diversity Score

HEA- Household Economy Approach

ICRAF – World Agroforestry Centre

IFPRI- International Food Policy Research Institute

KII- Key Informant Interview

MDG – Millennium Development Goals

MUAC- Mid-Upper Arm Circumference

NGO- Non-governmental Organisation

PSNP- Productive Safety Net Programme

REST- Relief Society of Tigray

SDG- Sustainable Development Goals

SIDA- Swedish International Development Cooperation Agency

SLF- Sustainable Livelihoods Framework

TLU- Tropical Livestock Units

UCC – University College Cork

WEAI- Women's Empowerment in Agriculture Index

5DE- 5 Dimensions of Empowerment

Glossary

Dega - Highlands

Kushets – Small district area within a tabia

Tabia – Village District

Woyna-Dega – Middlands

Abstract

Women's empowerment, agriculture and food and nutrition security are all crucial elements of development agendas. These issues are intricately linked and possess potential to progress poverty reduction, hunger and economic growth. The aim of this study was to explore issues of women's economic empowerment in agriculture and how these constraints link to food and nutrition security in Gergera Watershed, Tigray, Ethiopia. The research was carried out in association with ICRAF and UCC's Action Research Programme 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed.

The study presents empirical data on empowerment levels and food and nutrition indicators. It also provides the perspectives of women and men, on the change of women's roles within the community, and attitudes towards enhancing women's economic empowerment through increasing market-orientated agriculture.

The main findings of the study show that women have an empowerment status of 'medium' in the area, it indicated a higher number of women in male headed households were empowered. Workload is the main burden to all respondents. The food and nutrition status of households correlated with empowerment and wealth groups scores. The poorest and most disempowered having the worst diet and food consumption. The findings show extreme willingness to invest in market led agriculture, if it is collective farming and marketing. There was a feeling that women are prepared to empower themselves and each other to benefit from improved livelihood outcomes.

Acknowledgements

This research project would not have been possible without the kind support and help of many individuals and organisations. Several individuals deserve a special mention. Dr Nick Chisholm, Dr Stephen Thornhill and Prof. Mitiku who in collaboration with Mekelle University and ICRAF provided technical support throughout the project. To everyone on the ICRAF team in Mekelle without whom the research could not have been completed. A special mention should be given to Abrha Brhan who was a constant support and played a significant role in supporting field work. Gebrehiwot Hailemariam of ICRAF contributed to the overall success of the research project.

Most importantly thank you to every person who took part of the research, without them sharing their lives and experiences this research would not exist.

Chapter 1 Introduction

This thesis explores the issues of women's economic empowerment in agriculture and how these constraints link to food and nutrition security, based on research in the Tigray region of Ethiopia. Women contribute significantly to agriculture in developing countries and while they play a substantial role in the agricultural sector, they often face gender related constraints and inequalities that systemically places them at a disadvantage in agricultural production to men. Increasing women's empowerment is an important development goal. The inherent value of women's empowerment and its role in reducing poverty and improving food security must be acknowledged. As approximately one third of Ethiopia's population live below the poverty line and with the increasing pressure on food systems that continues to threaten agriculture, increasing women's economic empowerment is vital in attempting to reducing the risk of more people falling below the poverty line. This study measures empowerment dimensions and explores the linkage to food and nutrition security providing a more informed platform to analyse the opportunities created by increased levels of empowerment to address food insecurity and contribute to growth of the agricultural economy. The study was carried out in association with ICRAF[1] and UCC[2]'s Action Research Programme 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed.

This chapter provides the background, rationale and objectives of the study. A brief profile of ICRAF and UCC's Action Research Programme is provided, as is an outline of the thesis. The field research was carried out with the support of Mekelle University, Ethiopia and ICRAF.

[1] ICRAF - World Agroforestry Centre
[2] UCC- University College Cork

1.1 Background

Gender equality and women's empowerment has long been recognised as an important development priority, demonstrated by its inclusion in the former Millennium Development Goals (MDGs) and current Sustainable Development Goals (SDGs). It is widely acknowledged that poverty reduction, eradicating hunger and improving food security is closely connected to the increase in women's empowerment (Malapit and Quisumbing, 2015). Agriculture can be a significant agent of growth and poverty reduction, but the sector is underperforming in many countries. This can be partially attributed to the under-participation of women, who are often a constrained by cultural, economic and domestic responsibilities, which leads to lower productivity (Raney et al., 2011). According to Diiro et al. (2018) the higher the empowerment levels in an area, the higher the agricultural productivity and food and nutrition security levels.

Ethiopia has experienced strong economic growth in recent decades. A high proportion of this growth originates from the country's dominating agriculture-based economy. The agricultural sector accounts for 37% of GDP[3], one of the highest shares in Sub-Saharan Africa (FAO, 2018). In Ethiopia, 80% of the population live in rural areas, 72% of the population are employed in agricultural production. The Ethiopian economy heavily relies on smallholder agriculture, accounting for 85% of the total agricultural output. The country's geographical diversity results in varied farming systems, most crop and livestock production are found in the highlands and agro-pastorlism in the lowlands. The main staple crops that are grown to meet livelihoods needs are teff, maize, barley and sorghum. Farmer's landholdings are on average less than one hectare in size, this is predicted to decrease in the future due to the rapidly increasing population. Many smallholder farmers practice mixed production systems, crop and livestock production are used to sustain family farms; this is an important livelihood coping strategy for smallholder farmers (FAO, 2018). Women are responsible for the majority of the agricultural labour in

[3] GDP – Gross Domestic Product

communities. However, their contributions are often unrecognised and their access to resources and community participation can be restricted (USAID, 2019). The Ethiopian government focuses on the commercialisation of smallholder agriculture as a national development plan. 'Ethiopia's Second Agricultural Growth Programme' contributes to the development targets outlined in the country's Second Growth and Transformation Plan (GTP-II), the government has committed to support capacity building for nutrition-smart agriculture and gender (FAO, 2019).

Similarly, to the recent economic growth in Ethiopia, important progress has been made in poverty reduction. However, food insecurity and under-nutrition continues to affect a large percentage of the population. According to government estimates, 7.88 million people rely on food assistance. Varied weather patterns and failing harvests are causing farmers loss of livestock and other productive assets, increasing the number of families to require food assistance. The government's committed to the GTP-II has facilitated the standard of basic social services to improve in recent years. The government and supporting partners use food, cash, nutrition assistance and other approaches such as training local work forces to improve nutrition, empower women, enhance local capacities and increase resilience to climate-related shocks (WFP, 2019).

The National Regional State of Tigray, Northern Ethiopia, is characterized by smallholder agriculture. Communities in the area have been engaged in successive soil and water conversation activities through grass root participation, NGOs, donors and government agencies with the aim of improving livelihoods of farmers.

Irish Aid is one of the long-term donors that have been involved in integrated development programmes in the area to increase livelihood status. Gergera watershed project has been an intervention in the region for soil and water conversation initiatives of the Irish Aid Development Programme since 1998 (Balcha, 2019).

1.2 Action Research Programme in Gergera Watershed

This study was completed in association with the ICRAF and UCC project 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed: An Action Research Programme'. The project is located in the Eastern zone of Tigray, Northern Ethiopia. The aim of the project is to improve food security, economy and resilience through developing innovation and learning platforms to facilitate informed policy making and future design and scaling of national programmes for several hundred households living in the area. To date the project has produced many positive outcomes for the local area including increased crop and dairy production and productivity, integrating high value fruit trees and improving honeybee production, with a focus on creating new economic opportunities for unemployed/landless youth and women.

1.3 Rationale

The study focussed on the economic empowerment of women within agricultural production, using existing value chains to explore empowerment issues over a range of agricultural activities. As mentioned, women's empowerment plays an important role in improving poverty reduction and food security within communities. This research contributed to overall development goals by identifying and exploring the constraints on women participating in entrepreneurial activities in agricultural production, as well as linking into food and nutrition security goals. Prior to this study there had been no consistent approaches for measuring women's empowerment in the area. Appropriate metrics are necessary to fully understand levels of empowerment, it informs the local administration and external actors in the area of current constraints and potential for future interventions. Evidence shows that there is empirical support for the claim that gender equality has a positive impact on economic growth (Kabeer, 2012). Therefore, focusing on women's role in agriculture and the potential of economic growth through the empowerment of women adds to

the overall development of Gergera watershed. There is also evidence to support the fact, although women's empowerment can generate economic growth the inverse is not a given. Economic growth does not directly improve women's empowerment, as some of the fastest growing developing countries show the least signs of progress on basic gender equality outcomes (Kabeer, 2012). This signifies the importance of this research as by not analysing the livelihoods and empowerment levels of women in the Gergera watershed, the community is not fully recognising a powerful element in creating economic growth.

This research also complements the recently completed rapid market assessment of the project which aims to provide preliminary analysis on the value chain of agricultural products including honey, dairy, apiculture, fruits, vegetables, sheep and goats. [4]

1.4 Study Objectives

The overall aim of the study is to explore the issues of women's economic empowerment in agriculture and how these constraints link to food and nutrition security, based on research in the Tigray region of Ethiopia.

The main objectives of the study are to:

i) identify the level of women's participation and economic empowerment within agriculture,
ii) explore the linkage between participation and household food and nutrition security levels,
iii) assess the likely opportunities for enhanced women's empowerment resulting from increased focus on market-orientated agricultural production.

[4] The Raid Value Chain Assessment in Gergera Watershed, Tigray, Ethiopia. Conducted by Balcha, (2019), provided a summarised description of the nature of the value chain for the selected agricultural commodities produced in Gergera Watershed and a baseline framework of existing market activities that allowed for an examination of women's participation within the current context.

The study was carried out in association with ICRAF and UCC's Action Research Programme 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed. In order to achieve the objectives of the study, the following research questions were developed:

- What are the empowerment levels of women involved in agriculture?
- Is there a link between empowerment levels and food and nutrition security levels?
- What are the current opportunities and challenges for enhancing women's empowerment in the Gergera area?

1.5 Outline of Study

This paper is dived into six chapters. This first chapter introduces the study and background to the topic and rationale for the research. The second chapter reviews the current literature relating to the topic. The third chapter outlines the research methodology. Chapter four presents the findings of the household survey, focus group discussions and key informant interviews, whilst the fifth chapter discusses the main findings of the research in relation to the objectives. The final chapter summarises the main outcomes of, and draws conclusions on, the research.

Chapter 2 Literature Review

2.1 Introduction

This chapter provides an insight into the role of agriculture in enhancing women's economic empowerment primarily within the context of developing countries. The literature review is structured into the following sections. Firstly, the conceptual frameworks used in this study are presented, secondly, examining the conceptualising the term "empowerment" and how it is defined in the context of development. Thirdly, a discussion around measuring empowerment and how it has been done in the past. Fourthly, the relationship between empowerment and nutrition is explored and how it impacts people's livelihoods. This is followed by a review on what is seen as 'women's role in agriculture' in developing countries, leading to the final section on the potential for increased empowerment through the commercialisation of smallholder farming.

2.2 Conceptual Frameworks

This study adopted approached derived from the Sustainable Livelihoods Framework (SLF) and the Household Economy Approach (HEA) to provide a conceptual and methodological framework.

2.2.1 Sustainable Livelihoods Framework

The concept of 'sustainable rural livelihoods' has been central in discussions around rural development, poverty reduction and environmental management. Developed from the concept defined by Chambers and Conway (1991), that a livelihood comprises people, their capabilities and their means of living including food, income and assets (Krantz, 2001). The sustainable livelihoods

approach improves the understanding of the livelihoods of the poor (Serrat, 2017). The SLF is a tool used to organise the factors that constrain or enhance livelihood opportunities and described how they are often interconnected. It is a method that can contribute to the planning of development activities and assess the contribution of current activities to sustaining livelihoods. It is built upon the theory that development should be people-centred, responsive and participatory, multilevel, conducted in partnership with the public and private sectors and sustainable (Adato, 2002). The SLF is designed to show the connection between people and the overall enabling environment that impacts the outcomes of livelihood strategies. It focusses on the intrinsic potential of people regarding their skills, social networks, access to physical and financial resources and ability to influence core institutions (Serrat, 2017).

A central theory to the SLF is that various households will have various access to livelihood assets. These assets comprise of

- Human capital, e.g., health, nutrition, education, skills
- Social capital, e.g., networks and connections, relations of trust, formal and informal groups
- Natural capital, e.g., land, water, crops, livestock, environmental services
- Physical capital, e.g., infrastructure, tools and technology
- Financial capital, e.g., savings, credit, remittances and wages (Adato, 2002)

The SLF includes vulnerability context, vulnerability is characterised as insecurity in the well-being of individuals, households and communities in the face of changes in their external environment. This concept highlights the processes of change, people moving in and out of poverty (Scoones, 1998). Vulnerability has two main elements: an external side of shocks (conflict, floods, pests and diseases), seasonalities (prices and employment) and critical trends (economic, environmental, demographic); and an internal side of defencelessness due to lack of ability and resources to cope with the external side (Serrat, 2017).

Livelihood strategies aim to attain livelihood outcomes. Decisions on strategies leads to the choice of livelihood activities, such as farming, off-farm employment, migration and remittances, whether to intensify or diversify activities and whether there is a need for short- or long-term outcomes. Potential livelihood outcomes can include, increased income, improved well-being, increased resilience to vulnerability, better food security, sustainable resource use and ensured human dignity (Adato, 2002).

The SLF recognises that livelihood strategies and outcome are dependent of the policies and institutions surrounding them. They are influenced by the environment of structures and processes. Structures are the public and private sector organisations that design and implement policy and legislation that have impacts on livelihoods. A challenge that faces most poor households is the processes which frame their livelihoods often systematically constrain them (Serrat, 2017).

2.2.2 Household Economy Approach

The aim of the HEA[5] is to understand how households are making ends meet under both normal and abnormal conditions. The HEA has two main parts. The first is a quantitative description of the economy of a defined population, including all the main factors determining current household income and potential household income under changed conditions, and how these differ between households. The second is a system to analyse the relationship between a shock and the ability of households to maintain their food and non-food consumption. These relationships are often complex and can impact households either directly or indirectly, for example a shortage of rainfall may impact one household's crop income or a household that purchases crops from market may have to sell assets to account for increased market prices due to

[5] Household Economy Approach

low supply. The approached used in the HEA is to model the most likely chain of events linking a shock and the outcome (Seaman et al., 2000).

There are five steps involved in conducting an HEA analysis. They are:

- Define the group of households for which analysis is required.
- Define categories of household wealth within each group.
- For each wealth category, collect information that allows for a description of how in a 'normal' year, a household obtains its income and what the economic context is. The information collected should contain all the information necessary to understand people's current access to income and food and the potential for a household to expand their income under different conditions.
- Describe the economic context to which the households relate.
- Use this description as a baseline from which to understand the likely effects of changes on household income and food supply.
  (HVP, FEG and Save the Children, 2014)

The HEA[6] and SLF complement each other and allow for a deeper understanding of the livelihood strategies and outcomes of a specific area. Using a combination of both gives a more wholistic view development and how people are achieving their basic livelihood needs. They will be further discussed in chapter 3.

2.3 Conceptualising empowerment

The definition of empowerment has been a subject of debate for many years. The concept of empowerment has an important and long history in social change. Women's empowerment, as it is referred to today, began in the 1970's with feminist consciousness-raising and collective action in early international development work (Cornwall, 2016). It then transformed into a radical

[6] HEA- Household Economy Approach
SLF – Sustainable Livelihoods Framework

approach concerned with shifting power relations in favour of women's rights and rebalancing equality between women and men in the 1980s and 90s (Kabeer, 1999). It began with a focus on women's subjectivity and consciousness (the power within) which was the start of the process of change. It then moved on to focus on the importance of valued resources that enable women to gain greater control over certain aspects of their lives and contribute to a wider society (the power to) and finally the importance of women collectively focusing on gaining more empowerment together (the power with)(Kabeer, 2012). It was then conceptualised that women as a group need to be empowered, but within the group there are significant differences in socio-economic inequalities. In other words, women's empowerment and gender needs reflected different societal roles and responsibilities associated with each woman's position within the socio-economic hierarchy (Molyneux, 1985).

Although the term empowerment has been added to the rhetoric of many development interventions, there remains debate on what is exactly meant by the term, often used with no attempt to define it within the context of practical development. It is often attached and measured through traditional development goals, such as increased health or income. However, these methods of accessing empowerment, firstly do not define it and secondly, do not appropriately measure it (Mosedale, 2005). For example, the section on women's empowerment and gender equality in the MDG[7]s and women's economic independence target of 'The Beijing Platform for Action' failed to define the scope and meaning of the term 'women's empowerment'(Kabeer, 2012). The World Bank (2004) report on measuring women's empowerment and impacts of projects aimed and improving empowerment in Ethiopia did not once clearly define what they interpreted as empowerment.

Some critics, including Mosedale (2005) argue the fact that empowerment is not easily definable is a challenge. Alternatively, others such as Batliwala (1993) and many feminists believe the value of empowerment is the fact that it cannot

[7] MDGs – Millennium Development Goals

be easily defined and allows space for working on it practically first, rather than attempting to define it (Kabeer, 1999).

There are four aspects of empowerment that seem to be generally accepted in the literature on women's empowerment (Mosedale, 2005).

- To be empowered one must have been disempowered. It is then relevant to use the term 'women's empowerment' as a group term as they are disempowered relative to men. The common aspect is that women as a group are restricted by 'norms, beliefs, customs and values through which societies distinguish between women and men' (Kabeer, 2000, p. 22).
- Empowerment cannot be given by a third party, meaning it must be claimed. Development agencies cannot empower women, they may however, facilitate women empowering themselves.
- Definitions of empowerment usually include a sense of people having decision making power over significant matters in their lives and being able to act on their decisions.
- Empowerment is a continuous process rather than a product. A person cannot achieve a perfect state of empowerment, they are always disempowered or empowered relative to others at any given time. (Mosedale, 2005)

Given the contested nature of the concept, the most accepted and used understanding of empowerment has been used for this paper.

As this research intends to measure empowerment, the definition used will mirror that of other studies that have measured empowerment in similar contexts. Malapit et al. (2019), Malapit and Quisumbing (2015), Sraboni et al. (2014) and Upadhyay et al. (2014) all refer back to the definition used by Kabeer (1999),

"the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them''.

A large amount of today's empowerment interventions and measurement research draw upon Kabeer's definition and understanding of empowerment,

which was developed to translate feminist insights into a policy-orientated analytical framework. The fundamental underpinning of Kabeer's theory is 'choice'. There is a natural association between poverty and disempowerment because a lack of means to meet basic livelihood needs often rules out the ability to exercise meaningful choice. In Kabeer's definition, the ability to exercise choice comprises three dimensions: resources (defined to include not only current access but also future claims to material, human and social resources), agency (process of decision making and negotiation) and achievements (well-being outcomes) (Malapit et al., 2019).

These concepts reflect overarching development theories. Sen (1999) refers to freedom as the primary element to development, reasoning that the only acceptable evaluation of human progress is primarily and ultimately enhancement of freedom and that the achievement of development is dependent on the free agency of people. Sen's capability approach provides an important analytical and philosophical foundation for those pursuing development as freedom, but it is a foundation that must be built on as the global political economy shifts to a heavily market focused, economic relations (O'Hearn, 2009). Focusing on agency and choice may mitigate the market-based power inequalities from undermining development as freedom for all people. Considering Sen's definition of poverty, as the deprivation of basic capabilities, all development should acknowledge that in most instances' women are often more deprived as men of basic capabilities. There is a clear consensus between literature on women's empowerment and the fundamental theories behind development (Kapoor, 2002). Chambers (1994) repeats the concept of inclusiveness and allowing each person in the community a chance to participate. He also paid particular attention to including marginalised and disadvantaged groups, '' The poor, weak, vulnerable and exploited should come first'' (Chambers, 1994). In theory any development progress could include equal opportunities to both men and women, however as it can be seen, there is necessity for specific women's empowerment interventions.

The reason for specific interventions targeting women's empowerment is due to the theory that development intervention impact men and women

differently, often the position of women in society is a large disadvantage to them, therefore the starting point for women is much further back than men. This concept is addressed in Moser's 'Gender Analysis Framework' as it is used to gain a greater understanding of the division of labour and the different roles within a community. The roles of men and women differ, as do their needs. Moser's framework is based on the idea that women have triple roles in communities, often referred to as 'the triple burden'. They perform multiple roles in production, reproductive and community simultaneously (Ludgate, 2016).

2.3.1 Economic empowerment

As mentioned, there are various opinions of what is exactly meant by the term 'empowerment'. Now that there is an accepted concept what women's empowerment is, empowerment itself has been categorised into five different parts – social, educational, economic, political and psychological. Social empowerment related to the enabling force that strengthens women's social standing in society. Educational empowerment the ability to realise higher education as an element of personal development. Political empowerment is the increase of women's participation in the political sphere and psychological empowerment is where women are able to overcome traditional and patriarchal taboos and social obligations (Mandal, 2013). This study focuses on economic empowerment which is discussed below.

The conversation around the concept of 'empowerment' began has always had an economic dimension, and in recent years it has become the norm to see the term 'economic empowerment'. The World Bank was one of the first organisations to adopt this term, stating that economic empowerment is about making markets work for women and allowing women space to compete in the market (World Bank, 2006). This definition allowed development agencies to focus on specific economic sectors such as land, labour, product and financial markets. There was then a shift in language on specific economic terms. Golla et

al. (2011) noted that it was at this point at which the relationship between economic empowerment and other development goals was truly recognised. The rhetoric became focused on economically empowering women as a necessity to realise women's rights and to contribute to wider development goals, such as economic growth, poverty reduction, health, education and welfare. The UNDP in 2008 realised that for full economic empowerment to be realised, economic opportunity must be addressed through the strengthening of women's rights and legal status, ensuring their voice, inclusion and participation in economic decision making.

In a report for SIDA[8], Tornqvist and Schmitz (2009) defined women's economic empowerment as the process that actualises women's real power over economic decisions that directly impact their lives. Empowerment is said to be largely achieved through equal access to, and control over, important economic resources and opportunities and the elimination of structural gender inequalities in the labour market and better distribution of unpaid care or domestic work (Kabeer, 2012).

The hypothesised outcomes related to increased women's empowerment are:

- Self confidence.
- Voice and vote in household decisions such as; domestic wellbeing decisions, economic decisions, fertility decisions and land use and conservation decisions.
- Control of their 'life options', for example marriage and freedom of movement.
- Influencing community affairs.
  (Blumberg, 2005)

Measuring women's empowerment in agriculture is crucial as the agricultural sector is the basis of livelihoods for most rural people in low- and middle-income countries. Without such empowerment in agriculture there is little

[8] SIDA - Swedish International Development Cooperation Agency

potential for economic empowerment and, hence, economic growth in rural societies (Malapit et al., 2019).

2.4 Measuring empowerment

Measuring empowerment has been at the centre of debate in the policy domain in recent years. The nature of the philosophical concepts surrounding the concept of empowerment, has contributed to the difficulties in including it in the practical world of development policy. Quantifying empowerment positions the concept on more stable and objectively verifiable grounds. This has led to a range of studies attempting to measure empowerment. The method and objectives of these attempts differ, adding to the unclear nature of quantifying empowerment. Some attempts sought to measure the impact of specific interventions on women, others to demonstrate the connection between women's empowerment on policy objectives and some looking at comparisons between locations or time periods (Kabeer, 1999).

Until recently, most measurements of women's empowerment have been collected through administrative or aggregate data at national levels. However, these indices predominantly are reporting on gender equality rather than empowerment (Malapit et al., 2019). The most recognisable indices are the Gender Gap Index, Gender Development Index and the Gender Inequality Index. Alkire et al. (2013) conducted a review on these indices and concluded that they are successful in measuring broad terms of inequalities but fail to measure empowerment or largely rely on indirect agents like age, education and governmental participation. The limitations of these methods have been discussed in-depth by several authors, and the need for specific methods to measure empowerment was identified (Malapit et al., 2019).

Demand has been high for a standardised method of measurement in women's empowerment, specifically within agriculture as it is the foundation of household livelihoods in the developing world. The demand has been especially

high for projects that aim to empower women, not just projects that may have a by-product of empowerment (Johnson et al., 2018).

In response, the Women's Empowerment in Agriculture Index (WEAI) was developed in 2012 as a tool to track changes in the level of women's empowerment of the US government's Feed the Future Initiative. Since then it has been used by many organisations and agencies to assess the level of empowerment and gender parity in agriculture, to highlight the main areas in which empowerment needs to be strengthened and to track progress over time (Malapit et al., 2015).

The WEAI is undoubtedly rooted in Kabeer's framework of empowerment as it is designed to reflect an individual's ability to exercise choice in terms of resources, agency and achievements. Sraboni et al., (2014) note the focus WEAI places on the ''agency'' aspect, which is much less studied than resources such as income or achievements. In addition, Upadhyay et al., (2014) are satisfied with the WEAI's focus on participation in household decision-making as it is seen as one of the most common and important aspect of women's empowerment. It could be argued that agency is a more direct measure of empowerment compared to resources and achievement indicators as both could be present even in areas where women are severely disempowered, agency cannot. There also needs to be a method to ensure minimal complexity by concentrating on the most important elements of empowerment, that otherwise wouldn't be collected in other types of data collection such as impact assessment or monitoring and evaluation projects. Adding indicators to measure agency allows for analysis of how resources, agency and achievements interact (Malapit et al., 2019).

The WEAI is an aggregate index based on individual-level data on men and women living in the same households and data on women living in a household without an adult male. The WEAI consists of two sub-indexes: (1) the five domains of empowerment sub-index (5DE) measures the empowerment of women in five areas; and the gender parity sub-index (GPI) measures the average level of equality in empowerment of men and women within the household.

(Ahmed et al., 2017) The first sub-index (5DE) assesses the degree to which women are empowered in five domains:

- decisions about agricultural production,
- access to and decision-making power about productive resources,
- control of and use of income,
- leadership in the community,
- time allocation.

The 5DE is a measure of empowerment rather than disempowerment (Ahmed et al., 2017). These dimensions have been chosen based on evidence of the causal pathways supporting women's empowerment in agriculture (Hillesland, 2015).

The second sub-index (GPI) measures gender parity within surveyed households. It reflects the percentage of women who are equally empowered as the men in their households (IFPRI, 2019). It is a relative equality measure that shows the equality in 5DE indicators between the primary male and female in each household. The GPI[9] comprises 10% of the total index.

In reviewing the recent literature, it is evident that the WEAI[10] is becoming the default indicator for many empowerment research studies and monitoring and evaluation reports. Various versions of WEAI have been developed, which indicates the limitations of one specific measurement of empowerment, it also shows the complexity and range in the types of disempowerment and how empowerment is extremely country and context specific. Adapted versions also include aspects of agricultural livelihoods not captured in WEAI. There are also limitations in adapting the WEAI regarding the calculation of different elements of the index. For instance, studies may only include the 5DE[11] element and exclude the GPI, resulting in data relating to women's empowerment only. This may cause issue as; an exact measurement of empowerment may only be obtained when compared to the empowerment of men. However, it remains important to quantify women's empowerment and allows for the calculation of a baseline and comparable measure of women's empowerment in agriculture.

[9] GPI – Gender Parity Index
[10] WEAI – Women's Empowerment in Agriculture Index
[11] 5DE – 5 Dimensions of Empowerment

So, whilst the limitations of WEAI reflects the complex and diverse nature of empowerment, it remains the most appropriate method to measure empowerment.

2.5 Empowerment and food and nutrition security

As mentioned above there is a widely accepted relationship between empowerment and poverty reduction, health and economic growth. This study specifically looks at the relationship between women's empowerment and food and nutrition security.

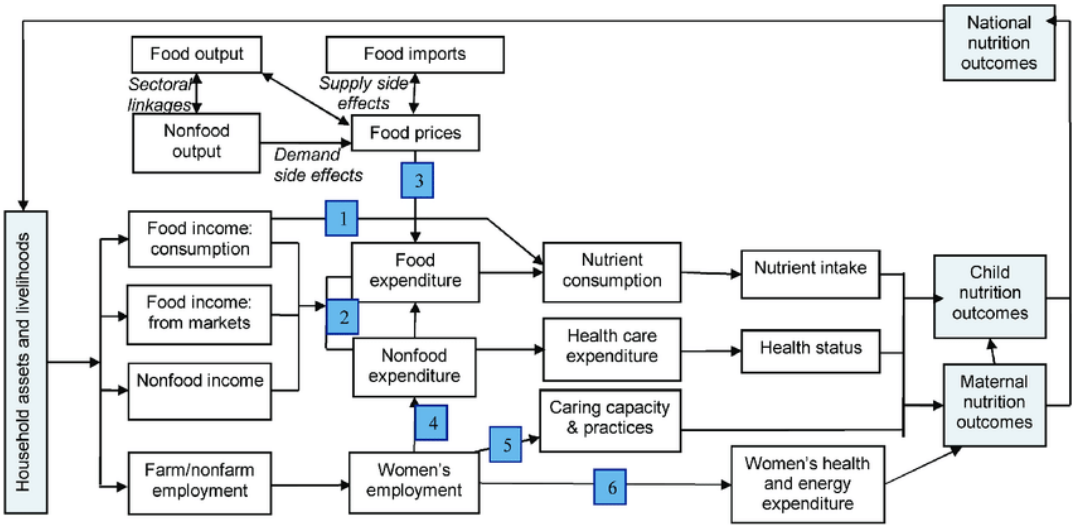
Food and nutrition security undoubtedly is one of the world's significant challenges. Meeting the world's food and nutrition needs is a continuous priority in development agendas. One of the most underused sources of agricultural growth to help meet these needs is the inclusion and increase of women's power in every stage of agricultural production. Women in developing countries contribute significantly to food production. They play an extremely important role in addressing food and nutrition security, whilst facing major social, cultural and economic constraints (Quisumbing et al., 1996).

The term 'food and nutrition security' reflects the conceptual linkages between food security and nutrition security. The accepted definition is ''Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life'' (Committee on World Food Security, 2012).

The connection between agriculture and nutrition has been cited many times, agriculture produces the food people consume and is the primary source of employment and income for people living in developing countries, who are in turn the most vulnerable to food insecurity and malnutrition. Gillespie and Van den Bold (2017) outline the framework that conceptualises pathways through which the agriculture sector may impact nutrition outcomes. The TANDI (

Tackling the Agriculture-Nutrition Disconnect in India) framework shows six pathways linking agriculture and nutrition.

Figure 1 Agriculture-Nutrition Pathways Framework



(TANDI Agri-Nutrition Pathways Framework, Gillespie and van den Bold, 2017)

Figure 1 shows the TANDI framework, pathways 4-6 focus on the linkage child undernutrition and maternal socio-economic and nutritional status. Agricultural production conditions can affect women's decision-making power and control of food, directly impacts the level of empowerment a woman enjoys. The framework provides evidence that there is merit in applying a gender lens to assess how impacts of agriculture on nutrition may be facilitated by women's role in agriculture. Interventions focusing on nutrition and agriculture should revolve around creating opportunities to strengthen women's power, agency and control of resources (Gillespie and Van den Bold, 2017). It recognises the important of women's empowerment and the role it plays in improving food and nutrition security.

Ensuring the food and nutrition security of the household through the combination of food and other resources is almost exclusively the role of women (Quisumbing et al., 1996). This study examines the consumption levels, quality of diets and access to health and feeding practices training which falls in line with the concept of food and nutrition security.

The main methods used to quantify consumption levels and diet diversity were the Households Diet Diversity Score (HDDS) and the Food Consumption Score (FCS). The HDDS was deployed in 2006 as part of the FANTA II project as a population-level indicator of household food access. Household dietary diversity can be described as the number of food groups consumed by a household over a given reference period. It is used to describe the quality and quantity of food consumed in a household. A more diverse diet is associated with caloric and protein adequacy, percentage of protein from animal sources and household income. The HDDS[12] indicates the manner in which a household access food and its socio-economic status (Swindale and Bilinsky, 2006). The FSC is a composite score based on food frequency, diet diversity and relative nutritional importance of different food groups. The FCS[13] is method of analysis for this study as it is a commonly used method to measure the food security status of a household, as it captures both diet diversity and food frequency and therefore is an indicator of both the quantity and quality of food consumption (World Food Programme, VAM, 2008). The FCS is used as a proxy indicator of household caloric availability. Validation studies have demonstrated that the FCS and the HDDS are both associated with caloric intake as well as each other (Coates et al., 2007).

Smith et al. (2003) found women with higher empowerment levels have increased control over household resources, fewer time constraints, more access to information and health services, and better mental health, self-confidence and higher self-esteem. This in turn leads to a linkage between women's empowerment levels and the nutrition status of themselves and children. A woman's empowerment level may determine the extent to which she can command the resources required to adopt good nutrition and health practices. This finding was mirrored in Diiro et al. (2018) concluding that research shows that empowering women leads to increased status both in their household and in their community. This increased status includes more control over household resources, better mental health, reduced work load, increase in

[12] HDDS – Household Diet Diversity Score
[13] FCS – Food Consumption Score

access to financial support, training and extension work on income and working opportunities, information about markets and legal rights, all of which transform into higher agricultural productivity, and better food and nutrition security.

The physical understanding of what is considered good nutrition is deeply understood. However, the knowledge surrounding which dimensions of women's empowerment are important for good nutrition is limited, primarily because empowerment is culture and context specific and measurement has its limitations. Findings from a study on empowerment and nutrition in Ghana suggests that different domains of empowerment may have different impacts on a household's nutrition. Implying that improved nutrition is not necessarily related with women's empowerment across all empowerment domains and that different domains may have varying impacts on nutrition (Malapit and Quisumbing, 2015). The study also examined the difference in findings across three countries and analysed the relationship between the WEAI and various indicators of food and nutrition security and concluded that policies that are designed to empower women and improve food and nutritional security need to be based on understanding which specific domains of women's empowerment impact specific outcomes in each given context.

Similarly, not all aspects of nutrition are impacted by empowerment. Results from the study conducted in Ghana showed that empowerment influences diet quality and diversity but does not automatically lead to high consumption (Malapit and Quisumbing, 2015). The true measurement of improved nutrition can only be measured if the other factors that contribute to better food and nutrition security are considered, such as access to health services, water and sanitation. A woman may be empowered to a point at which she has better diet yet still be lacking sufficient amounts of food (Gillespie, 2013). There is also a theory that empowered women have more time constraints (contrary to Smith et al. 2003; Diiro et al. 2018 findings above), if women have increased workloads as a result of empowerment, they also need more energy, therefore higher consumption and better diets. This point is also made by Malapit et al. (2019). An unintended outcome of a project on empowerment may result in

increased time constraints that may negatively impact a women's health and nutrition. It is for this reason measuring nutrition and empowerment together is so vital. When assessing a project that directly impacts women, these elements should be considered and tracked.

The acknowledgement of the linkages between empowerment and food and nutrition security has promoted the development of a measurement of both combined. An extension of WEAI has been designed, the Women's Empowerment in Nutrition Index which reflects nutritional empowerment. Malapit et al. (2019) describe the process as a person gaining the capacity to be well fed and healthy. The relationship between empowerment, nutrition and workload must be accounted for when designing empowerment and nutrition interventions. Once the link is acknowledged, and nutritional empowerment is included, food and nutrition security will become a marker of empowerment in its own right.

To obtain nutritional empowerment individuals must have; access and control of key resources, food consumption that is nutritionally adequate, knowledge on nutrition and health practices and external support. In turn, these resources will lend to enhancing a woman's agency which is a pillar of empowerment, specifically their decision-making power over production, purchasing and distribution of food (Naryanan et al., 2019).

2.6 Women's role and empowerment in agriculture

According to Malapit and Quisumbing, 2015; Lal and Khurana, 2011: Raney et al., 2011 women play a significant role in agriculture, contributing far more to production than is acknowledged and is often incorrectly measured. Acknowledgement of women's vital role in agriculture should not take away from the fact that they simultaneously fulfil their primary role as wives, mothers and homemakers. The lack of recognition women in agriculture receive may result in poor policy decisions that lack important information and cause the challenges facing women in the sector often to be neglected.

The IFC[14] (2016) reported that women who are involved in agriculture have twenty to thirty percent lower productivity rates than men, mainly due to the constraints they face. These include restricted access to equipment, labour, quality seeds, technology, training and markets. The constraints women face obstructs their potential contribution to supply chains and therefore adds to the instability of the supply chain. It is recognised that male farmers face such constraints also, but to a much lesser extent than female farmers, this may be due to socio-cultural norms. The economic constraints, cultural norms and practices continuously limit women's contributions to production, empowerment, food and nutrition security and inhibit the increase of women's participation in commercial farming (Raney et al.: Lal and Khurana 2011). The challenges experienced by women are often interconnected, for instance women's access to legal land tenure and titles can impact their access to finance, which in turn impacts their ability to invest in input for production (Lal and Khurana, 2011).

Agriculture can be an important engine of growth and poverty reduction. Considering that as of 2011[15], data showed women made up 43% of the global agricultural labour force. Women play a large role in adding to agricultural, economic and social growth and are significant contributors to reducing poverty. This figure does not represent the extent of variation across regions and within countries accounting for culture, age and social status.

The employed method of analysing the exact contributions of women in agriculture and the precise nature of their roles is through time use surveys, which are comprehensive but do not reflect adequate representation of the diversity of contributions made to agriculture. It does however highlight that female time allocation in agriculture varies by crop, production cycle, age and cultural background. The results of these extensive time-use surveys have shown that the most common activities for women to participate in are weeding and harvesting. It can also be stated that the workload of women is far more

[14] IFC - International Finance Corporation

[15] Data on agricultural labour distribution is not gathered continuously or per periodically across most countries, FAO are limited to results from a single census year. Note that this census year is not consistent across all countries. Therefore 2011 is the most recent (Roser, 2019).

intense than men involved in agriculture and that as mentioned above the workload is carried out in conjunction with their daily household duties (Raney et al., 2011). Similarly, Aregu, Puskur and Bishop Sambrook (2015) recognise the difference in division of tasks between genders depending on the type of production, farming systems and technology used, and the wealth of the household.

Gender roles and relationships impact the workload allocation within households, use of resources and sharing of benefits between males and females. In many rural Ethiopian communities, women work from morning to night, whereas men have more time for leisure and social activities. Women not only have to work on their agricultural land, they also take responsibility within communities to tend to the needs of children, the elderly and the disabled (Aregu, Puskur and Bishop Sambrook, 2015).

There are also issues around how women are rewarded for their participation, women work harder but are often unpaid and have less access to the income earned from production. Data on rural and agricultural feminisation reported that women receive almost no reward for their participation in centralised Sub-Saharan Africa (Raney et al., 2011). Although women play a vital role in productive, domestic and community related activities they are continuously excluded in official discourse and national conversations. Aregu, Puskur and Bishop Sambrook (2015) conclude that women play an extremely important role and contribute immensely to agricultural and rural economic activity yet are highly undervalued.

Women are not only often lacking recognition for their labours they also have less access to resources for their agricultural production, such as land, livestock and machinery. They also have less decision-making power over the resources available to them, often both within a household and in the wider environment. Cultural norms can dictate whether certain types of farming are more accessible to men or women, for instance, poultry-raising is deemed as a 'woman's' job and cattle raring as a 'man's' job. This, and the dominance of men as the head of households, often results in men having more access to important resources like land (Aregu, Puskur and Bishop Sambrook, 2015). It should also be noted

that women involved in farming often have low literacy rates and education which impacts their ability to fully recognise their legal rights (Raney et al.: Lal and Khurana 2011).

Women in rural Ethiopia contribute significantly to current agricultural production (Aregu, Puskur and Bishop Sambrook, 2015). They either add to male headed households or are female headed. In 2005, the Ethiopian government deployed policy initiatives to support the role of women in agriculture. 'The Plan for Accelerated and Sustained Development to End Poverty, 2005/06 to 2009/10 (PASDEP)'' intended to protect rights to land, credit and other resources and to ensure women were not experiencing deprivations such as heavy workloads, violence and discrimination. Later in 2005, 'the Federal Rural Land Administration Proclamation' attempted to advance women's secure land rights (Aregu, Puskur and Bishop Sambrook, 2015: MoFED, 2006).

Access to land is another facet of discrimination against women in agriculture. There is a large gender gap in owning agricultural land holdings. Just under 20% of female headed households have land titles in Ethiopia, compared to over 80% of male headed households (FAO, 2019). Under Article 1126 of the civil code all land is government-owned, buildings are owned by individuals, but crops and trees are recognised as land. Therefore, crops are technically government owned until harvested, as individuals have using rights their crops belong to the individual. If land is rented the landowner technically owns the crops until they are harvested by the renter (Ambaye, 2015). The Ethiopian Land Administration and Land Use Proclamation No. 456/2005 emphasises 'the equal rights of women with respect to use, administration and control of land, as well as in respect to transferring holding rights' (FAO, 2019). The digitisation of land registration of cultivated land is an attempt to make it easier for women to register. Following the land reform of 1998, the documentation of land tenure benefited women, it was designed to end economic uncertainty and led to an increase in female investment and their ability to rent out land. After the 2nd land reform in 2016, 'The Second Stage Land Registration and Certification' the costs of registering land decreased making it more accessible. As of 2017,

just under half of privately-owned land in Tigray was owned by women, however, male headed households had over a third more land than female headed households (Holden and Tilahun, 2017).

Another major constraint to women in agriculture is the distribution of access to extension and training. According to a study done on agriculture in Ethiopia in 2015, women were found to have been given less extension support on agricultural topics (Aregu, Puskur and Bishop Sambrook, 2015). This decreases women's ability to broaden their knowledge and skill which would result in improved agricultural performance. The lack of extension work focused on women in agriculture is often dismissed with the argument that women will indirectly receive the information through their husbands and other male family members. However, it is recorded that often the information isn't transferred. By being excluded women then have less access to knowledge, improved technologies and packages promoted by the extension system. This often means they become excluded from participation in market-oriented agricultural activities.

2.7 Evaluating opportunities for women in market-led agriculture

Smallholder farming contributes 80% of the food consumed in Asia and Sub-Saharan Africa, meaning the sustained productivity of these smallholders is vital in meeting the increasing global agricultural demand. It also means that the full potential productivity needs to be achieved to ensure food security for low-middle income countries. The current smallholder farming sector is underperforming. In Sub-Saharan Africa two thirds of the labour force are engaged in agriculture, whilst thirty percent of gross domestic product is from agriculture (IFC, 2016). There is potential to increase both the amount of food available to people and create stable and profitable markets through increasing the productivity of smallholder farms. The World Bank estimates food production and processing in Africa generates over $300 billion annually. Given the right access to inputs to increase marketable crop production, this figure

could rise to $1 trillion a year by 2020 (World Bank 2013). They state that the key is to focus on market-orientated agriculture in developing countries and realising the full potential of productivity. This is not universally accepted, Wiggins and Keats (2013) report that food and nutrition security may suffer if households focus on cash crops, for example, the demands of market orientated production may lead to increased workloads of women, leading to less time available to cook, feed and care for infants. An early review of literature on the subject in 1996 showed that although women have lower yields on their land, it is mainly due to lower access to inputs (Quisumbing, 1996). A more recent review in 2011 reflected little change over this time. The FAO[16] recognises the failure to increase economic growth through agriculture can be partially attributed to the stagnant position of women in agriculture. ''If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent'' (FAO, 2011, p.5).

The combination of challenges that face women in agriculture directly impacts the level of productivity they can reach. Study findings show a positive relationship between women's empowerment and crop production. A study examining Kenyan crop production and women's empowerment found that maize production plots tended by empowered women had higher level of productivity than those tended by disempowered women or men. All dimensions of empowerment showed positive impacts on increased yields; there was no significant association between the women's workload and maize productivity, suggesting that with increased agency, resources and achievements women can enjoy higher yields without the added burden of extra workload (Diiro et al., 2018). Studies conducted in Uganda and Tanzania also reflect these results. It was found that in cases where men and women had equal access to inputs and capital, women farmers achieved equal to and in some studies significantly higher yields than those of men (Combaz, 2013). These findings support the theory that women's empowerment can reduce the gender gap in agricultural productivity and increase productivity of farms

[16] FAO - Food and Agriculture Organisation

managed by women. It is suggested that rural development and value chain interventions could achieve better results by including women's empowerment into current and future projects (Diiro et al.: Quisumbing 1996). In these cases, productivity was not used as a direct measurement of women's empowerment but as an outcome of increased levels of empowerment.

The main conclusion that can be drawn from current literature is that increasing women's productivity is the most promising pathway to facilitate their presence in market-oriented agricultural production. When a household can produce sufficient yields to cover food needs, women invest more in high value crops. Due to the significant percentage of households not achieving this, women are not able or interested in investing in marketable crops. Their primary concern is production to meet household food needs. Increasing production will increase food security to a point at which women will have confidence to invest and partake in cash crop production (Combaz, 2013: Quisumbing, 1996: IFC, 2016: FAO, 2011). The most promising approaches to ensure women's presence in the market sector are:

- Ensuring interventions work for women and girls. This includes gender mainstreaming in strategies and funding, adaptations of strategies for each context and managing unintended consequences regarding gender equality.
- Making commercial food markets work for women's income and assets, by improving market availability and access for women and increasing capacity-building for women farmers that can allow them to address disadvantageous gender norms. It also requires connecting value chains, asset development and choices of commodities with gender equity.
- Securing land tenure and legal awareness for women.
- Strengthening collective action and participation.
- Providing high quality and frequent training and extension services on agriculture and markets.

- Making markets work for household food security by investing and promoting 'women's crops'[17] and supporting crop diversity.

(Combaz, 2013: Quisumbing et al., 2015: Woldu, Tadesse and Waller, 2015)

Considering the approaches that can facilitate the increase in women's participation in market-led agriculture, the main challenges at a local level are; access to training and extension, inclusion beyond production, lack of access to collective farming, and as mentioned above access to land and resources.

Understanding the current situation regarding the listed challenges is important as it is the basis on which future action will be built upon. The most commonly discussed issue is access to information and training. Without the appropriate information on new technologies and practices, and service provision, women are being left behind. The result is market-oriented growth that doesn't include women; therefore the benefits also bypass women (Aregu, Puskur and Bishop Sambrook, 2015).

Women are often expected to gather information through informal paths, for example, extension training aimed at men is expected to then be shared through the community, Women rely on men, family or neighbours to receive updates on agricultural practices, new farming systems and market information (IFC, 2016). The FAO recorded that women received only 5 % of extension services globally, although this figure varies from country to country, it clearly signifies a gender gap and gender bias in many cases. The World Bank also reported that women farmers have less access to agricultural information and extension services, and many agencies assume that information will reach them through male farmers (FAO, 2011: World Bank 2013). Recent data shows that in Ethiopia women receive 20% of extension services. The percentage of female land holders who received extension was 51% compared to 62% for male holders receiving the same services. Similarly, lower rates can be observed in extension package utilisation with 19% for female holders to 28% for males (FAO, 2019).

[17] 'Women's crops' is a term used to refer to crops grown by women for household consumption rather than for sale (Orr et al., 2014).

Training needs to include more women farmers but also needs to be effective, and therefore must be adapted to women's capacities, literacy rates, schedules and needs. Training must be designed in ways which it is accessible, in other words, made available at times when women can attend and does not conflict with domestic responsibilities or limited mobility. In addition, increasing the number of female extension agents is a method of improving women's access to services, it builds confidence, is more catered to women's specific needs and can overcome barriers surrounding cultural norms that may restrict male and female interactions (Doss, 2017). Extension for all farmers should include farm management and introduce the concept of farming as potential business for the household (FAO, 2019).

As mentioned above collective participation is an approach that may see more women involved in market-led agriculture. Farming groups, and cooperatives have the potential to increase income but are also a mechanism for women to help empower each other. Group farming reduces individuals' risk and increases market bargaining power, mitigating challenges they may face in the marketplace and enhancing market opportunities. Through collective approaches, individual capacities increase, incomes improve, and leadership skill are learnt. The benefits of cooperatives have been proven to improve overall socio-economic status and resilience (Alkali et al., 2018: Woldu, Tadesse and Waller, 2015).

To fully engage and participate in market-orientated farming, women need to be included in the agricultural value chain[18]. As discussed, agriculture plays a role in food and nutrition security, therefore it is beneficial to place a focus on what happens between production and consumption. A way of addressing this issue is to apply a value chain concepts, analysis and approaches. These are already used as development interventions to improve the livelihoods of producers but have rarely been used as a method to increase food security. It is

[18] The term value chain refers to the full life cycle of a product or process (WBCSD, 2011). A 'value chain' in agriculture identifies a set of actors and activities that bring an agricultural product from production at field level to final consumption. Traditional agricultural value chains are often governed through market transactions involving a large number of small retailers and producers (FAO, 2010).

in this context the concept of nutrition sensitive value chains has derived in the development sphere, questioning how value chain development can enhance incomes and livelihood but also improve nutrition. Value chains have the potential to increase levels of food and nutrition security as they already provide a framework within which opportunities for promoting agriculture for nutrition can be identified and applied (Hawkes and Ruel, 2011: Pena, Garrett and Gelli, 2018).

Women contribute to the agricultural value chain at different levels, production, post-harvest and small-scale trading. Women's participation in the production of specific crops can be related to the crop's assumed value and can result in being limited to local consumption and the local market. Men are more likely to participate in export commodities or within markets that have higher economic return (IFC, 2016). Within the local market value chain women are often responsible for small scale trading, however when the value chain goes beyond local markets women are underrepresented. When involved in the production of high value goods, women receive less of the benefits of the produce as they have limited access to larger markets (IFC, 2016: FAO, 2010).

Sustaining the gender gap in agricultural production is hindering growth, profitability and sustainability of agricultural enterprises (FAO, 2019). Gender gaps affect, yields, quality, processing, storage, transportation, marketing and sales resulting in broken and faulty markets. Investment in smallholder farming remains a priority and facilitates women's empowerment, however investment is also needed in other areas of the agricultural sector, to promote women controlled small enterprises and allowing women access to more profitable value chains (IFC, 2016). Numerous opportunities exist for small-mid scale business to benefit from narrowing the gender gap.

Some critics argue that smallholder farmers lack the potential to prosper in commercial farming. There are benefits to supporting some farmers in leaving the agribusiness sector and exploring other employment opportunities. (Fan et al., 2013) Alternatively, supporting smallholder farmers to fully realise their potential to profit from commercial farming adds to overarching development goals and the sector as a whole (IFC, 2016).

2.8 Conclusion

It is evident from the literature that women's empowerment as an independent development goal and its contributions to attaining other goals is crucial in enhancing socio-economic development and poverty reduction in developing countries. The focus on empowerment in the development sector has earned its place as a vehicle to enhance the livelihoods of people living in developing countries. Expansion of people's ability to make strategic life choices where they could not before, has been proven to accelerate the process of development. The undeniable relationship between poverty and disempowerment has forced the development sector to invest in addressing women's empowerment as a means to achieve wider development goals.

Empowerment encompasses an economic dimension. This has transformed into a rhetoric that economic empowerment is about making markets work for women and allowing them space to compete. This leads to the conversation on women's access to land, labour, product and financial markets. Ensuring women's rights and ability to be heard is a major factor in progressing economic empowerment. World development agencies now support the idea that to advance growth in almost every sphere of development, agendas must include women.

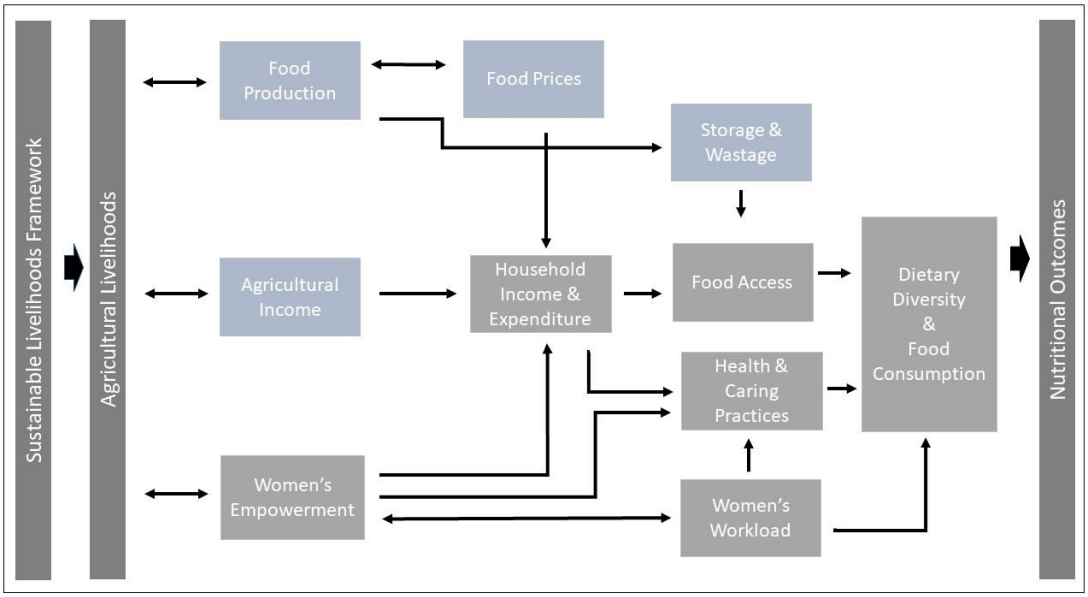
Accurately measuring empowerment is crucial, as it allows strategies and future investments to be gender specific and more effective. Attempting to measure empowerment highlights the immensely diverse nature of the concept. Progress has been made in recent years; the development of the Women's Empowerment in Agriculture Index has allowed for the first quantifiable measurement of empowerment. It is the foundation from which many alternative versions of empowerment can be measured, and it has changed the manner in which empowerment can be accessed and addressed. Its development has helped in drawing attention to the importance of empowerment in agriculture as a pathway to economic empowerment and growth in societies.

Now that there is a way of measuring empowerment, there are empirical methods available to illustrate the link between empowerment levels and food and nutrition security. Food and nutrition security is one of the major challenges the world currently faces. Understanding how women's economic empowerment can contribute to addressing food and nutrition security will aid in enhancing people's livelihoods. Women can significantly improve food and nutrition security, however the obstacles they face must be addressed to realise their potential.

Women are the most overworked and unvalued resource in agriculture. Agriculture is an important engine of growth and poverty reduction, yet often the main drivers behind the sector are neglected and excluded from major decisions. The low levels of access to resources and inputs women have is directly impacting the rate at which the sector is growing. They are often seen as a supporting role to male farmers; however, evidence shows repositioning their role can lead to significant improvement in socio-economic development within communities.

Drawing on the revised literature it is clear that women's empowerment is important in the pathway to improve nutritional outcomes through agricultural livelihoods. This research will focus on the interrelated linkages between agriculture, empowerment and nutrition. Below is a conceptual framework developed to guide this research and explore the various relationships between pathways. Agricultural activities often affect more than one pathway and interact with the enabling environment that includes policies, the naturalresource base, food market environments, among other factors.

Figure 2 : Pathways of Agricultural Livelihoods, Women's Empowerment and Nutritional Outcomes Conceptual Framework



Considering the major contributions women make to agricultural production, addressing the many constraints they face within the sector must be a priority if global development agendas are to be achieved. Women's unique potential in market-led agriculture could increase global supply of the world's much needed demand of agricultural production. Increasing women's productivity, influence in markets and voices in policy making will create major opportunities for developing economies.

In conclusion if women's empowerment and involvement is ignored in every stage of agricultural production, the true potential of change will never be met. The literature reviewed informed the methods and approaches of this study, considering the relationship between women's empowerment and agriculture and the link between empowerment and nutrition, and the recent methods to measure empowerment than allows for a comprehensive understanding of how empowerment can lead to opportunities in market led agriculture, the following methods were chosen to be the most appropriate for this study.

Chapter 3: Methodology

3.1 Introduction

This chapter outlines the methodology used to plan, design, collect and analyse the research data. It presents the research aim and objectives, study location and sample description. Followed by methods of data collection, analysis applied, and descriptions of tools used.

3.2 Research Aim & Objectives

The overall aim of this study is to explore women's participation and economic empowerment in market-oriented agricultural production and the linkage between women's participation and food and nutrition security.

The main objectives of this research are:

1) To identify the level of women's participation and economic empowerment within agricultural production.
2) To explore the linkage between participation and household food consumption and nutrition levels.
3) To assess the likely opportunities for enhanced women's empowerment resulting from increased focus on market-oriented agricultural production.

The main research questions are:

- What are the empowerment levels of women involved in agriculture?
- Is there a link between empowerment levels and food and nutrition security levels?
- What are the current opportunities and challenges that face enhancing women's empowerment in the Gergera watershed area?

3.3 Description of Study Location and Study Sample

3.3.1 Study Location

Gergera watershed is in the Eastern zone of the National Regional State of Tigray, Northern Ethiopia. Fieldwork was conducted in a town named Haikmeishal, located in Tabia[19] Hayelom. Geographically, Gergera watershed covers an area of 2,302 hectares. The watershed drains from the outlet in Gergera to the Birki/Agula river, covering 149km.

Population: According to the Ethiopian population estimation of 2018, the total population of Hayelom is 8,660. The Tabia population has a ratio of 5,375 to 3,285 female to male residents. Of the total population of Hayelom, 6,640 are living within the watershed area. The female to male population in the watershed is 4,005 to 2,635. Of the 1,378 households within the watershed area 39% are female headed. It should be noted that this considered high, it may be linked to migration, death of spouse in conflict and divorce and separation (ICRAF, 2018).

Climate: Gergera watershed lies in *Dega* (highlands) and *Woyna-Dega* (midlands) areas with an altitude ranging between 2,066 and 2,505 meters above sea level. The climate is characterised as semi-arid, with temperatures approximately ranging from 15°C to 25°C. The average annual rainfall varies from 450 and 600mm and the rain season usually occurring from June to September (ICRAF, 2018).

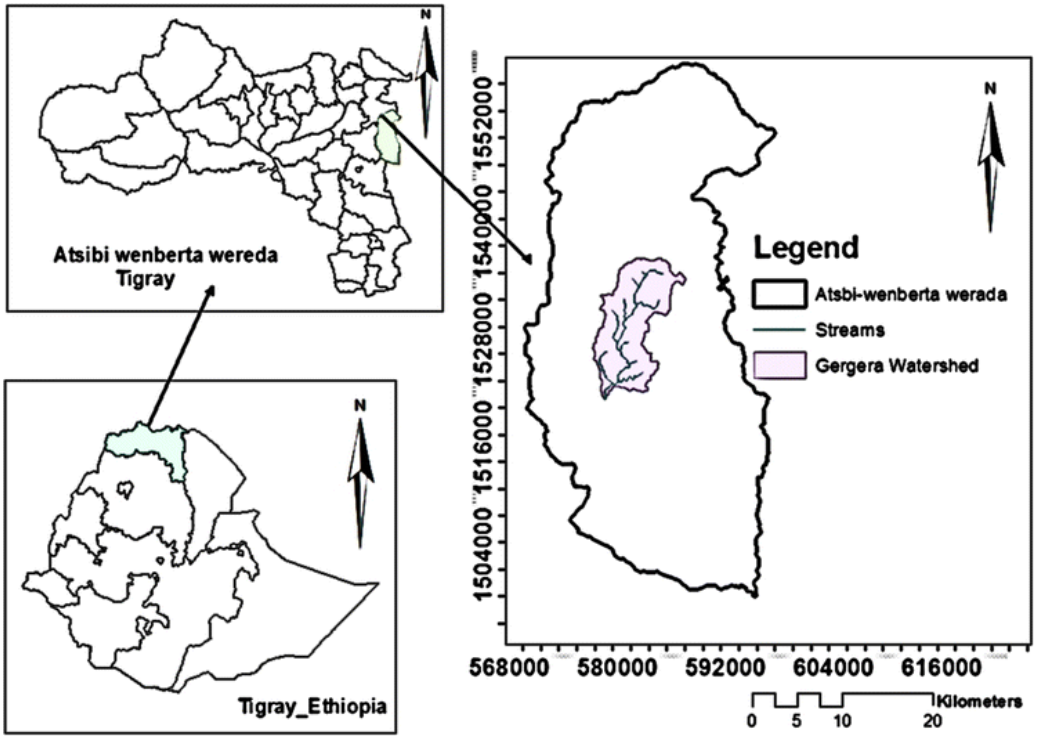
Economy: Agriculture is the main livelihood activity in the area with the majority of the households being smallholder farmers. The main areas of production are crops, livestock and recently apiculture. The main crops grown are wheat, barley and teff.

Geographic Context: Although the research was conducted within the watershed project area, the geographic context of the watershed did not have

[19] Village District

any direct influence of the findings of the study. The study participants, that were randomly sampled, lived within the lower catchment areas of the watershed meaning they may have had access to irrigated land and may have been involved in the ICRAF and UCC[20] project 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed: An Action Research Programme' activities, however there is no evidence to suggest that this had an impact of this study's findings.

Figure 3 Map of study location



(Gebre et al., 2018)

3.3.2 Study Sample

The study surveyed a total sample of 152 households, chosen through stratified random sampling. The sample has a confidence level of 95% and a margin of error of 7.5%. [21] The sample consists of female respondents only, living in both

[20] ICRAF – World Forestry Organization
UCC – University College Cork

[21] The confidence level of 95% is commonly used to calculate the margin of error for a given sample. It relates to the sample size and the size of the general population of the area. Using a 95%

female and male headed households. The sample has been categorised by household head gender. Table 1 displays the distribution of respondents by household head gender.

The sample was obtained using probability sampling and included stratified random sampling. The researcher was given a list of households that included female members: this list was divided between female and male headed households and each respondent was then randomly picked from both lists.

Table 1 Sample Distribution

Sample Distribution		
	n	%
Total Sample	152	100
Gender of respondent		
Female	152	100
Male	0	0
Gender of Household Head		
Female	74	48.7
Male	78	51.3

The sample are residents of Tabia Hayelom and represent households from 9 surrounding Kushets[22] in the area, Table 2 displays the distribution of the sample by Kushet.

Table 2 Sample Distribution by Kushet

Sample Distribution by Kushet		
	n	%
Adi-awile	2	1.3
Asagulo	10	6.6
Damayno	1	0.7
Devo	4	2.6
Gergera	23	15.1
Geter-Haikmeishal	55	36.2
Katuni	1	0.7
Menegede	6	3.9
Rural Haikmeishal	50	32.9

confidence level, a sample size n=152, and the household population of Gergera in 2019 of 1,378 (ICRAF, 2018) the margin of error is calculated at 7.5%.

[22] Kushet is a smaller division of an area in a Tabia.

3.4 Methods

The research was conducted using a mixed method approach, combining qualitative and quantitative methods of data collection. A mixed method approach was applied to attempt to mitigate inherent biases that come from using single methods. Using both qualitative and quantitative methods allows for the strengths and weaknesses of both to be compensated by each other, giving the research a higher degree of accuracy and broadening the understanding of the research context. ''The mixed methods approach has emerged as a 'third paradigm' for social research. It has been recognised as a platform of ideas and practices that are credible and distinctive'' - (Denscombe, 2008).

The methods included both desk and field research. The tools were chosen on the bias of reliability and appropriateness while taking into consideration both time and resource constraints.

3.4.1 Desk Research

A literature review on the study subjects was undertaken to gain an up-to-date understanding of the topics, concepts and arguments, and facilitate a broad view of the subject both globally and within Ethiopia. Literature was used from a range of sources including books, peer reviewed journal articles, E-journals, organisational websites and publications from past studies conducted in the area. These sources were accessed both electronically and in print.

3.4.2 Field Research

Field work was conducted in Ethiopia over a period of two months, between late April and late June 2019. The purpose of fieldwork was to collect primary data on the wider context of women in agriculture by collecting information on

the role of women through a lens of agricultural production, income patterns and social involvement. Primary information included data on women's access to land, income generating activities, farming inputs, savings and credit, institutional support and social capital. The data was used to explore the link between women's participation in agricultural production, the proportion of products home-consumed and sold, and household nutrition (measured by food security indicators). Data was collected where appropriate to reflect conditions over the previous 12 months. Data was collected through household surveys, focus group discussions and key informant interviews.

The data was collected in the area that current ICRAF and UCC project 'Developing an Innovation and Learning Platform for Enhanced Economic Opportunities and Resilience in Gergera Watershed: An Action Research Programme' is implemented. The aim of the project is to improve food security, economy and resilience through developing innovation and learning platforms to facilitate informed policy making and informing future design and scaling of national programmes for several hundred households living in the area. This study can be used to inform the wider objectives of the project by identifying and exploring the constraints on women participating in entrepreneurial activities in agricultural production, as well as linking into the food and nutrition security goals of the project. Prior to this study there had been no consistent approaches for measuring women's empowerment. Therefore, focusing on women's role in agriculture and the potential of economic growth through the empowerment of women contributes to the overall aim of the ICRAF, UCC project.

3.4.2.1 Ethics

Before fieldwork began all appropriate measures were taken to ensure data collection was conducted in a regulated and satisfactory way, that was in line with local administration guidelines. Permission was granted to conduct primary research in the study location by community leaders and all relevant

documentation was obtained. The community was informed on what the aim of the research and how the data was going to be used.

For all the data collection activities, oral consent was obtained by all participants. For the household survey, a standardised introduction was read out by the enumerator, this introduction gave a background to the research, the purpose of the study, how the information would be used and how all information would be treated confidentially. This was also done in FGDs and KIIs. Participants were also informed that they were entitled to ask any questions, and if at any time, they wanted to terminate the interview they could do so or could refuse to participate. Participants were given payment for their participation, calculated to represent potential earnings lost during the time given to complete the survey.

3.5 Household Surveys

A total of 152 household surveys were conducted over a period of four weeks.

Household surveys consisted of a questionnaire that identified the quantitative elements of the above-mentioned objectives and designed to give a general context to the livelihoods of the respondent households. The survey was verified and translated in the local language (Tigrinya) by a local translator and was piloted before being carried out. The study required two enumerators, both had experience in digital data collection. They were trained over two days. Before each survey the respondents were told of the exact nature of the research and the background of the researcher. The surveys were done on a voluntary basis and completely anonymised.

Survey respondents were all female from both male and female headed households. The household surveys were conducted on android tablets using KoboCollect[23]. It should be noted that there are some limitations to surveying women, often they are under time constraints and have children with them,

[23] KoboCollect is part of Kobotoolbox data collection software which was used to deploy the questionnaires.

which may lead to respondents being distracted. In such cases the children were cared for by others or distracted to ensure respondents' answers were as accurate as possible. Before survey collection was conducted, the community leaders and the respondents were asked which time was most convenient for them to participate in the survey. All surveys were conducted based on the workday of the respondents.

The household survey drew on a range of conceptual and data management tools to measure each objective of the study, including the Sustainable Livelihoods Framework (SLF), the Household Economy Analysis Framework (HEA), certain elements of the Abbreviated Women's Empowerment Agricultural Index (A-WEAI), the Food Consumption Score (FCS), and the Household Diet Diversity Score (HDDS). As the survey comprised of various tools of analysis it was designed concisely to avoid any duplication of questions to ensure it was as time efficient as possible.

Adopting approaches derived from the SLF and the HEA provided the conceptual and methodological framework.

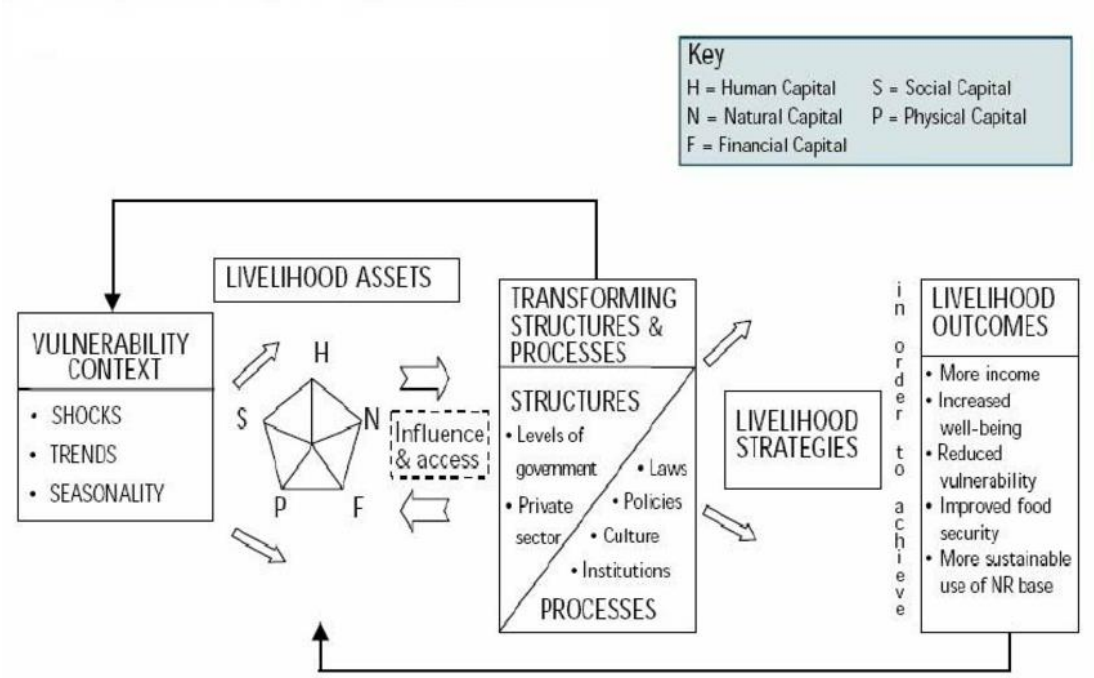
3.5.1 Sustainable Livelihoods Framework

The SLF[24] (discussed in chapter 2) is a common tool used to analyse the causes of poverty, people's access to resources and their diverse livelihood activities and relationship between relevant factors at micro, intermediate and macro levels (Adato, 2002). Figure 4 illustrates the various elements of the framework. The framework informed the methods used to collect data as it highlights the importance of obtaining quantitative data for specific capitals, e.g., natural, financial, physical and human. It also was used to design the themes used during qualitative data collection, focusing on households' main vulnerabilities and how they respond to shocks and hazards and household strategies and outcomes. It provided a framework in which the households' capabilities to

[24] SLF - Sustainable Livelihoods Framework

meet their livelihood needs relate to the wider environment of policy and local institutions.

Figure 4 Sustainable Livelihoods Framework



(Scoones, 1998)

3.5.2 Households Economy Approach

HEA[25] is a livelihoods-based framework used for analysing the means people use to access the things they need to survive. It is used to help determine household's food and non-food needs and can lead to data that represents a clear picture of the fundamentals of the rural economy of a specific area (Lawrence, Holt and King, 2019). Using the HEA provides quantitative information on food and income sources and expenditure. The HEA also provides an accurate perspective of households' operations and constraints (Boudreau et al., 2019). It enables the analysis of patterns and sources of food and cash income and patterns of expenditure over a defined period of time,

[25] HEA – Household Economy Approach

giving a baseline picture of HHs' means to obtaining food and cash. The survey was designed to address the seasonality of the study through the HEA. The HEA provides for a better context to the overall study by identifying a general overview of smallholder farmers' livelihood practices and attitudes, including data on production, sales and consumption and agricultural practices. The HEA was not only used as a basis for question development for the survey but also in structuring FGD[26]s and key informant interviews. Elements of the HEA complemented the FCS[27] (see below) to give a deeper level of livelihoods strategy analysis. The five steps in applying the HEA described in chapter 2 were followed to construct wealth groups (see chapter 4).

3.5.3 WEAI & A-WEAI

As mentioned in Chapter 2, WEAI is the most commonly used tool to measure empowerment in agriculture. Since its launch at least 86 organisations in 53 countries (as of June 2019) have fielded the WEAI, often adapting it for their own use.

The Women's Empowerment in Agriculture Index (WEAI) is a survey-based index developed to measure the empowerment, agency and inclusion of women in the agricultural sector. The WEAI is used to assess the level of empowerment and gender parity in agriculture, to identify key areas in which empowerment needs to be strengthened and to monitor progress over time (Malapit et al., 2015).

Following the development of WEAI an abbreviated version was derived from the original, the A-WEAI. Research shows that conducting the original version of WEAI has been resource-intensive (in terms of time and costs) and that some key modules in WEAI proved difficult to conduct. Specifically, the sections on time allocation, autonomy in production and public speaking were identified as time consuming, sensitive in nature and difficult to convey to survey participants

[26] FGD – Focus Group Discussions
[27] FCS – Food Consumption Score

(Ahmed et al., 2017: Malapit et al., 2015: IFPRI WEAI Resource Centre, 2019). The total A-WEAI module takes approx. 30% less time to administer than the original WEAI (IFPRI WEAI Resource Centre, 2019). Based on this information the selection of A-WEAI was seen as a more appropriate version to use for this research project, given the limitations on time and resources. A-WEAI can help to design appropriate strategies to address identified deficiencies and monitor project outcomes related to women's empowerment.

The A-WEAI retains the 5 Dimensions of Empowerment that is used to measure empowerment in the WEAI, however the A-WEAI is composed of only six of the original ten indicators.[28] The 5DE score accounts for 90% of the total empowerment score and the Gender Parity Index (GPI) accounts for 10%, as all survey respondents were female and due to limitations of time and resources, the GPI was excluded from this research as it required survey completion by both men and women in the same households.

Due to the design of the WEAI and A-WEAI, there is no requirement for existing baseline data to calculate the 5DE making it the most suitable approach to measure women's empowerment for this research project.

All aspects of the A-WEAI were used in the design of the survey, except questions pertaining to the GPI. As the GPI is separately calculated the weighting of the 5DE remained the same.

3.5.3.1 Limitations

The limitations of only including the 5DE and excluding male respondents to calculate the GPI should be noted. Although the 5DE scores of women are measured, the exact level of disempowerment of women compared to men cannot be calculated. However, the GPI is not required to calculate women's level of empowerment. The 5DE allows for empowerment to be disaggregated by domain and indicator to see which specific area contributes to women's disempowerment, but not comparable to male empowerment. This limits the

[28] See appendix for the domains, indicators, survey questions, cut off and weights of A-WEAI.

research findings as excluding the GPI, the overall empowerment score is not comparable with other studies: however, the 5DE score remains comparable. As a baseline study it is important to have a quantifiable and widely recognised measurement of female empowerment and it allows for future studies to have a comparative measure.

3.5.4 Food Consumption Score

The survey was designed to include the relevant questions to calculate the Food Consumption Score (FCS). The FCS is an index that was designed by the World Food Programme in 1996, it is used to aggregate household level data on the frequency and diversity of food groups consumed over a seven-day recall period. The data is then weighted according to the relative nutritional value of the consumed food groups based on nutritional properties of the food.

Data was collected using 7-day recall: it is important to avoid atypical consumption periods (e.g. feast days) in collecting FCS data and therefore the timeframe for survey deployment was during the month of May, leaving a time gap after Easter fasting. The FCS gathers data on sources of food that will contribute to both the HEA[29] and measurements of food availability and access during the research period.

3.4.6 Household Diet Diversity Score

The Household Diet Diversity Score (HDDS) is a measure of dietary diversity based on counting the number of food groups consumed over the recall period: the higher the score the higher the diet diversity of the household. A good quality of dietary diversity is generally expected to correlate with a healthier level of nutrition amongst household members. It was used in conjunction with the FCS as they both factor-in the consumption of different food groups and rely on 7-day

[29] HEA – Household Economy Approach

recall. By combining the FCS and the HDDS, analysis can be done on both diet diversity and food frequency while also reducing the survey response time. The HDDS that was used in this study is the modified indicator used by the National Integrated Household Survey III (HIS III, 2007). The following set of 12 food groups is used to calculate the HDDS: Cereals, Roots and tubers, vegetables, fruits, meat, eggs, fish, pulses, milk and milk products, oils/fats, sugar and miscellaneous (Swindale, 2006). These are the same food groups used to calculate the FCS.

3.6 Focus Group Discussions

Five focus group discussions (FGDs) were conducted: one all-female farmers, one all-female market traders, one all-female mixed, one all-male farmers and one female/male community leaders. The range of topics covered in the FGDs were; current agricultural practices, attitudes and perceptions of women's empowerment, women's role in agriculture, market trends and activities, attitudes towards market-led agriculture and general livelihoods strategies. Group sizes varied between 5-13 people. FGDs were led and designed by the researcher, however a trained facilitator and translator conducted the FGDs. All FGDs were audio recorded for analysis purposes: all participants were informed, and the recording only began when each individual gave consent and fully understood the purpose of recording.

The FGDs were conducted to provide a deeper understanding of the contextual picture of the communities that the sampled households lived in. The FGDs were used to give insight to the group and individual perceptions of what strengths, weakness, opportunities and threats households face in terms of women's engagement and economic empowerment within and outside the agricultural sector. The FGDs were also used as part of the HEA to determine wealth groups, which aided the disaggregation of data and allowed for a deeper analysis of the linkages between women's empowerment and nutrition.

3.7 Key Informant Interviews

Five key informant interviews (KIIs) were conducted with agricultural and health extension workers, local leaders and community representatives. The interviews were semi-structured and conducted through a translator. As with the FGDs, all KIIs were audio recorded for analysis purposes, all participants were informed, and the recording only began after each individual gave consent and fully understood the purpose of recording. The KIIs were designed to gain insight into the constraints on women's economic empowerment from different perspectives. KIIs also contribute to the HEA[30] in providing perspectives on how households and communities respond to new situations, positively or negatively, in terms of its likely effect on livelihoods. The interviews provided internal and external perspectives around: women's engagement in production, views on changing attitudes towards women's economic empowerment in agricultural production, issues relating to adoption of technology, market orientation, changes in levels of women's participation, identifying the main constraints to increased women's participation and social changes in the area. The interviews also helped to identify policy constraints that may limit the potential economic participation of women. They were used to gain a deeper understanding of the overall agricultural industry and its position within the local economy in the area.

3.7 Direct Observation

Direct observation was conducted, such as recording events, structures, processes, institutions, behaviour, relationships, social differences, and enumerators' notes and personal observations from household interviews. Throughout each process of research, direct observation helped inform data collection and allowed for adaptation of methods if needed.

[30] HEA – Household Economy Approach

3.8 Data Analysis

Results from the household surveys were used to create a dataset and analysed using SPSS version 23 and Excel. Basic exploratory analysis was conducted. Where appropriate, tables and figures were used to present summary statistics. Independent t-tests were used as an inferential statistical test to determine whether there is a statically significant difference between the means in two unrelated groups. The qualitative data was transcribed and analysed using analytical skills and knowledge of the context from where the data was collected.

3.10 Conclusion

Overall, the chosen methodology was efficient in gathering the necessary information to fulfil the objectives of the study. The applied methods were considered the most appropriate based on the research questions and the scope of the study. Considering the scale and limitations of the study, the findings can provisionally be used to provide insights into the levels of economic empowerment, the linkages to nutrition and the opportunities available to women in market-oriented agriculture.

This research provides a baseline study for empowerment measurements. It is hoped that this study's findings will contribute to the understanding of livelihood strategies and can be used as a platform to discuss future interventions regarding women's empowerment in agriculture and market-orientated agriculture and food and nutrition security. Furthermore, it is expected the findings will provide an overview of the relevance and potential of women's empowerment.

Chapter 4: Findings and Analysis

4.1 Introduction

The main findings of the research are presented and analysed in this chapter, beginning with a description the sample households main livelihood strategies. The second section provides the findings and analysis of the primary data collected based on the research objectives.

The key findings show that 71.7% of women meet the threshold of empowerment. The largest contributing factor to disempowerment was the workload of women. Regarding nutrition levels, 30.3% of households, did not meet the requirements of a healthy household. The findings show a clear correlation between women's level of empowerment and food and nutrition security, the higher the 5DE score the better food and nutrition score. The main findings regarding enhancing livelihoods through market-led agriculture, show a willingness for participation but identifies the many challenges faced.

4.2 Livelihood Strategies of Sample Households

This section applies elements of the Sustainable Livelihoods Framework (SLF) as a tool to analyse the findings on livelihood characteristics of the sample households. Examining livelihoods through this framework allows for a better understanding of a sample's livelihood strategies, and highlights associated opportunities and constraints. Kabeer (1999) defines empowerment as the process by which people expand their ability to make strategic life choices, therefore understanding the current livelihood strategies and characteristics of households is needed to contextualise the following sections of findings and analysis.

As mentioned above the SLF highlights five factors that affect the livelihoods of people. This section particularly draws upon three of these factors:

- Physical capital, such as the structure of dwellings and housing.
- Natural capital, land ownership and livestock ownership.
- Financial capital, livestock, and commercial farming.

Findings on both human capital and social capital are discussed in the following sections as they are interlinked with nutrition and empowerment.

As a method of creating comparable categories within the sample, an asset index has been calculated to represent low to high wealth groups. Ownership of assets varies amongst households; these variations indicate differences in wealth status and give an indication of how a household may achieve its livelihoods needs. The wealth group variable is a composite index of household wealth. Table 3 below displays the results of a stratification method undertaken for all households, which was in line with the Household Economy Approach (HEA) methodology.

Quantitative data on specific assets was collected through surveys and supporting qualitative data has been used to categorise the sample into different wealth groups. Key informant interviews were conducted as a foundation of the various groups and how to differentiate each group. Characteristics of the main defining factors and resources of the poorest, middle and high households were described. Once the characterisations were determined the sample was divided into wealth groups: low, low middle, high middle and high. The reason for splitting the middle category into two groups is due to the high levels of households' participation in the Productive Safety Net Programme (PSNP), which according to local extension workers and community leaders, categorises the household to be within the lower wealth groups of the community and it therefore would be misleading to categorise the households within a high wealth ranking. All data collected in relation to wealth groups was triangulated with FGDs[31] and KII[32] throughout the data collection period.

[31] FGD - Focus Group Discussions
[32] Key Informant Interviews

4.2.1 Wealth groups

Table 3 represents the wealth group categorisation described by the data collected. To calculate which households fell into each category, a weighted score was given to each indicator[33]. The sum of the scores reflects which category a household was included in. The score ranges from 0-16, the higher the score the higher the position within the categories. It should be noted that in the study area wealth categories are defined by local administration by income and the value of yields from production, but due to the nature of this study no data on income was collected and therefore the use of assets is used as an indicator for wealth groups.

Table 3 Wealth Group Categories

Wealth Group Categories					
		Low	**Lower Middle**	**Higher Middle**	**High**
House Structure	Roof	Grass/Clay Tiles	Iron Sheets	Iron Sheets	Iron Sheets
	Walls	Mud/Mud Bricks	Burnt Bricks/Wood	Stone	Concrete
Tropical Livestock Unit (TLU)		0-2	2.1-5.75	5.76-8.1	>8.1
Land Owned (ha)		0-0.25	0.26-0.5	0.51-0.75	>.75
PSNP Dependency	Type of payment	Food	Both	Cash	No PSNP
	Proportion of HHs Income	>50%	25-50%	<25%	0%
Score 0-16		0-4	5-8	9-12	13-16

Figure 5 and Table 4 display the results of the wealth ranking activity. The majority of the households fall within the low middle category, followed by high

[33] See appendix for weighted score index for wealth groups.

middle and low. None of the households qualified within the high wealth group, this was to be expected as the sample was highly dependent on the PSNP[34].

Table 4 Wealth Group Ranking

Wealth Group	n	%
Low	2	1.3
Low Middle	115	75.7
High Middle	35	23
Total	152	100

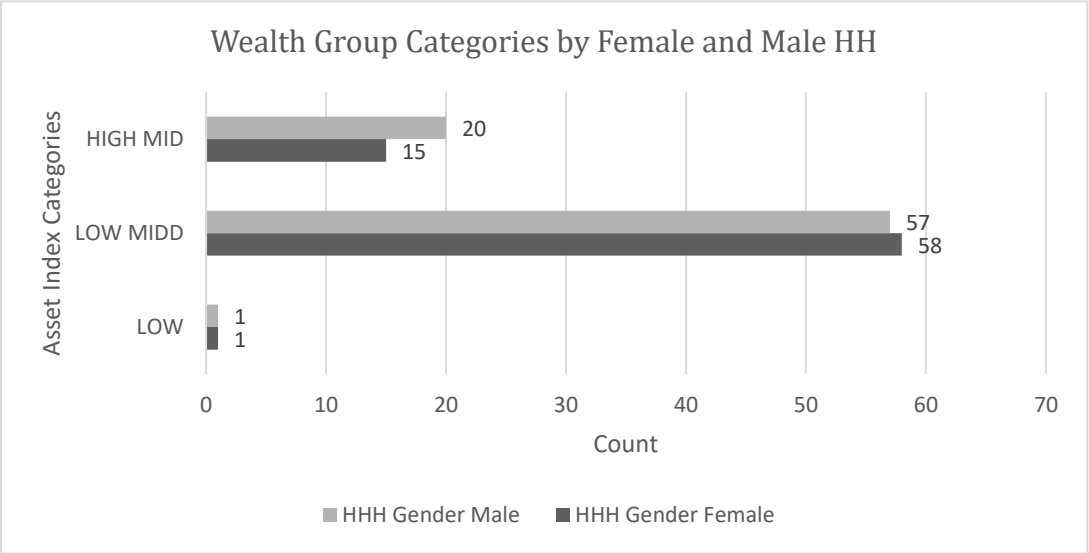
Figure 5 Distribution of Wealth Group Score



Figure 6 displays the distribution of wealth groups between female and male headed households. There is slightly higher male headed households in the 'high middle' group than female headed households, however statistically speaking there is no significant difference.

[34] Productive Safety Net Programme

Figure 6 Wealth Group Categories by FHH and MHH



4.2.2 Access to Assets

Land

Land is one of the defining measurements of livelihood status, Table 5 presents the mean area of land use and ownership. In every instance, except renting out, male headed households have access to a higher area of land than female headed households. Access to land is one of the primary constraints to female farmers in this area; this issue will be further discussed in the following section. The reason for female headed households renting out more land was discussed in FGDs[35] and it was reported than due to cultural practices they are unable to plough, therefore many female headed households who do not have a man in their household or cannot afford to employ casual labourers to plough their land, cannot cultivate their land, resulting in them renting it out. Of the households that rent out land for cultivation (31) 67.7% are female headed households. Of the households that rent in land for cultivation (33) 84.8% are male headed household. From this it can be concluded that male headed households within the sample have increased access to land than female headed households.

It should be noted that some respondents were not cultivating land during the research period as they were letting land rest for next season.

[35] FGD – Focus Group Discussions

Table 5 Land Use & Ownership by household

Land Use & Ownership				
	Unit	Total Sample	Male HH	Female HH
Land Owned	ha	0.3	0.36	0.24
Agri Land		0.29	0.35	0.22
Non-Agri Land		0.03	0.03	0.03
Cultivated Land		0.29	0.36	0.22
Rented Out		0.31	0.3	0.31
Rented In		0.32	0.33	0.25

Livestock

This study calculates livestock in Tropical Livestock Units (TLU), which is a reference unit used for the calculation of livestock (FAO, 2018). The TLU conversion factors used are as follows: cattle = 0.7, sheep and goats = 0.10, pigs = 0.20 and chicken = 0.01. The national average TLU is 2.4 (FAO, 2018). The total amount of households that own livestock is 110 (72.3%), the mean TLU score is 1.7, with a range from min-max of 0.10 to 5.70. When livestock ownership is disaggregated by household head gender it shows that 43.6% of livestock owners are female headed household and 56.4% are male. The mean TLU for female headed households is 1.2 and 2 for male.

PSNP

The Productive Safety Net Programme (PSNP) was introduced in 2005 by the government as part of a strategy to address chronic food insecurity. It provides cash or food to people who need supplementary food or income to purchase food in a way that improves their livelihoods, usually a person is offered a period of work in exchange for payment (Campbell and Hobson, 2012). The sample's involvement in the PSNP is extremely high at 94.1%. This may be due to severe frost, and low yields because of pests and disease in crops. The payments received by the households vary, 61.3% receive both cash and food, 32.2% receive cash only and 0.7% receive food only. The amount of people within a household that participate in the PSNP ranges from 1 to 3 people. PSNP is usually

available from January to June, however in the FGDs it was mentioned that the availability and PSNP time was changing, making it more difficult for households to access the programme. The reasons for the change in PSNP availability was unclear, many respondents guessed it may be political restrictions, but the community have not been officially informed.

Agriculture

Subsistence farming is a common characteristic of households in the area. Throughout this report a household will be defined as an agricultural household if it partakes in any agricultural activity related to farming including cultivation of the soil for growing crops for either food or cash and the rearing of animals. For example, 55.9% of households state their main occupation is 'farmer', however this does not mean the remainder of the households are non-agricultural as they may partake in agricultural activities to supplement their primary occupation. Non-agricultural households are defined as households that do not partake in any other of the mentioned activities. According to these definitions, 82.9% of households are involved in agricultural production and will be referred to as agri-households. This definition is used to ensure that households that partake in some form of agricultural activities are not excluded.

Table 6 Agricultural Characteristics of Sample Households

	No. of HH Cultivating	Mean Area Cultivated	Median Quantity Harvest	Min	Max	Mean cost per ha	No. of HH's Selling
Units	n	ha	Kg	kg	Kg	Birr	n
Grains	119	0.3	200	10	1250	5,042	27
Millet	5	0.25	200	100	300	5,600	2
Barley	8	0.38	200	75	600	3,783	3
Teff	15	0.23	100	50	200	4,840	0
Wheat	91	0.31	200	10	1250	5,156	22
Pulses	20	0.12	50	20	200	4,108	7
Chick pea	6	0.14	50	25	100	3,466	2
Faba Bean	6	0.14	75	25	200	3,800	2
Lentils	5	0.11	50	20	150	6,080	2
Field Pea	3	0.08	50	50	100	2,720	1

Table 6 displays the main crops grown by households. As the research was concentrated around Haikmeishal which is located in a low lying area of the watershed, the high levels of grains grown compared to pulses may be due to the geographical location of the households, grains tend to be cultivated on the lower parts of the watershed area and pulses in higher areas. The most popular grain to cultivate and sell is wheat. The mean amount of area given to grain cultivation is more than double the area allocated to pulse production. The mean cost of production per hectare is lower for pulses than grains. High levels of pests and diseases in grains have been reported, the difference in cost of production could reflect the costs of households trying to mitigate the effects of such hazards. 5.9% of grain producers and 35% of pulse producers have access to irrigated land.

Figure 7 Seasonal Calendar

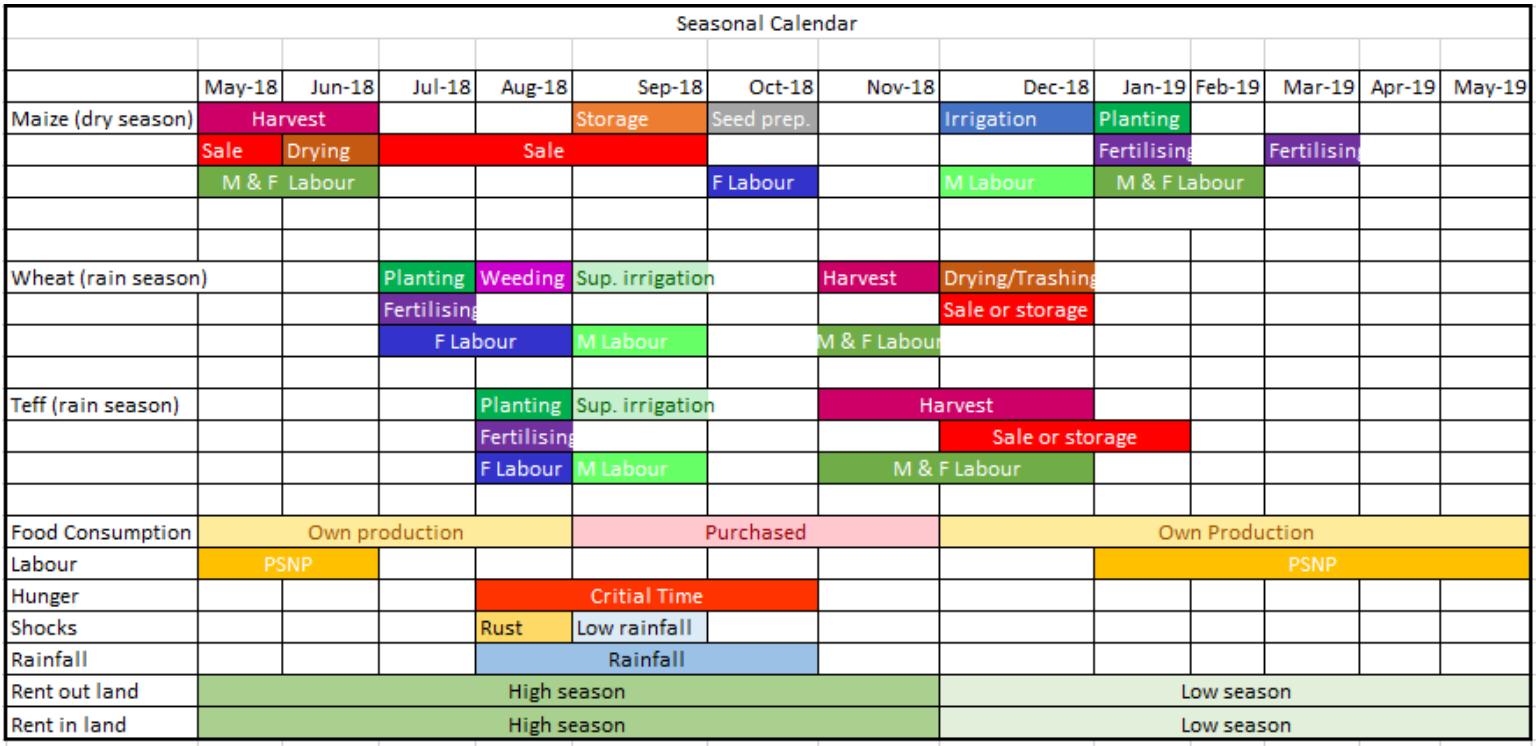


Figure 7 illustrates activities households underwent in the last twelve months. It shows the activities involved in various types of crop production, it also shows whether an activity is usually performed by male or female members of the household. Seed preparation, planting and weeding is done by women, while irrigation is done by men, and harvesting and fertilising are joint duties. The calendar also shows consumption patterns and when is the most critical time of food insecurity. During the months of August to October is the most critical time in relation to hunger, this matches with the time of year households rely most on purchased food. It also corresponds to the period before the harvesting of rainy season crops, (wheat and teff), and after the harvest of dry season crops in May and June. Unsurprisingly it is also the period that was reported to have the main shocks of that year and it is when the PSNP is not available to households. A combination of all these stresses led to a 3-month period of critical time for households. According to FGDs and a KII with a local agri-extension worker, the main shocks to households in the last twelve months were: pests, diseases and frost in crops. The main risk in agri-production is pests and disease, there are high levels of rust and pests in crops, households attempt to treat crops for

disease where possible but have no solution for rust and often the only response to high levels of rust in their crops is to avail of supplementary feeding programmes. Frost was listed 2nd of the most chronic hazards to livelihoods. It is a relatively new hazard and is becoming increasingly severe. Households' awareness of how to respond to the risk of frost is increasing, households are becoming more resilient against it as they plant crops that are less likely to be affected by frost, such as cabbages and onions.

Other income sources

Table 7 displays the occupation of the head of households. This shows a combination of both farmers and market traders, which is a positive result for the study, as perspectives from households involved in different parts of the agricultural value chain contributed. As mentioned above 82.9% of households partake in agricultural production of some kind. Table 8 displays the proportion of income from agriculture. Agricultural income accounted for more than 75% of the total in only 3.3% of households. Therefore, many households have more than one source of income. The other sources of income are shown in Table 9.

Table 7 Distribution of Household Head Occupations

Distribution of HHH Occupations		
	n	%
Farmer	85	55.9
Market Trader	37	24.3
Skilled Worker	9	5.9
Casual Labourer	11	7.2
Other	10	6.6

Table 8 Proportion of Income from Agriculture

Proportion of Income from Agriculture	
	% of HHs
0%	10.5
Less than 25%	26.3
25-50%	28.3
50%-75%	31.6
More than 75%	3.3

During times where the households' needs cannot be met through income from agriculture or other sources, credit is available through a local micro-finance programme. Loans are paid out to women, however if a woman is not living independently their spouse must co-sign for the loan, if a woman is single, she must produce a licence stating she is not married. The number of respondents that have received loans from the micro-finance programme is lower than those who received loans from family and friends.

Table 9 Other Income Sources

Other Income Sources		
	n	%
Agriculture (labour and/or production)	53	34.9
Gift	7	4.6
Own Business	12	7.9
PSNP	19	12.5
Remittance	58	38.2
Wage/Employment	3	1.9

The most interesting result from Table 9 is the high percentage of households that receive remittance. During survey completion this issue was noted and further explored in FGDs. Remittance has increased significantly in recent years in Tabia Hayelom, as it is reported that the demographic of those who leave to work abroad has changed. In the past there was a 50:50 ratio of men to women leaving, now it is predominantly young men. The main destination is Saudi Arabia and the trips are usually short periods of time, on average 1 month, dependant on how much income the person is attempting to earn. It has become accepted that the young men who are traveling abroad obtain illegal jobs, such as the transportation of contraband. They take this risk to earn money fast, often it is to earn enough to purchase a one off good, such as a cow, a house or to have a wedding. Men who leave for longer periods of time usually work as construction workers. The average education levels of young men who leave is grade 10-12, they are educated but have no employment opportunities in the area. There are extreme risks involved in these trips, the rates of reported arrests and deaths by Saudi police forces is increasing. The community reported that they are looking for solutions and are concerned about this trend.

The women who go abroad are usually domestic workers or the same job as they had in Gergera and stay between 3 to 5 years. However, there has been an increase in stories relating to women being used as drug mules, often unaware of the fact, due to the lesser security faced by women. It is estimated 1 of 100 women have been used in this way.

It should also be noted that in some respondent cases, the household was preparing for travelling abroad, therefore they had little access to land and other assets as the assets had been sold before travelling. The number of cases like this is not significant enough to skew data but should be acknowledged.

4.3 Women's participation and economic empowerment within agriculture

Objective 1 '' To identify the level of women's participation and economic empowerment within agriculture'' was addressed by using the elements of the A-WEAI, (see page Chapter 2). This section examines the 5 Dimensions of Empowerment, the incidence of empowerment, adequacy among the disempowered and identifies who is empowered.

4.3.1 Computation of the index

The 5DE (5 Dimensions of Empowerment) of the A-WEAI is used to calculate women's empowerment. According to the index, a woman is defined as empowered if she achieves adequate thresholds in four of the five domains or score 80% or higher through a combination of the weighted indicators that reflect total adequacy.[36] If the score is less than 80%, they are classified as disempowered. The 20% margin is strict. These individual scores are then aggregated to calculate the 5DE.

The formula used to calculate the 5DE is:

$$5DE = He+HdxAe$$

[36] See appendix for indicators and thresholds of A-WEAI.

Where 'He' is the percentage of empowered women, 'Hd' is the percentage of disempowered women and 'Ae' is the absolute mean empowerment score among the disempowered. In this case the formula was:

$$5DE = (71.7) + (28.3)(.1079) = 74.76 \text{ or } 0.74$$

Table 10 A-WEAI 5DE Scores

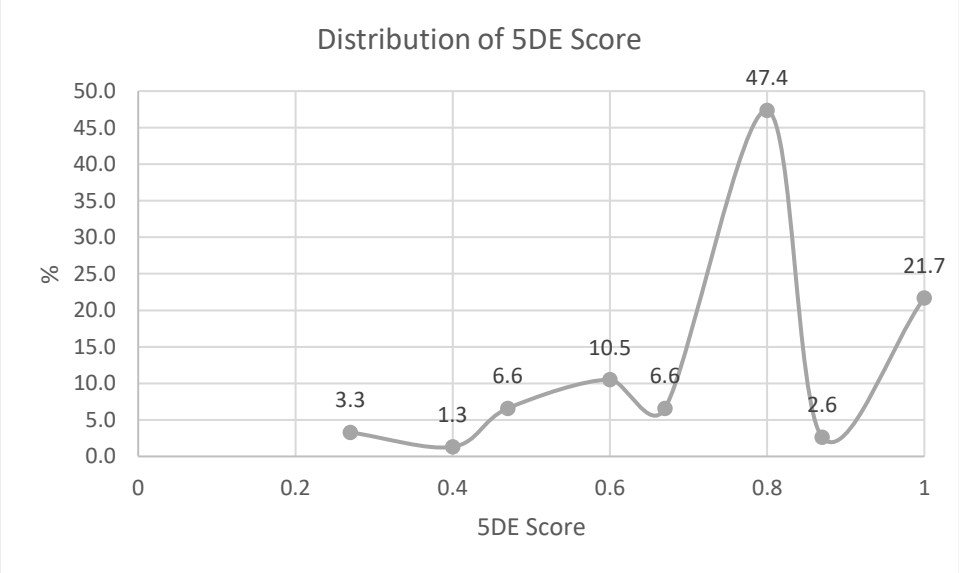
A-WEAI 5DE Scores			
Indicator	**FHH**	**MHH**	**Total**
5DE Score	0.71	0.78	0.74
Disempowerment score (1-5DE)	0.29	0.22	0.26
Number of observations	74	78	152
% of women achieving empowerment (1-H)	67.6	75.6	71.7
% of women not achieving empowerment (H)	32.4	24.4	28.3
Mean 5DE score for not yet empowered women (1-A)	0.43	0.5	0.46
Mean disempowerment score for not yet empowered women (A)	0.57	0.5	0.54

Table 10 presents the aggregate 5DE score for respondents. The total sample 5DE score is 0.74, and for respondents in female or male headed households the score is 0.71 and 0.78 respectively. Overall 71.7% of women are empowered according to A-WEAI. Of the women who are disempowered, the mean adequacy score is 0.46, these women achieve adequacy in an average of 46% percent of the indicators. In female headed households, the mean adequacy score is 0.43 and in male headed households it is 0.5. This is interesting as it is often argued that the households with only female decision makers are more likely to be identified as empowered by default (Malapit, et. Al. 2019). However, in this case the 5DE score is higher in male headed households, this may be due to the fact that when asked about ownership of assets women in male headed households had access to more assets and claimed ownership. This in itself is a positive outcome as evidence shows that the act of claiming ownership over an

asset itself is a reflection of agency[37] and empowerment (Malapit, et. Al. 2019)(Pradhan et al., 2018).

Figure 8 illustrates the distribution of the 5DE score across the sample, 47.4% of the total sample have a borderline score of 0.8, accounting for 66.1% of total empowered women. This can be identified as a limitation to the A-WEAI method of measuring empowerment, for example a woman with access to one community group within the leadership indicator is receiving the same adequate achievement than a woman who has access to five. This raises the question as to whether the percentage of women with a score of 0.8 would be different.

Figure 8 Distribution on 5DE Score



It's important to note from Table 10 that the mean 5DE score for disempowered women is 0.46, this low score indicates that there is a significant range between scores of disempowered and empowered women. Figure 9 shows the proportion of disempowered women is much higher in the low middle wealth group and significantly lower in the high middle wealth group.

[37] Agency is an important part of women's empowerment, the World Bank (2012) defines agency as the 'ability to make effective choices and to transform these choices into desired outcomes.

Figure 9 Empowerment Status by Wealth Group

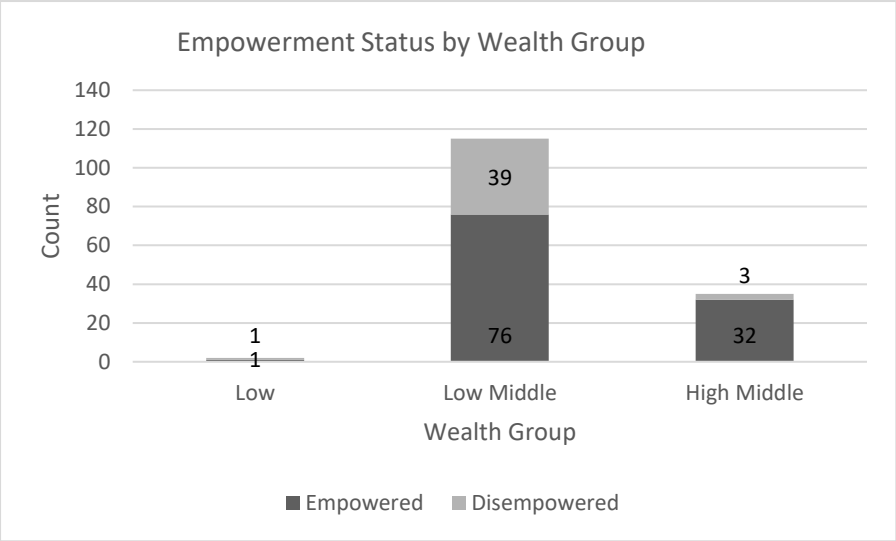
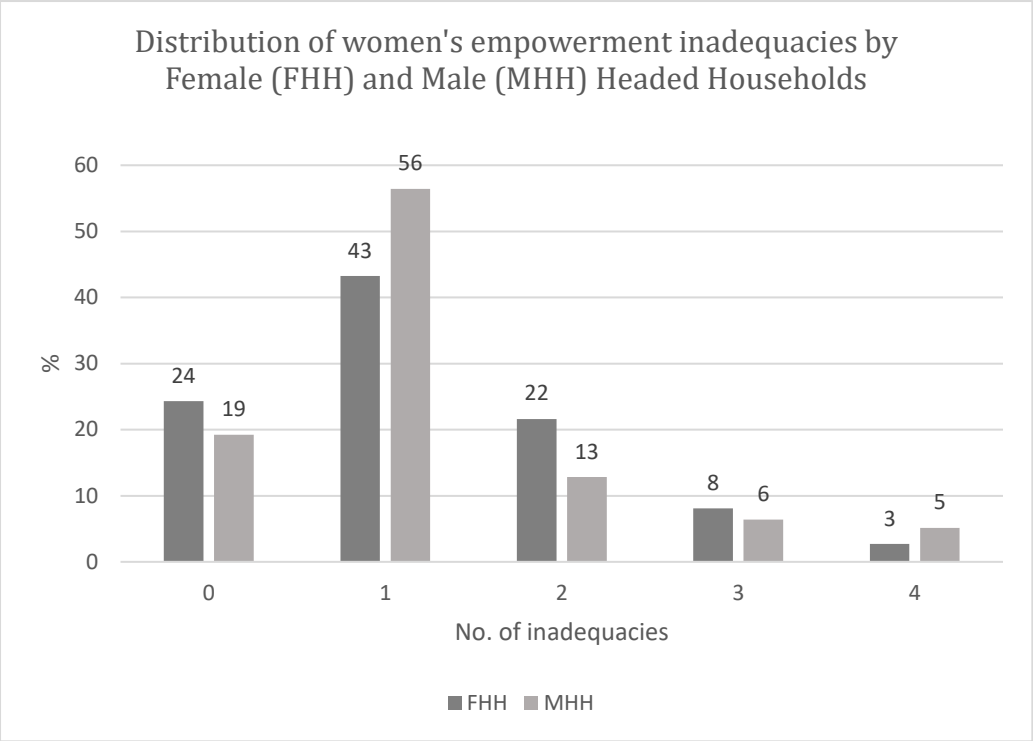


Figure 9 illustrates the relationship between a household's wealth and empowerment. The proportion of disempowered women in the high middle group is extremely low compared to the low middle. Yet, there is one woman in the low group that is empowered. The high middle group is almost solely empowered women.

The 5DE considers the number of indicators in which women are not adequately empowered to allow to examine the intensity of their disempowerment. Figure 10 compares the proportion of women's empowerment inadequacies between female and male headed households. A slightly higher proportion of women in female-headed households had zero inadequacies, and slightly larger percentage in male headed households had 4 inadequacies. Overall, a higher proportion of women in female-headed houses had fewer inadequacies than in male-headed. More respondents in female headed households are disempowered, and disempowered women in female headed households have marginally more inadequacies, on average, than women in male-headed households. This suggests that women living in female headed households experience a slightly higher intensity of disempowerment.

Figure 10 Distribution of inadequacies by FHH & MHH



Figures 11 & 12 show to what extent each indicator contributes to the disempowerment of the women who have 5DE scores less than 0.8 within male and female headed households. The largest contributor to disempowerment is workload/time allocation. The second largest contributor in male headed households is access and decision-making power to income from various productive activities, followed by production and assets.

Figure 11 Contribution of each of six indicators to the disempowerment of women MHH

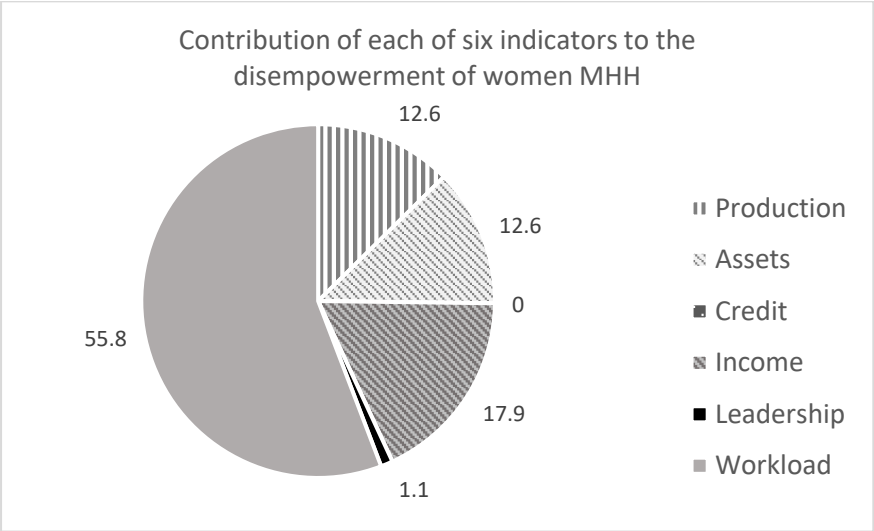
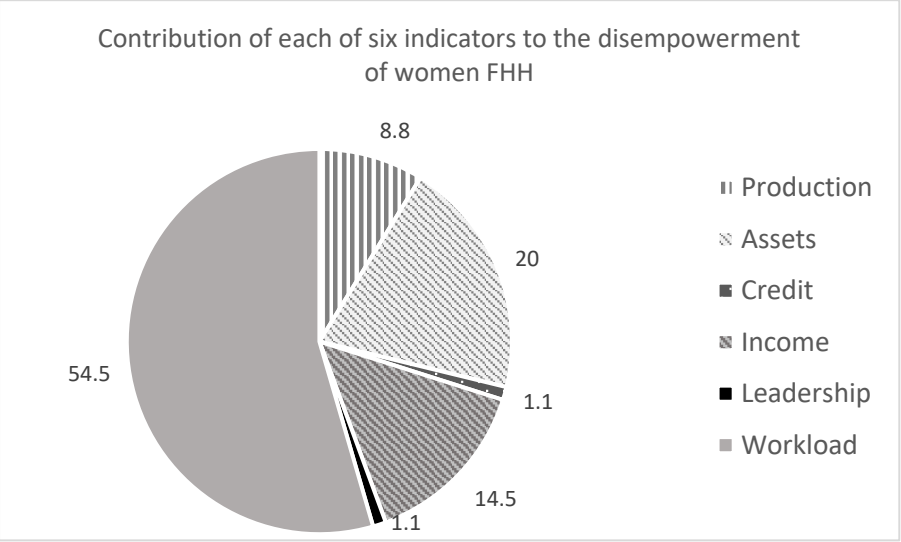


Figure 12 shows the second largest contributor in female headed households as access and decision-making power over assets and access and ownership of assets, followed by income.

Figure 12 Contribution of each of six indicators to the disempowerment of women FHH



Leadership and credit are not significant contributors to disempowerment in either case.

Figure 13 presents the distribution of empowered and disempowered women with inadequate achievements by each indicator. The most interesting finding here is that disempowered women have higher inadequate achievements in production, assets, credit, income and leadership indicators than empowered

women. However, empowered women have higher inadequate achievements in workload than disempowered women. Figure 14 also reflects that workload is the indicator that women achieve the least adequacy.

Figure 13 Distribution of inadequate achievements by indicator

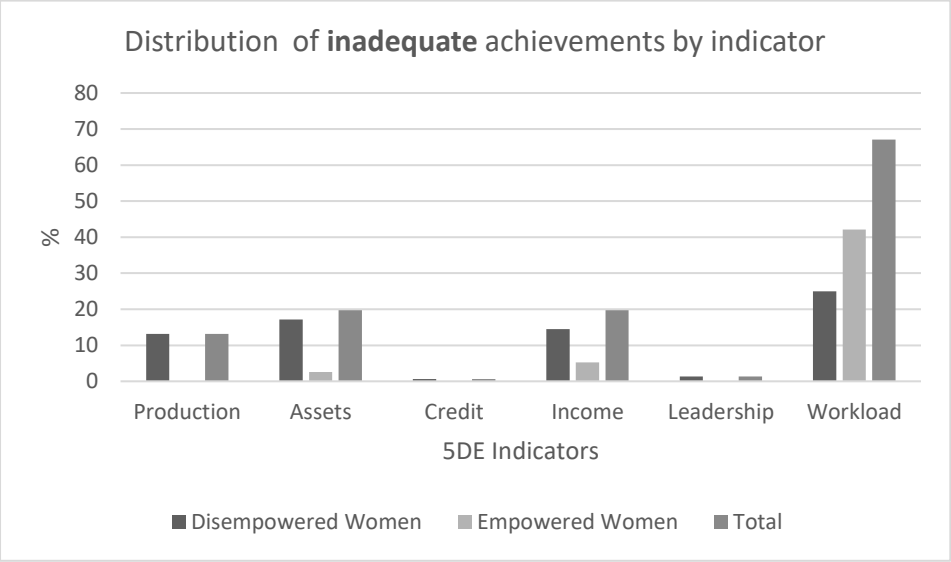
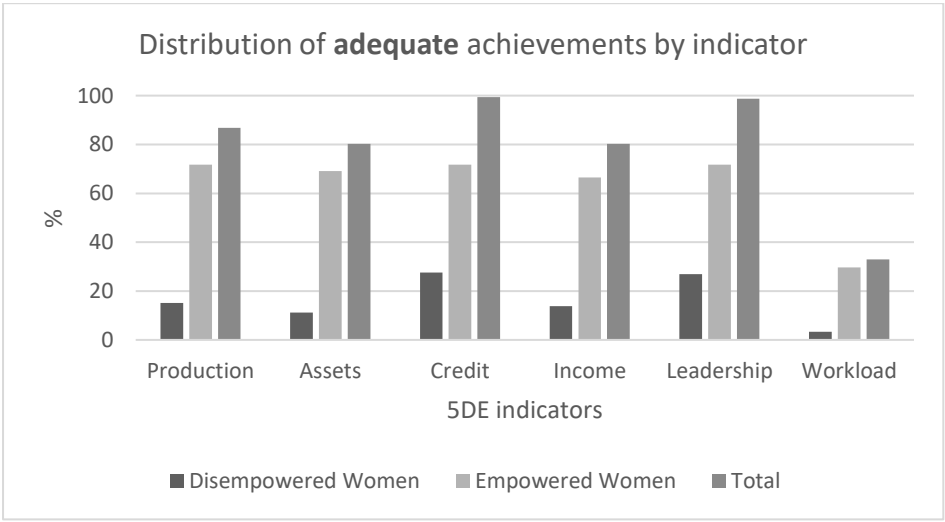


Figure 14 Distribution of adequate achievements by indicator



Examining the workload indicator further, Figure 15 shows the mean hours per day allocated to productive, domestic and leisure activities. The terms productive, domestic and leisure were understood as; productive – any activity that contributed to the primary income generating activity of the household e.g.; working on land, market trading, PSNP work, tending to livestock etc. Domestic – any activity that contributed to the needs of the house, spouse, children or

dependent e.g.; cooking, cleaning, sewing or caring for elderly. Leisure – any activity that wasn't in the above categories e.g.; social activities, church going, personal care, celebrations.

The mean number of hours per day spent on productive and domestic activities is higher for empowered women. When respondents were asked if in the last 24 hours had they worked more than 10.5 hours one third responded yes. Due to constant fluctuations in how people spend their time, it is important to measure what a 'typical day' consists of, measuring the normality of how respondents spent their time in the last 24 hours helps to eliminate assumptions. Data was collected on religious and cultural holidays or 'rest' days, so it is important to know if the time allocation in the past 24 hours is a usual representation of their daily activities. Figure 16 shows that most respondents represent a usual day. Respondents were also asked about how many hours since they rested (doing something they wouldn't consider work), the mean was 7 hours ago, with a minimum of 1 hour and maximum of 19 hours.

Figure 15 Time Allocation in a Typical Day

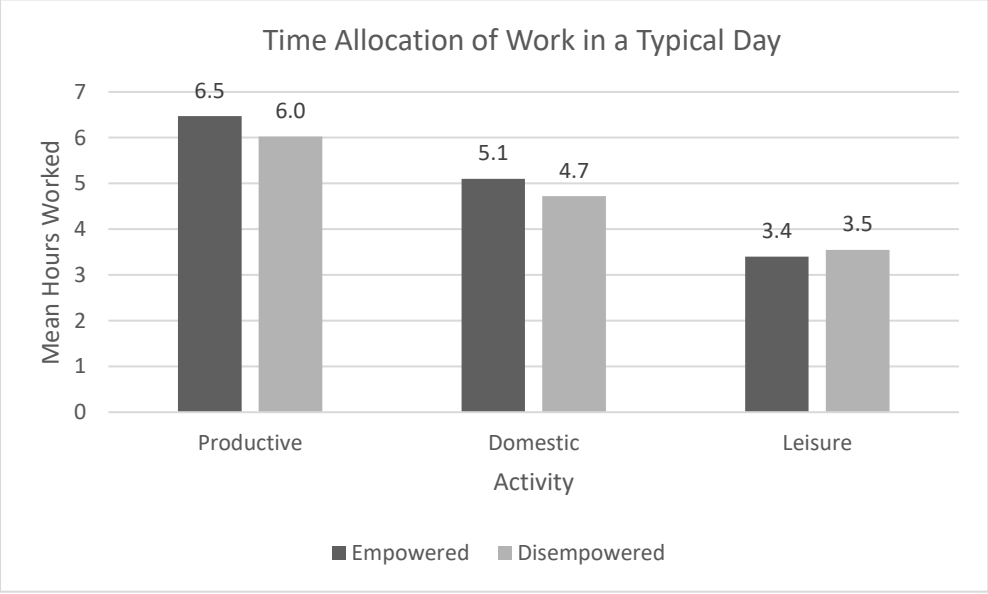
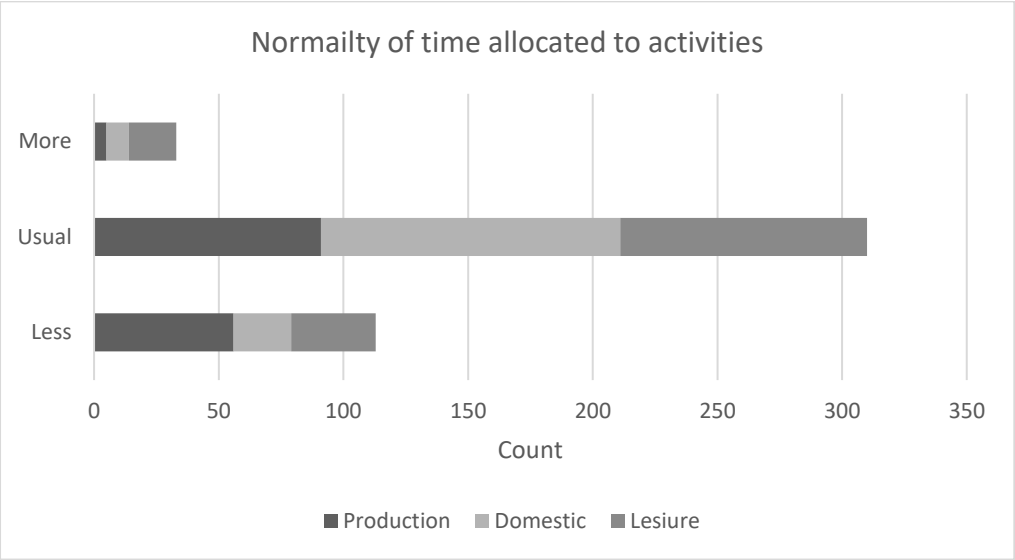


Figure 16 Normality of Time Allocation



Second to workload, input in decision making on the participation and income on production activities (Figure 11 &12) is the largest contributor to disempowerment. Data from the FGDs show that the assumed activities for women in agriculture are; weeding, planting, cultivating, land preparation, harvesting and selling. After the men plough the land the women prepare for sowing and weeding. It is no coincidence that these activities are the most labour intensive; hence, the high contribution of the workload indicators A quote from one of the focus group discussions reflects how this division of labour has become normal practice:

''This is the way it's always been, its usual for women to do these activities.''

Figures 17 & 18 illustrate respondents' level of input into decisions of each production category within female and male headed households. Non-farm activities are the only area in which respondents reported that they had 'no input' in decision making. Most women felt they had equal input in both growing food crops and wage/salary activities. Figures 17 & 18 also show that more male headed households participate in growing crops for food, this may relate to women household heads being unable to plough, therefore unable to cultivate their land. Of the women in male headed households the majority have equal access to decision on activities related to crops for food. Interestingly, the levels

of input in decision making within female headed households varies, it could be presumed that the household head has total input. The number of women having 'all' input in female headed households is higher than male headed households, the varying input may be due to other male household members having input or the respondents may have been females within a household but were not the head of household. Figure 18 shows that regarding participation and input in decisions of production activities regarding food crops zero respondents felt like they had 'all' the decision-making power within male headed households. It also displays that in every activity except wage and salary, women in male headed households have less input than in female headed households.

Figure 17 Participation and Input in Decisions of Production Activities FHH

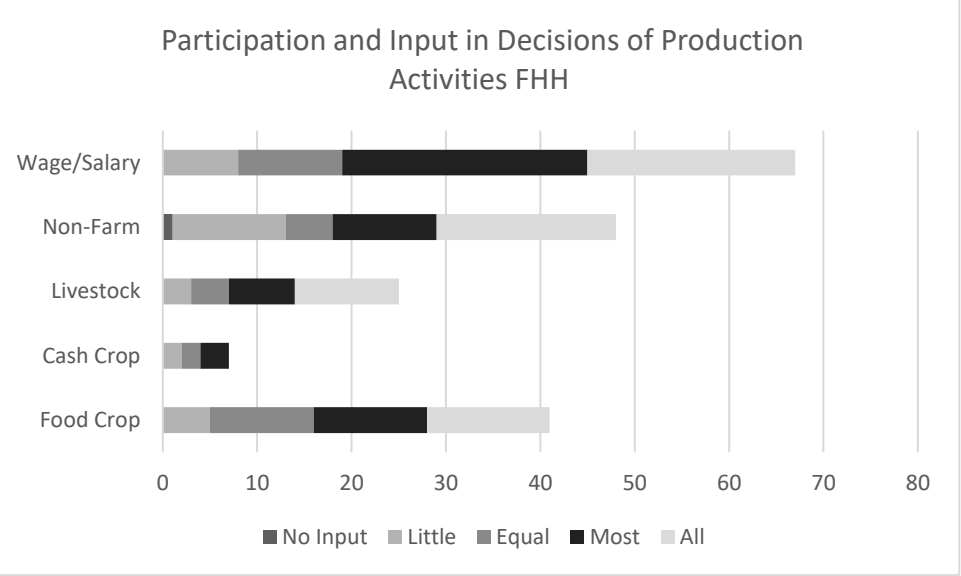
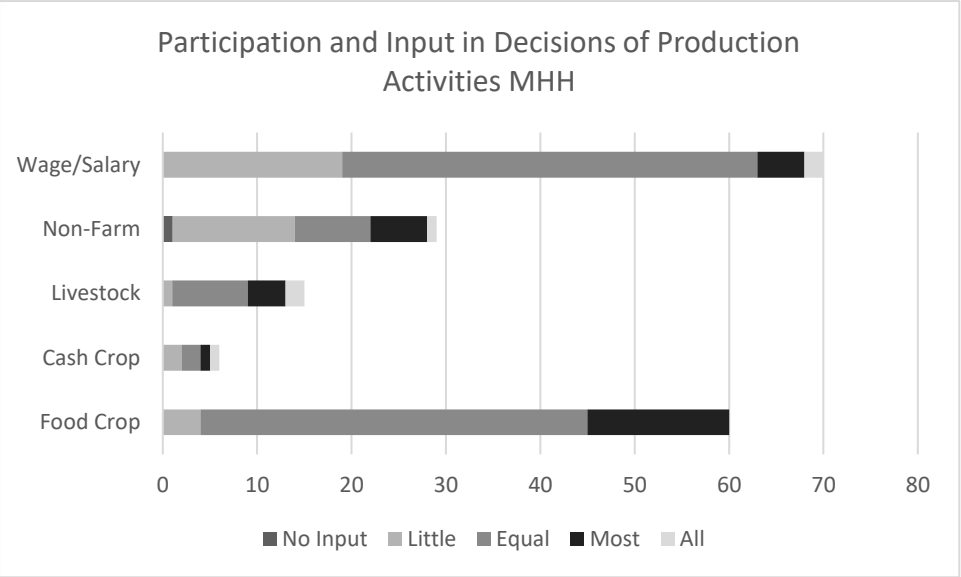


Figure 18 Participation and Input in Decisions of Production Activities MHH



When an all-male focus group was asked about decision making in the household regarding plating/selling crops, the response was that husbands are listening more and will take advice from their wives, but the ultimate decision is theirs.

A factor in participation and input into decision making is constrained by access to land. In 3 of the all-female FGDs, access to land was named one of the biggest challenges to improving livelihoods and a barrier to investment in market orientated agricultural production. Table 11 presents the mean area of land use and ownership by empowerment status. The 5DE does not include land area as an indicator, yet it includes access to and ownership of land. The area of land that empowered and disempowered women have access to, directly impacts the level of participation in production activities they can enjoy. The mean area of land owned by empowered respondents is significantly higher than disempowered respondents. Comparing the mean area of land allows for a deeper understanding of the intensity of disempowerment. The disempowered women have access to less mean land in each category displayed in Table 11.

Table 11 Land Use & Ownership by Empowerment Status

Land Use & Ownership				
	Unit	Total Sample	Empowered	Disempowered
Land Owned	ha	0.3	0.34	0.19
Agri Land		0.29	0.33	0.18
Non-Agri Land		0.03	0.03	0.01
Cultivated Land		0.29	0.33	0.18
Rented Out		0.31	0.33	0.27
Rented In		0.32	0.34	0.2

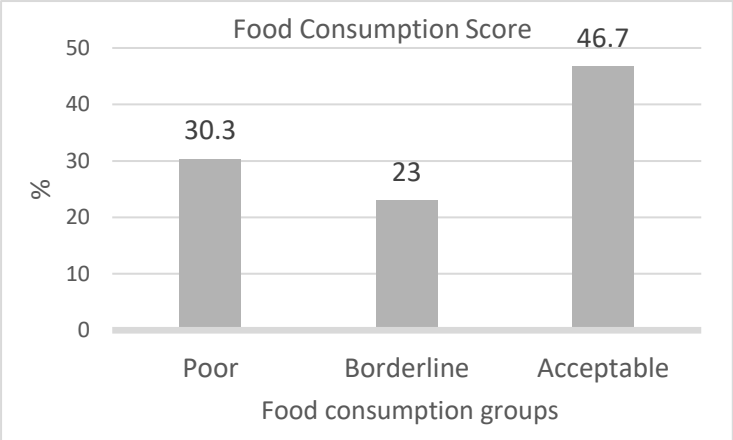
4.4 Food Security and Empowerment

This section presents the findings of food and nutrition security measurements and explores the relationship between household consumption and diet diversity with levels of empowerment, addressing Objective 2, to explore the linkage between empowerment and household nutrition levels.

The methods used to measure consumption and diet diversity patterns of households are; the Food Consumption Score (FCS) and the Household Diet Diversity Score (HDDS). The FCS is a composite score based on food frequency, diet diversity and relative nutritional importance of different food groups. The score ranges from 0-112 and is then categorised into 3 groups; poor (0-21), borderline (21.5-35), acceptable (>35). The HDDS is a measure of diet diversity based on counting the number of food groups consumed over the recall period: the higher the score the more diverse the households' diet.

Figure 19 shows that the distribution of households within each category of the FCS are 30.3% poor, 23% borderline and 46.7% acceptable, meaning 30.3% of households are reported to not have sufficient levels of consumption and diet diversity to be considered a healthy household and less than half of all households have an acceptable level of food security.

Figure 19 Food Consumption Score



The HDDS average score for the total sample is 6.2 out of a possible 12. It reflects that there is an issue with either food availability or lack of knowledge surrounding the importance of diet diversity. Table 12 presents the HDDS disaggregated by wealth group. The high middle group has the highest mean of 7.2 and the low middle has a mean of 5.9. As the low middle group included the highest proportion of households, it can be said that most of the households have the lowest mean HDDS. The difference between the mean of low and high middle should also be noted. An independent-samples t-test was conducted to compare the HDDS for wealth groups. There is significant difference in scores between the low middle (M=5.9, SD=2.06) and low high (M=7.2 SD=2.02); t (152) = 6.2, p=.001, two-tailed.

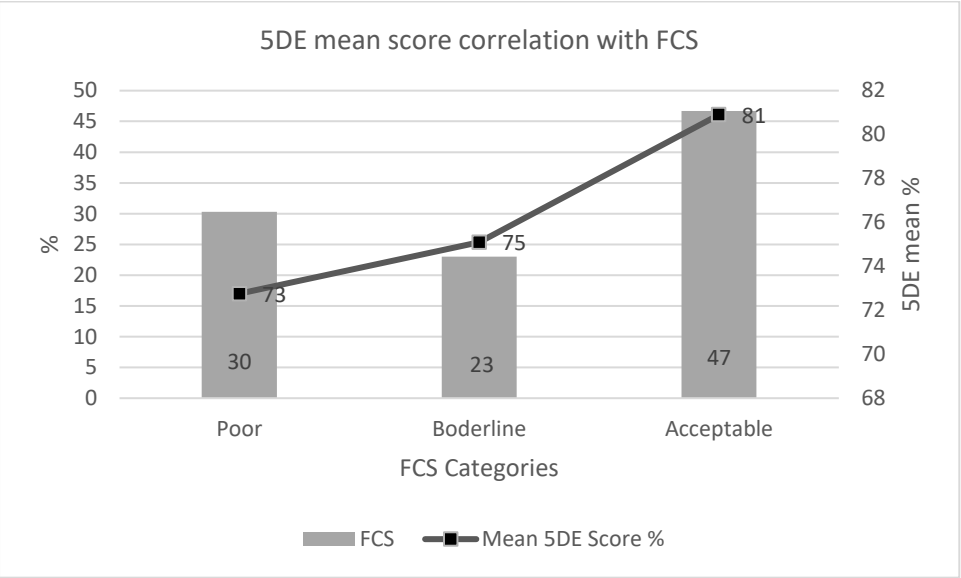
Table 12 HDDS by Wealth Group

Mean HHDS by Wealth Group		
Wealth Group	Mean	n
Low	6	2
Low Middle	5.9	115
High Middle	7.2	35
Total	6.2	152

Exploring the relationship between food consumption and nutrition, and empowerment is important as evidence shows that often the most disempowered have the lowest nutritional status. The 5DE examined access to resources, specifically their influence in decision over production and ownership. Figure 20 shows a correlation between the mean empowerment scores and FCS

categories. This confirms the hypothesis that there is a linkage between empowerment and nutrition in this area. The mean empowerment score increases as the FCS categories improve. There is a difference of 8% in the mean empowerment score between the poor and acceptable categories of the FCS. There is a correlation between the AWEAI and both HDDS and FCS, although relatively weak HDDS .248 FCS .66 and AWEAI were both statistically significant.[38]

Figure 20 5DE mean score correlation with FCS



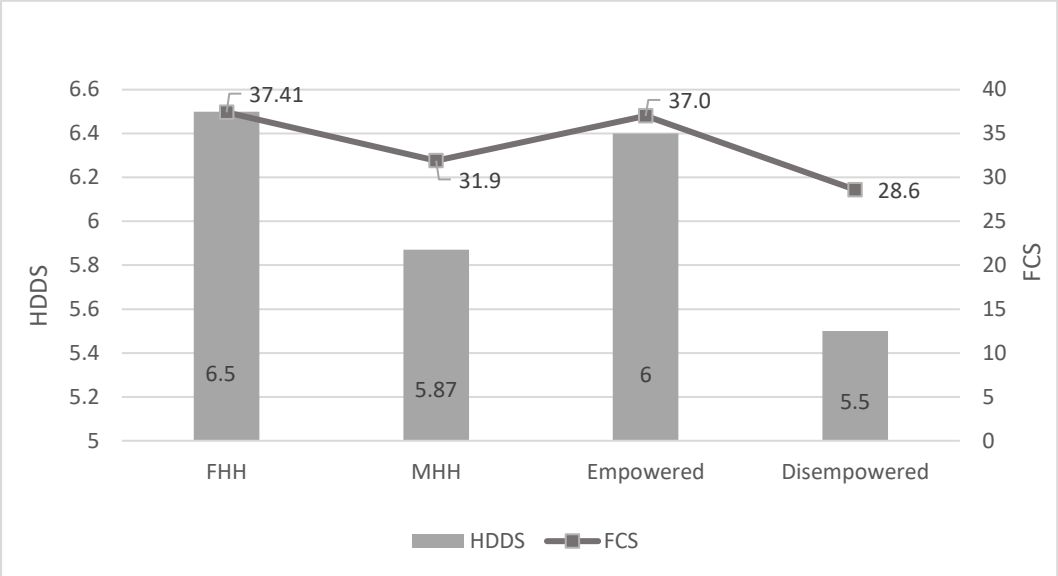
To fully understand the link, there is a need to further investigate nutritional status of specific sub-groups. Figure 21 illustrates the mean HDDS and the FCS score for female and male headed houses and empowered and disempowered respondents. The mean HDDS and FCS within female headed households is higher than male headed households. This data also supports the link between empowerment and nutrition, there appears to be a significant difference between empowered and disempowered households in relation to both the food consumption score and dietary diversity. It should also be noted that the mean FCS for female headed and empowered households is categorised as acceptable, whereas the male and disempowered households fall within the borderline category. Food security may be better amongst female headed household due to

[38] See appendix for Pearson Correlation Test

increased access to health extension or it may reflect that there are links to control over consumption decisions or intra-household allocation of resources. This is a point to be further explored.

When asked about who within the household makes decisions on what is consumed 55.9% of respondents answered they have sole control over what is eaten, 41.1% reported that it was a joint decision between themselves and their spouses, and 2.7% said it was themselves or another household member.

Figure 21 FCS & HDDS by HHH & Empowerment Status



The link between production and the amount of food consumed versus. sold is an indicator of how households are distributing their food. Often households will sell high value foods that are nutrient rich and use the income from the sales to buy less nutritious foods. If a household doesn't produce high value crops, often they cultivate large amounts of grains that will feed the household over an extended period of time: however, these crops are usually not very nutritious. Information from KIIs shows that in the area surrounding Haikmeishal, households tend to be mono-cropping, specifically wheat, which may explain the low HDDS scores there.

Table 13 shows the number of households that sell their produce and the quantities consumed versus the quantities sold. This allows us to examine which crops are planted for food and which for sale. The data shows that 117

grain-producing households consume their produce compared to 27 that sell. Wheat is the most popular crop and is widely consumed (this reflects the KII data). Teff is the only crop cultivated solely for consumption. An FGD with market traders revealed that teff is not a marketable crop as it can take up to 5-6 months to sell, so considering storage, it is not a profitable crop. According to a health extension worker in the area many women want to sell their produce and buy more nutritious foods but, they don't follow through. It is apparent households are cultivating crops for consumption primarily and sales secondarily. Proportionally, more pulses are sold. This may have negative effects on nutrition as pulses are high in protein and fibre.

Table 13 Crop Sales, Consumption & Waste

Crop Sales, Consumption & Waste							
	No. of HH Cultivating	No. of HH's Selling	Sales Min-Max	No. of HHs Consuming	Amount Consumed Min-Max	No. of HHs with wastage	Amount wasted Min-Max
Units	n	n	kg	n	kg		kg
Grains	119	27	7-300	117	10-600	35	100-500
Millet	5	2	50-100	5	100-250	3	100-300
Barley	8	3	50-100	8	75-500	2	100
Teff	15	0		15	50-150	6	100-200
Wheat	91	22	7-300	89	10-600	24	100-500
Pulses	20	7	10-100	15	5-100	3	10-100
Chickpea	6	2	50-100	4	25-50	1	100
Faba Bean	6	2	50	6	5-100	1	20
Lentils	5	2	10-25	2	6-25	1	10
Field Pea	3	1	16	3	25-40	0	

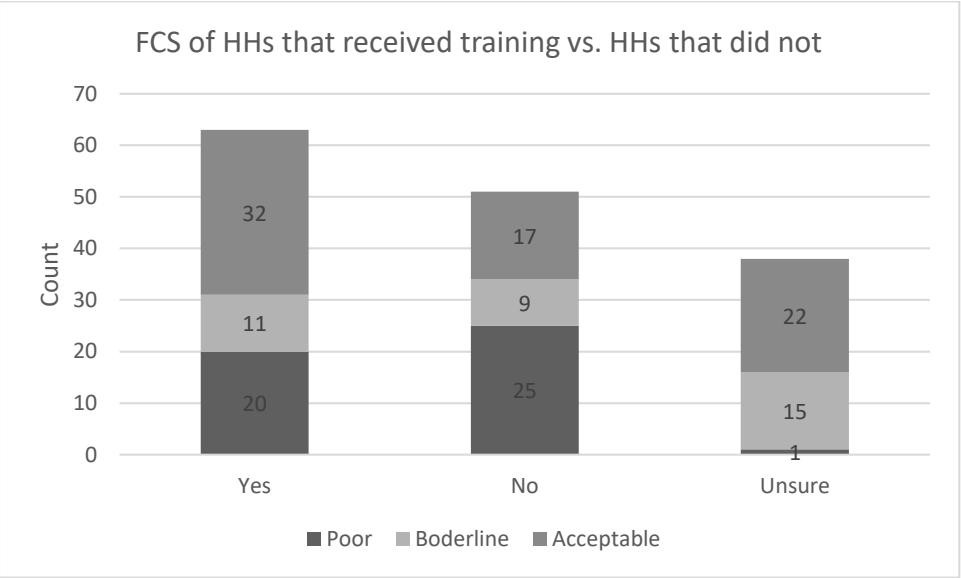
Table 13 also presents data on household's food wastage, wasted produce directly impact the livelihoods of households, whether it be food consumption or income from sales. Of the grain producing households 29.5% reported waste of produce; Table 13 shows the quantity of wasted produce is high. All 35 households reported that the primary reason for wastage and loss of produce

was pests and diseases in crop, when the issue was further discussed in FGDs it transpired that the main issues were rats, rust and American barnos (local name for a pest found in crops) in crops along with very severe frost during last year. The reasons for waste in pulses mirror those of grains. This information matches that from KIIs and FGDs, in every case pests and disease ranked 1st in shocks to livelihoods.

Aside from the physical quantity and production of food in the area, food consumption is affected by attitudes and knowledge on nutrition and health. There are numerous health extension workers in the area that provide training to the community. The respondents were asked if they had ever received health and nutrition extension work, 41.4% responded yes, 33.6% no and 25% were unsure. Of those who responded yes, 41.3% received training from the FTC[39], the remaining 58.7% received it from health workers. The training was given to 74.6% of the women themselves, 20.6% underwent the training with their spouse. From the total who received training 34.9% said that the information on nutrition had been used to influence what the household consumed the rest stated it had not influenced them. Figure 22 shows that the proportion of households with an acceptable FCS score is higher within households that have received extension training, however the number of households in the poor category remains high.

[39] Farmer Training Centre

Figure 22 FCS of HHs with & without extension training



One comment from a health extension worker reflected the survey findings; ''It is difficult to change perceptions of famers, culture is a factor, but from what I see most women do adopt the advice or training. I've followed up with random HHs and I saw an improvement, but I can't be 100% confident that it's being adopted by all households''.

According to FGDs and KIIs, the biggest changes in the last five years regarding health and nutrition in the area are; the increase in MUAC[40] screening, healthy child birth practices and the building of latrines. According to a local health extension worker, the changes are difficult to quantify. Government support has changed, it used to be focused on specific illnesses but now it is a more general approach. MUAC screening has increased significantly, and women will now bring their children to the health office and ask them to be measured for malnourishment if they are concerned about their children's weight. Diets appear to be improving, however there are many households that still receive supplementary feeding. At the time of research, it was reported that the monthly supplementary feeding had been cancelled, so extension workers showed great concern of the impact of this on families and had not been given a reason for the cancellation.

[40] MUAC is the Mid-Upper Arm Circumference, it is a method of measurement of whether a child is malnourished and to which degree they are malnourished.

The current training on health and nutrition include nutrition demonstrations, school training, lessons on the importance of diet and frequency of eating (specifically to children), construction of latrines. The extension worker interviewed admitted that the quality of diets is not good in the area. She stated that they are very behind with nutrition in the area, but they are working with farmers on all components and aspects of nutrition, hoping that the information will be used to encourage change. There is individual training aimed at different target groups, for example; pregnant women, children's health in the 1st 1000 days, 6+ months breast feeding and solid feeding for babies. The training is targeted at women but there is a willingness to include men in health trainings.

The biggest changed noticed by the community and extension workers are childbirth practices and the building and use of latrines. The treatment and care of babies has improved, baby's births are planned, and the mothers often go to give birth at the local clinics. The health extension worker interviewed reported that baby's births are now scheduled and for the first-time women have due dates.

The building and use of latrines are considered the biggest change but also the biggest challenge in terms of health issues within the community. Latrines are constructed but are often not used for the intended purpose, the space is often used as storage for animal dung, firewood or biomass. In the town of Haikmeishal it is mandatory to have a latrine built before the completion of the main dwelling. The biggest issues surrounding latrine and hygiene is in rural areas. Some households still have not adopted the use of latrines, which is having significant impacts on disease transmission; the extension worker considers the lack of awareness and training to be the reasons for this.

To fully understand the food security situation in the area, knowing where households source their food is important. Table 14 displays food groups that weren't captured in Table 13 but were used in the calculation of the FCS and HDDS. It is apparent that the respondent households rely heavily on purchased food. This is an issue that could factor into the low HDDS and possible solutions to this will be explored in the following chapter. Interestingly none of the

household's source vegetables or fruit from their own production, which mirrors the data on what households produce.

Table 14 Primary Sources of Food

Primary Sources of Food				
	Own production	Purchased	Gift	Traded/ Bartered
	n	n	n	n
Maize	3	27	4	
Rice		33		
Bread	71	70	6	
Tubers		58		
Pulses	8	83		
Red Meat	6	53	25	
White Meat	20	49		
Vegetables		92	1	
Fruits		56		
Eggs	24	43		
Dairy	8	14	13	1
Milk alone	4	15	17	
Fats	1	79		
Sweets		30		1
Coffee/Tea		146	3	

When asked about the role of women in increasing food and nutrition security, local extension workers noted a significant change. In the past five years women have become the teachers, extension workers, trainers and clinical practitioners of health issues, and sanitation for both male and female headed households. An unintended outcome of this is women's feeling of having managerial roles in the community, and confidence levels of women have also increased. As the health extension worker said in a KII ''Women's shyness is decreasing; women are starting to use their voices.''

Although women are becoming more involved in health issues, men seem to be excluded from the conversation. The community health worker addresses families on a range of issues, from heathy feeding practices, to healthy sexual behaviour to sanitation. When such training is conducted the audience is commonly women. In order to increase the levels of adoption and increase better

food and nutrition security men must not be excluded from the conversations and trainings.

4.5 Opportunities for enhanced women's empowerment and market-orientated agricultural production.

This section will explore the current attitudes and efforts towards women's involvement in market-oriented agricultural production. The potential opportunities for enhanced empowerment through such production will also be discussed.

4.5.1 Rama Extension Training Event

One of the most notable events that occurred during the fieldwork period was an organised trip to another town called Rama. This event was organised by local extension workers and ICRAF, and the event had significant impacts on the women in the area and must be included to give context to many of the conversations had in the FGDs. It is also extremely relevant to the conversation on increased participation of women in market-orientated agriculture.

The trip consisted of bringing a group of 10-20 women to visit a mango plantation in Rama, run by a woman called Haregu, who had built her plantation up from 0.5 ha to 12 ha. The purpose of the trip was to show the women from Haikmeishal that it is possible and worthwhile to invest in commercial crops such as mangos. Haregu's story was one of overcoming obstacles, as she suffered criticisms from her husband, her community and her local administration. She is now owner of one of the most profitable mango plantations in the area. Her story was used to show women how to overcome land tenure and theft problems. She described the agricultural practices she uses to make sure her soil is fertile, and the compost is high quality. The knowledge transferred from Haregu was invaluable as it played a more significant role than solely teaching the practicalities of

commercial farming, because she also used the opportunity to encourage and inspire the visiting women. The weeks following the trip to Rama, Haregu's plantation was a major topic of conversation in Haikmeishal.

When referring to opportunities in market orientated agriculture women were asked about their perceptions of Haregu, therefore when responses are based on Haregu it refers to commercial farming.

4.5.1 Opportunities & Challenges

Each time a FGD was conducted or casual conversations around agriculture was had during the fieldwork period, the women did not only inform the study of the challenges they faced but also contributed potential solutions to the challenges. This section will follow a pattern of highlighting the main constraints to increased market orientated farming, followed by the solutions that were offered to combat these constraints.

4.5.1.2 Land

The mean area of land solely owned by women was 0.38ha, whilst the mean area of land jointly owned with a husband was 0.53 ha. Women repeatedly reported that the lack of access to an area of land large enough to invest in commercial farming was the most significant challenge they faced. In Haikmeishal it is prohibited to plant trees on rented land, which restricts anyone who wishes to invest in fruit trees and doesn't own land of their own.

They also face the cultural barrier of not being able to plough the land. Women's attitudes towards this cultural norm was that they understood it was culture and it is part of their society but during 3 all-female FGDs women reported if they could plough, they would be happy and would worry less about having to depend on a man to cultivate. They said they are not physically strong enough to plough, therefore the men must do it. Some women reported they would like

to try it but are afraid of how the community would respond. Two women have already tried to plough, they experimented on the FTC plot and were extremely competent at ploughing. Although they proved their ability and were excited to continue, they stopped and have not tried again, as the community laughed and didn't approve so they stopped in fear of the community's reactions.

When asked 'if a woman came to the village and started to plough how would the community react?' responses included the following; ''If the woman ploughing was investing in agriculture the community would be happy, everyone involved would be happy, the community leaders and the government agencies would be pleased to see more female investment. The woman ploughing would be seen as strong, equal to a man. People would be happy because others would come and observe, like the respondents did in Rama, they said it would be as impressive as the mango plantation. One woman noted, ''if women do special things more people will come.''

When male FGD participants were asked the same question, they responded positively at first, they replied that they would be happy, it would lighten their workload, however it would never be accepted, as they see the physical act of ploughing as too difficult for women. It is also a cultural issue, they are not used to see women ploughing, women's role and jobs are in the households. Individually they responded that if they saw their wives ploughing, they would be proud, but they would not want the community to see her. When challenged that if individually they all accepted it and the community is made of individuals could it become accepted, the response was that woman's job is not to plough but to provide food and childcare. When asked about women investing in market-orientated crops, they responded that they would be very proud and would support them. Even when asked if it meant their wives had to be absent from the house more to tend to her crops, they said they would support them.

Two FGDs revealed that women already requested better access to land. After the trip to Rama, women became interested in investing and approached the local administration to request legal contracts for land use. During a KII it was mentioned that the challenge is not only that women are unsure of their legal

rights, but that local leaders are also unsure of land legislation and often do not respond to requests due to their lack of knowledge and information.

All FGDs, female and male, reported interest in investing in market orientated production if they have more access to land. Since their plots are small, households are focused on food crops, if they had more land, they would invest in perennial fruit crops.

According to an agricultural extension agent the main constraints of investment are cultural, however with the external influence of development organisations there has been an increased focus on the role women play in agriculture.

4.5.1.3 Lack of knowledge, support and training

Respondents were asked if they had received any extension training on marketing or adding value to commodities, 3.9% replied yes, 53.3% no, and 42.8% were unsure. Of those who had received training themselves only half said it influenced them in any way, suggesting that currently don't regard training as relevant to their role in marketable crops.

Women repeatedly reported a major challenge to them in investing in cash crops is the lack of awareness within the community around planting. There are concerns about the risks of planting high value crops only to have livestock destroy the plants.

Women living within the Gergera watershed are in a unique position, the current UCC and ICRAF project is focusing on investment in perennial fruit trees, so women have significant chances of availing support while investing. This fact was also mentioned by Haregu, who told the women to use their opportunities, as she had managed to become extremely successful by herself. She encouraged the Haikmeishal women to use their advantages to create opportunities for themselves, to demand training in new agricultural practices and to be included in the same training the men receive.

To date, the training on fruit production has only been delivered to men. Extension agents notice that there are many opportunities for market orientated production, but it has been targeted at men. Men have received training on land use, crop variety soil conversation and planting techniques. The men's training also covered the optimisation of yields.

Agricultural training targeted at women has been recently introduced. The training differs somewhat, reflecting the perceived role of women in agriculture, as women receive training on planting, fertiliser and seed use.

When the men were asked if they share what they learn in trainings with their wives, they responded, almost always. Usually the compost is made by women and children, so they share how to improve techniques, they share information because it related to the activities usually performed by women.

One respondent from an all-male FGD noted ''We get the training but it's the women or children that implement the changes.''

The men reported that they have never attended a training with women present. They said that whether it is an all-male agriculture training or an all-female health and nutrition training, all information is shared between spouses. Trainings are usually discussed afterward and the means of how to implement what they learned is discussed as is whose role it is to implement it. Men notice a change in women's role within the community, they are beginning to ask for things and have a say in their husband's decisions.

4.5.1.4 Attitudes towards women in market oriented agriculture

Those who currently sell pulses reported that they sell at the local market because it is the closest buyer. Through the FGDs, it was noted that women would consider planting more marketable crops if they had access to a market with good prices.

Of those who sell grain produce, 23 of the 27 sell at the local market, the remaining 4 sell to traders (who then sell it at a local market). The reasons for

choosing this place of sale are as follows: closest buyer (19), best price (4), always sell to this buyer (3), and contracted to sell to this buyer (1).

When asked how the community would benefit from women earning more income and having more control in the agriculture value chain (including trading and markets), responses came with tones of reservations. The main responses were that women would happily invest in marketable crops to increase income, but only after they learn more and they would feel more comfortable if they had someone do it before them, that they could use as an example. If they had a figure like Haregu they would feel more confident in investing.

A woman from the farmers FGD agreed with this sentiment '' She could be our teacher, we would learn from her, it would be the best.''

Participants in the all-female market trader groups reported that women having more control and higher incomes would encourage women to 'wake up' and increase community participation, they would have better quality of life and could change traditional roles.

The market trader FGDs also revealed that those involved in trading would like to see an increase in cash crops as the current grain-based markets are unstable. Attitudes toward women independently farming marketable crops was positive from both men and women.

A common trend noticed in discussions around investment and production in cash crops was the willingness towards collective farming.

Women are extremely interested in collective farming but recognise the challenges in organising such activities. Land plots are limited and often far apart, too far in their eyes to form a co-operative, if they had access to communal land they would invest. Many women said the only way in which they would invest in market orientated agriculture is in a group.

There is caution towards cooperatives in the area, FGDs revealed that a men's group attempted to establish a co-op but it failed: women are concerned that theirs might also fail. It showed them that not everyone agrees, and this can

lead to bad investments. However, if they knew how to make it successful, they would like to try to organise a women's only co-op.

Three women from the market trader FGD approached local leaders for support to set up a trading group but received no response. However, they remain motivated, they also want to reflect on exactly what the focus will be.

Women reported that in a village nearby a group of women created a weeding group, it started as a way of distributing the workload of land preparation and maintenance and has now become a model for others. The fact that women in Haikmeishal are discussing neighbouring village's agricultural practices illustrates the power of information sharing. This is also reflected in the discussions surrounding the trip to Rama, as women have been sharing the success stories of women starting their own businesses to every spouse, neighbour and family member.

When market traders were asked how increased women's participation in market orientated agriculture (mostly referring to fruit production) would impact their livelihoods, they reacted positively. They reported that up to now there is no demand for crops like mangos/avocados, but if there was a demand, they would be pleased to support women in the market, they couldn't imagine any negative impacts. They reported that guava is a more profitable fruit, the low demand for avocado's could be due to the community's lack of awareness of planting and using it for food.

Women repeatedly reported interest in collective action. They wish to set up a women's farming association, they want to collectively increase their incomes and make sure everyone had equal shares and equal participation.

A lady from the all-female FGD on the trip to Rama observes ''It would change our lives, we could invest together, we would have opportunities to become rich, and other women would follow us''

4.6 Conclusion

The livelihood strategies of the respondent households are reliant on agriculture in one manner or another. Regarding the wealth status of the sample, the majority of households fall within the within the low middle category, followed by high middle and low. None of the households qualified within the high wealth group, this was to be expected as the sample was highly dependent on the PSNP[41].

Land is one of the defining measurements of livelihood status. Although women have access to land, the area of land they have access to is smaller than men. In every instance, except renting out, male headed households have access to a higher area of land than female headed households. Access to land is one of the primary constraints to female farmers in this area. Livestock ownership also reflects this trend, there is no significant different in the number of women that own livestock but there is a different is how many and what kind of livestock.

The sample's involvement in the PSNP is extremely high at 94.1%. This may be due to severe frost, and low yields because of pests and disease in crops. PSNP is usually available from January to June, the availability and PSNP period was changing, making it more difficult for households to access the programme. The reasons for the change in PSNP availability was unclear, many respondents guessed it may be political restrictions, but the community have not been officially informed.

During the months of August to October is the most critical time in relation to hunger, this matches with the time of year households rely most on purchased food. It also corresponds to the period before the harvesting of rainy season crops, and after the harvest of dry season crops in May and June. It was also the period in which PSNP was unavailable A combination of all these stresses led to a 3-month period of critical time for households.

Empowerment measures show that 71% of respondents are empowered. The 5DE score was lower in female headed households that in male headed

[41] Productive Safety Net Programme

households. This is interesting as it is often argued that the households with only female decision makers are more likely to be identified as empowered by default. The findings of study may be positive as when asked about ownership of assets women in male headed households had access to more assets and claimed ownership. This is a reflection of agency and empowerment.

The difference between empowerment scores and wealth groups show there is a significant gap in the livelihoods between the empowered and disempowered. The findings also suggest that women living in female headed households experience a slightly higher intensity of disempowerment.

The largest contributor to disempowerment is workload/time allocation. The second largest contributor in male headed households is access and decision-making power to income from various productive activities, followed by production and assets.

Regarding nutrition levels of households 30.3% of households are reported to not have sufficient levels of consumption and diet diversity to be considered a healthy household and less than half of all households have an acceptable level of food security. The findings illustrate a clear relationship between empowerment and food and nutrition security. The most disempowered women have the lowest nutrition scores. In the area, there has been significant improvement in health practices in recent years, the main challenge remains latrine use in rural households. In the past five years women have become the teachers, extension workers, trainers and clinical practitioners of health issues, and sanitation for both male and female headed households. This shows the link between including women and positive outcomes for the community.

Although there is an evident willingness to participate in more market led agriculture the constraints, they face are hindering their investment. The main challenges they face is access to land, they do not have access to a enough land to invest, this is coupled with the cultural barrier of not being able to plough, leaving women in all female households unable to cultivate. Before investing women are demanding legal land contracts. Lack of training and knowledge is another major constraint to women, they are eager to learn new agricultural

technologies and practices but have much less access to training and extension then men. Concluding that although women are faced with constraints, they remain willing to participate in new ways of achieving improved livelihood outcomes, and to mitigate the risks involved they wish to invest together, to face the challenges and share the work burden as a group.

Chapter 5 Discussion

5.1 Introduction

The aim of the study was to measure current levels of empowerment, explore the link between empowerment and food and nutrition security and to access the opportunities of enhanced empowerment through market-orientated agriculture.

The main research questions are:

- What are the empowerment levels of women involved in agriculture?
- Is there a link between empowerment levels and food and nutrition security levels?
- What are the current opportunities and challenges that face enhancing women's empowerment in the Gergera area?

This chapter discusses the main findings of the research. The discussions are based on the research findings and literature review and relate to the research questions and objectives of the study.

5.2 Livelihood strategies of households

The results on livelihoods strategies within the study location indicate that there is a shortfall of both income and food from agricultural production to sustain most households over a twelve-month period. The high number of households reliant on the PSNP and other income supplements reflects this. It also confirms the information given by extension agents before the wealth group calculation: households that rely on PSNP are usually the poorest group in the community. The diversity of 'other income sources' reflects the capabilities of the households to diversify their activities to increase their income.

According to the respondents, livelihood status has improved in the last five years, and the main changes can be attributed to the high level of extension training deployed in the area. Households have adopted improved agricultural practices, such as the use of improved seed and fertiliser. The change in input use can be attributed to local regulations, as five years ago the use of organic fertiliser was mandatory, but now they volunteer and encourage farmers in other areas to use it as they have noticed significant benefits. The main change in the area is the positive attitude towards new technologies.

With the increase in knowledge households now prepare and expect two agricultural seasons, whilst five years ago they only farmed during the summer season. Although access to irrigation has increased in the general area, the majority of the respondents do not currently have access to irrigation, however they have noted the impact of irrigation on the community overall. Households have adopted other technologies that have improved their productivity. For example, line planting has resulted in increased yields and water conservation, and this was repeated through all FGDs.

The findings show that although there has been reported improvements households are still restricted by access to land, inputs and rely heavily on their production for consumption. As mentioned in the finding chapter, the sample was manly living in lower areas and experience water shortages, they would like to see a dam built or percolation pits.

In terms of risks and hazards to livelihoods and production, pests and disease were ranked highest. It was reported that before twelve months ago the situation was more stable. In the last year farming has become more risky. Rust in crops was extremely severe. Many households sowed improved wheat seed and it all became infested with rust. The entire crop was affected and productivity was low and the biomass was of poor quality, so much so they didn't use it for animal fodder. During a FGD it was mentioned that if they had no other option they would eat the infected wheat but if they could avoid it they would. The fact the last twelve months seemed so unstable may point to the high levels of PSNP particpation, if households lost their wheat harvest and had

little animal fodder this would signifanctly impact their ability to meet their livelihood needs.

Referring to figure 7, the seasonal calendar clearly signifies the stress period in the last twelve months. Between August and October households suffered from low rainfall, food shortages and shocks to their production, it was also the period when the PSNP was not available to them. Critical periods can force households to seek extra income from alternative sources, this may be a contributing factor to the high dependency on remittance from abroad.

The information on remittance was an unintended finding, but of significant interest. The increasingly popular trend of young men travelling abroad to earn money illegally is a great concern, it not only encourages risky behaviour for remittance it is also causing a loss of workforce within the community. The community is not in favour of this trend. FGDs revealed that an increasing number of young men are losing their lives to risk a chance at prosperity. The community fears that there will be a decrease in population. The dangers involved in these trips abroad is the primary concern of households who have family members involved. Although there is concern, there is also an acknowledgement that many of these young men have no other option. The lack of employment opportunities in the area are forcing them to risk their lives. The community would like to see a change and potential investment in industry close by. Women who travel abroad for work also face great risks, however women who travel are reported to go through legal means, the young men in the area travel illegally, increasing the risk to their safety.

Interestingly, during secondary desk research, the findings of a study conducted on agricultural practices in Ethiopia reported other means of income. The study looked at various regions in Ethiopia, one of the regions was Atsbi-Wemberta which is close to watershed area, of the nine regions studied, this region was the only to report poor, middle wealth and rich households listing migrating for work as an income source (Aregu, Puskur and Bishop Sambrook, 2015).

5.3 Empowerment levels

The assumption frequently made is that improving livelihoods leads to women's empowerment. Figure 8 shows the relationship between wealth groups and empowered and disempowered women, the high middle wealth group is made up of almost only empowered women.

The 5DE score of the sample is 0.74. In comparison with other 5DE score from other baseline studies in Bangladesh, (Ahmed et al., 2017), Ghana, Kenya and Liberia (Malapit et al., 2014) Gergera ranks highest. In terms of overall baseline studies, the 5DE score of 0.74 is considered to be ranked as medium. It is important to note that considering the sample is referred to as the poorest in the community, and assuming the correlation between livelihood status and empowerment, other women in the area, not captured in the study, may have higher 5DE scores.

The main contributing indicator to disempowerment for women in both male and female headed household is workload. Chapter 2 discusses whether increased empowerment leads to an overburden of work or results in fewer time constraints (Gillespie, 2013: Smith et al., 2003: Diiro et al. 2018). This study's findings would suggest the latter, the more empowered a woman is the larger her workload. Workload is not mentioned explicitly as an aspect of empowerment, merely an outcome of empowerment. However, the issue is repeatedly mentioned in results of empowerment studies. Increased workload as a by-product of empowerment could lead to empowerment levels decreasing. If a woman has excessive workloads, this will limit her achieving other empowerment indicators, like attending social events, group/community meetings or earning income. Another measure of empowerment is mobility and freedom of movement, increased workload also has a negative impact on this.

When women were asked if the amount of labour that goes into a certain crops production influence their decision in what they plant, the responses were similar across all FGDs and KIIs. They plan their crops considering cost of production and then labour. They plan out each activity required in the

production and then decide what to plant, it was mentioned that often they make plans and their husband decide to plant a different crop.

In regard to this study and exploring enhanced empowerment through market orientated agriculture one could argue by doing so may add to the burden of workload, and indirectly have an effect on children's workload in the long term. A possible solution is to facilitate a conversation between men and women on burden sharing. This may be done through targeting household's as a unit rather than men or women for different aspect of extension work. For example, the Relief Society of Tigray (REST) have begun to deliver extension work to both men and women within the same household, around health, nutrition and agriculture.

Referring to figures 17 &18, participation and input in decisions on production activities, the only activity that women had no input in decision making was non- farm activities. Interestingly 61.5% of women in non-agricultural households are disempowered. However, it would not be appropriate to make an assumption that there is a relationship between those involved in non-agricultural activities and disempowerment as the A-WEAI is designed to measure empowerment in agricultural households. In other activities such as wage and salary and food crop production the majority of respondent's either have equal, most or all input to decision making. The true sense of empowerment is reflected in Kabeer's (2008) philosophy on building women's capacity to make choices, leading to empowerment that facilitates their capacity to exercise control over their own lives and to determine their relationships with others, and their ability to participate on equal terms with men in reshaping the societies in which they live in ways that contribute to more fair and balanced distribution of power and possibilities.

One of the hypothesised outcomes of increased empowerment is that women become more self-confident and have greater self-esteem (Blumberg, 2005). At different points of fieldwork the change in women's confidence levels in Haikmeishal was mentioned. The KII with the health extension worker revealed that involving women in the roles of trainers and clinical assistants made women feel more confident, as they had a role in the community, and it

had a noticeable effect on how the saw themselves within the community. During the all-male FGD this was discussed, and men felt like their wives had more confidence and ability to voice opinions to her husband. They noted that 5 years ago this was not the case and now a woman has more control over her husband's actions. It was also extremely clear that by including women on the trip to Rama to visit the mango plantation and being in the presence of an extremely successful woman had a huge impact on the women. Following the trip, women were telling everyone around them how inspired they were, they didn't believe it was possible for a woman to achieve so much.

The fact that there is a link between confidence and empowerment and the women in Gergera are becoming more confident and are undeniably ready to empower themselves, their confidence may lead to empowerment rather than empowerment leading to confidence. Also, the evidence shows that by including women in community activities and allowing them to reposition themselves within the community leads to greater levels of confidence and will lead to women helping each other to improve their livelihoods. The increased confidence in women involved in health extension suggests that if women were included in agricultural training, they would be more confident to invest and engage in market orientated agriculture. There is an extremely positive attitude towards empowerment in the area, respondents are encouraging each other and although there is a lot of reservation and fear, it is outweighed by a strong sense of change. This finding reflects Kabeer's (2008) theory, empowerment touches on women's sense of self-worth and their social identity; their willingness and ability to question their subordinate status and identity. However, it should be acknowledged that women behaved enthusiastically and confident in women only focus groups, but the respondent women, female community leaders and extension workers quietened when men were present, especially in community meetings.

5.4 Empowerment and Food and Nutrition Security

The findings show a correlation between levels of empowerment and the food and nutrition security of households. This result is in line with the secondary data collected in chapter 2. There is a clear linkage between food and empowerment.

There is also a correlation between FCS and HDDs scores for female and male headed households, as both indices show lower scores in male headed households on average. This suggests that women may have more decision-making power of what is consumed.

It is also evident that households that received nutritional and health extension trainings have a better quality of diet and higher consumption levels. Figure 22 shows that the majority of people who have had training fall within the acceptable category of the FCS, it is also concerning that there remains a high proportion of the group that received extension that fall within the poor category. Of those who did not receive any training the majority fall in the poor FCS category. This suggests that there is a relationship between adequate training and increased information to better food and nutrition security. However, similarly to agricultural and market training, the groups are not mixed. Nutrition and health training are targeted at women, including men is necessary and would have positive outcomes. REST is currently engaged in couple's extension work, including women in the agricultural training and men in the health trainings, it has proven to increase overall health and productivity. REST is also working on a project to encourage households to have micro gardens, this ensures better nutrition and promotes using diverse crops.

While speaking to the health extension worker the chart for supplementary feeding was observed, it showed that between January and March 68 children and 45 pregnant women received supplementary feeding. When discussed it was found that all supplementary feeding had been cancelled since April and extension workers were not informed as to why.

An interesting finding from the data collected on crops grown for food is the high levels of food wastage. The data mirrors what was reported in KIIs and FGDs, means of protecting harvested product and mitigating damage to growing crops is crucial to increase yields, food availability and income. Adequate storage is a major constraint, many people in the community reported problems with rats. They don't have effective traps and don't wish to put chemicals near their food store. The investigation on levels of wastage was added during fieldwork as many reports of rats was noticed and the study allowed to explore the issue further.

5.5 Opportunities and constraints to enhanced empowerment through market oriented agriculture

The role of women in agriculture is defined by the laborious tasks of weeding, harvesting and planting. Yet beyond the practical activities on the land there has been a notable increase in the number of women going to college to train to be agricultural extension workers. The current female extension worker reported that the change is not necessarily happening in the fields, while she trained the majority of her classmates were women. She also noted that she is seeing an increasing number of female agricultural experts and agency workers. This is going to have an impact of women in agriculture as having women in training positions will lead to women's increased participation.

Although there is a current push for investment in perennial fruit crops, local extension workers feel that the future of women in agriculture is in livestock raring. It has already begun, especially in dairy production. According the extension workers in the area, women are willing to get more involved in commercial agriculture and note that the dairy industry is becoming more female dominated.

The concept of being led by example has been mentioned repeatedly through the study. Women want to get more involved in market orientated agriculture but would feel more comfortable if they had someone showing them how to do

it and that it could be successful. This idea of having a 'model farmer' to use as an example was brought to attention in each FGDs and KII. The subject was always mentioned after a discussion on equality within the community, women acknowledge that the community is becoming a more equal environment and therefore they feel more powerful, they realise that they have more opportunities than before and that they can accomplish more. However, they feel they can only accomplish more if they had more information and training on how to make their investment successful, their ideal means of this is to follow by example. Women want to learn from each other yet are afraid of taking the initial risk of investment. This highlights the important of events like the trip to Rama, they are seeing the potential and relating it to their own lives. The fact they are eager to work and learn from each other is another facet of empowerment.

The main constraint to farmers both male and female in the area is access to a piece of land large enough invest on. Extension workers are confident that if women had more land, they would become experimental and show greater initiative, thus leading the way and encouraging more women to participate in market orientated agriculture. Having women that could share success stories in the area would be the start of women's participation.

A woman who had been on the trip to Rama said ''I was conflicted about how much I can do as a woman, but after meeting Haregu I am excited. I keep comparing what she did against my abilities, and I realised I can do this. She forced me to believe in myself. I've already bought seedlings, costing 5 Birr each and I've already planted them. I picked avocado because it was suggested to me and researchers told me it had a good yield.''

This shows the importance of representation, many of the women who went on the Rama trip had never seen or heard of a woman achieving so much, the fact that she was extremely poor and alone when she started her business showed the women the possibilities they could have.

When the possibilities of having a successful business like Haregu was discussed in FGDs the main themes that emerged were:

- investing is too costly/ lack of access to land,
- investment was a new concept,
- impressed that a woman achieved so much,
- self-doubt,
- want training before they invest,
- have legal land tenure before investment.

The most common response to potentially investing was that the women didn't think it was possible for a woman to have the capability to achieve so much. Some women still don't think they have the abilities and presume that Haregu is special in some way. This rhetoric reflects the importance of confidence and empowerment.

Although self-belief in their own capacities hasn't been realised yet, the interest in market orientated agriculture has. Women have mentioned on numerous occasions that they have asked community leaders for help in finding land, support for trading groups and help in security legal tenure. In each case it was reported that the local leaders have not responded. One woman who was inspired by the Rama plantation asked for assistance to find a plot of land that was suitable for investment, she never got a response. The idea that it is not only residents in the area that are unaware of land legislation and their rights to land, but also the community leaders and therefore have no advice to share.

The participation in market led agriculture would be significantly higher if land tenure was secured, women are hesitant to invest on rented land as they worry that the landlord will terminate their agreement and they will lose their investment. It was reported that a woman had planted on rented land and was told by her landlord to move her plants because the land was wanted for wheat cultivation. This kind of insecurity is majorly hindering investment.

The most popular method of investing is in collective groups. This is the main trend noted in the findings regarding enhanced empowerment through opportunities. Women are not willing to invest as individuals but are extremely willing as part of a group. The thought behind collective farming is that there is less risk involved.

When discussing collective farming in a FGD one respondent states '' We are looking into collective farming, we want land together, we would have more power than even a man if we were together.''

There are physical constraints to women's participation in commercial crops but also cultural constraints. Women feel like they are judged or laughed at when they speak up about having ideas for investment. The community doesn't believe in their abilities and therefore the women start to believe it too. Women argued that even if they approached a landlord and ensured them of stable rent in return for a legal rent agreement and explain that they will benefit from the profits of their investment they will still be denied.

Regardless of the constraints they face, the women of Haikmeishal have planned their entry into market orientated agricultural industry. A group of women outline their plan for future investment. They want to ensure their land rights and involve the community leaders so they too are invested in the idea, then they will identify local seedling nurseries and ask for ICRAF's support. They plan to invest in guava and avocado because they can look at the existing avocado nursery and learn from that. It will be a collective of women from the area.

These women are also vehicles for change, they intend to share the information they have learned with others and use it to help empower each other.

A woman during a FGD spoke of her experience ''We have told absolutely everyone about her [Haregu], our neighbours our sisters, everyone! We told them all about what we can do for ourselves, we can imagine what we could achieve, and we want to share this with everyone. We want others to have an incentive to do like us.''

Apart from the main challenges of land and initial investment capital other concerns in participating in market led production reported were; transportation to markets and loss of investment due to failure.

When asked about how the community as a whole would benefit from increased women's participation and control in the agricultural value chain, one respondent answered ''This can help them to wake up and encourage

community participation. This will encourage women to become rich and leave the traditional roles of housework. Break the system of poverty.''

Due to the lack of access to land women are beginning to look at alternative livelihoods that are less dependent on land. A group of women are not making enough income from their small plot of land and are attempting to set up a tailoring business. In general, they are encouraging young women to try organising a collective to start small businesses together. However, the sentiment seems to be that the area of production or type of business is not as important as doing it as a group. Their priority is to be in a collective.

The discussions of collective group membership gave clear examples of how participation in groups could be empowering through new access to information, resources, and connections with others. Thus, group membership is suitable indicator of collective agency, directly linking to higher empowerment levels.

Many women are also encouraging young women and girls to get good quality education, they see the connection between education, economics and power. As one woman describes ''if a woman is educated, particularly economically they automatically become powerful, both inside and outside the household, the more educated a woman is the more likely it is for a household's mindset to change. If a woman is educated, she can have more decision-making power in the household.''

Education is spoken about in association to power, they see that in agricultural households if a woman is educated, they are more equal to men than if she were uneducated. The type of education is also important, they feel a woman should be educated politically and economically. They also feel that education is important in regard to raising a child, if the mother is not educated the children will be influenced by an uneducated perspective.

Education has also proven to be a significant contributor to women's participation in commercial production. A study in Kenya (IFPRI, 2012) found that increasing the primary education of women farmers not only make them

more likely to plant high value crops but also encourages other women to adopt the practice as they are more likely to copy women than men.

Women want to teach their daughters how to be more powerful and achieve their potential and they are seeking ways to lead by example, whether it be market orientated agriculture, small scale businesses or future education.

Awareness of potential benefits to increased income through marketable crops is high. Women are enthusiastic about bettering the community in general they want everyone to have access to better income. They were inspired by Haregu and that has led to a huge surge of interest in market orientated agricultural production, they see the potential in empowering themselves and others. There main role is to empower each other and take control over their lives.

A final reflection from a FGD participant ''She [Haregu] made us aware how women can empower others. She was so encouraging; we want to pass this to our daughters '' shows the eagerness to empower each other.

5.6 Conclusion

The findings on livelihoods strategies of respondents show that they are not meeting their livelihood needs, there is a shortfall of both income and food. Overall respondents reported that livelihood status has improved over the last five years, mainly due to the presence of development interventions and the increased access to extension and training. Households have since adopted improved agricultural practices. The main challenges facing the community is access to land and increasing pests and disease that has caused loss of produce. It was noted that farming was stable over the previous five years, however in the last twelve months have been riskier. The seasonal calendar indicates the stress period in the last year has been between August and October.

This stress period and the shortfall of income and food from agricultural has led to households diversifying their income activities. A significant proportion of

households rely on income from remittance, which is currently becoming more popular, and extremely dangerous for the young people traveling abroad.

The overall 5DE shows that the households score 0.74, when compared to other communities in developing countries it is ranked as 'medium'. The main contributing factor to disempowerment for all respondents is workload. This study suggests the more empowered a woman is the larger her workload.

One of the hypothesised outcomes of increased empowerment is that women become more self-confident and have greater self-esteem. At different points of fieldwork, the change in women's confidence levels in Haikmeishal was mentioned. It was evident from qualitative data that women both see each other as more confident and when they are included in community activities and extension work, they become more confidence in their abilities. This links to the assumption that the respondents are prepared to empower themselves and one another. Their confidence may lead to empowerment rather than empowerment leading to confidence

The findings show a correlation between levels of empowerment and the food and nutrition security of households. There is also a correlation between FCS and HDDs scores for female and male headed households, as both indices show lower scores in male headed households on average. This may be due to females receiving more health extension services. It is also evident that households that received nutritional and health extension trainings have a better quality of diet and higher consumption levels.

The role of women in agriculture remains mainly at production level, however it should be noted that women are beginning to place themselves beyond the practical roles as there has been a notable increase in the number of women going to college to train to be agricultural extension workers.

The main constraint to farmers both male and female in the area is access to a piece of land large enough invest on. Extension workers are confident that if women had more land, they would become experimental and show greater initiative. There seems to be a nervousness around investing as an individual,

the idea of collective investment was the most repeated suggestion given by respondents.

The willingness to invest as a group, matched with high levels of awareness of potential benefits to increased income through marketable crops. Women are enthusiastic about bettering the community in general they want everyone to have access to better income. They are prepared to participate in market led agriculture as a group to improve their livelihood outcomes.

Chapter 6 Conclusions

6.1 Introduction

This chapter presents the conclusions of the study. The conclusions are based on the research findings and discussions and relate to the overall aim and objectives of the study.

6.2 Conclusions

The main livelihood strategy of the sample is subsistence farming; however, the current levels of production are not meeting household's livelihood needs. Although, there has been reported improvements in agriculture and livelihoods status, the last twelve months proved unstable in terms of production and food security needs. This forces households to depend on the PSNP. The main shocks to livelihoods were pests and disease and severe frost, all damaging crop production. However, households responded by diversifying their income sources.

The 5DE score is ranked medium in comparison with other countries. As a baseline study conducted within the poorest households in the area, this shows great potential in increasing and continuous empowerment. The major obstacle facing higher empowerment levels is the workload that burdens many women in the area. Empowered women were found to have a higher workload than disempowered women. The most positive outcome of this study, is that when asked what has changed within the community over the past 5 years, the response was 'a visible increase in women's confidence'. Women are gaining self-esteem and are beginning to demand what they need to improve their livelihoods. Women are beginning to empower each other.

The main challenge that faces both women's empowerment, improved livelihoods, food and nutrition security and women's participation in high value

crop production is access to land. Land sizes are currently too small for investment. The area of land is not the sole problem, acquiring legal land agreements is hindering women's investment and commitment to market orientated agricultural production. The risk of uncertainty is discouraging them to take that initial step. The lack of awareness and information surrounding land tenure is not isolated to farmers but is a problem within local administration.

Introducing women to possibilities, was the most significant and effective way to encourage investment in marketable crops. By exposing women to successful and empowered women that offer advice and practical knowledge, leads to women feeling recognised as a crucial part of the community. This will have positive effects of women realising higher levels of empowerment.

There is a very distinct relationship between levels of empowerment and levels of food and nutrition security. The more empowered a woman is the healthier the household in terms of food security. Extension training on nutrition and health seems to be having an influence of households; however, there is still progress to be made. The inclusion of women in extension and training roles is having a direct impact on women's confidence within the community and needs to continue to be encouraged. To fully realise food and nutrition security men should be involved in the extension work also. By delivering health and nutrition training to women only and agricultural and market training to men only, it reinforces the existing biases in the community. Methods to reduce food wastage are needed urgently as households are losing produce due to pests and disease.

Although the traditional role of women in agriculture remains unchanged, the role of women studying and gaining positions of agricultural extension workers is extremely positive and will lead to women gaining more control in the agricultural sphere.

The inclusion of women in the conversation of market-orientated agricultural production is already showing results. Including women in activities that show the potential of high value crop production will ensure interest and investment.

Women who become more in control of their income and what decisions they make will become more empowered and this will benefit the entire community. The link between empowerment and poverty reduction has been proved, therefore promoting women's economic empowerment in Gergera should be classed as a priority.

The attitude towards market orientated agriculture as a means of enhancing empowerment is extremely high; however, involvement will remain low until access to land and cultural barriers are addressed. Women also want to gain more practical information and training around agriculture. There is a demand for more inclusive agricultural extension. Women and men both need to be present at all training, as until this is done women will not invest. There is also a significant desire for collective farming, as women are adamant that group investment is the best way to gain opportunities.

The desire for change and willingness to achieve it is extremely high in the study area. Women are now realising the opportunities they have and more importantly they are realising their capabilities. Self-belief in their potential to make better lives for their families is the driving force behind the women in Gergera. They have been introduced to the possibility of improving their livelihoods and creating something sustainable and secure by exerting their abilities and have stated that they will not stop until it is realised.

6.3 Contribution to research area

This study successfully measured women's empowerment levels within agricultural production, explored the link between empowerment and food and nutrition security and assessed the opportunities for enhanced empowerment through market orientated agriculture. This research contributes to the knowledge of how households adapt their livelihood strategies to take advantage of the surrounding environments and attain their livelihood outcome through resilience and ability to mitigate shocks. This study provides a comparable measurement of the five dimensions of empowerment in the

Gergera area. It also displays evidence that there is a relationship between women's economic empowerment and the food and nutrition security of households. It also has highlighted the potential and success of including women in extension and community activities and offers a platform on which opportunities for increasing market led agriculture can be explored. It is built on quantitative data but also offers the perspectives of the women in the area through qualitative data collection.

This study is the first to apply the A-WEAI within this region of Ethiopia and therefore contributes to a wider understanding of women's empowerment in differing regions of Ethiopia.

It presents primary research findings and also relevant secondary findings to ensure an in-depth understanding of the ideas, concepts and practicalities of the subject area.

6.4 Limitations of the study

The main limitation to this study is the exclusion of men from quantitative data collection. Although the measurement of the five empowerment dimensions can be compared to previous and future studies, this study does not provide a measurement of men's empowerment. The women's empowerment levels present only one side of the data, the relativity of the women's 5DE score compared to men who provide a deeper understanding of the empowerment status of women in the community. As would the calculation of the GPI.

As a result of time and resource constraints the sample size was limited and thus not proportionately large enough to fully reflect all the beneficiaries of the project. It should be recognised that additional sampling might have yielded other results and therefore cannot provide the basis for generalisation.

6.5 Suggestions for further research

Drawing on the findings of this study, there is an opportunity to further explore women participating in market orientated agriculture as a collective group. As this is a baseline study, research can be done to contribute to the development of understanding surrounding each dimension of empowerment and the affects on livelihoods and agricultural participation. It would also be beneficial to examine the relationship between empowerment and nutrition to gain deeper understanding on how dependant the relationship is and also explore potential methods of facilitating both an increase in food and nutrition security and women's economic empowerment in agriculture simultaneously, whilst contributing to improving livelihood strategies.

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Appendix 1

The five domains of empowerment in the WEAI (5DE)

Domain (each weighted 1/5 of 5DE sub-index)	Definition	Indicators	Weight of indicator in 5DE sub-index
Production	Sole or joint decision-making over food and cash crop farming, livestock, fisheries as well as autonomy in agricultural production	Input in decisions Autonomy in production	1/10 1/10
Resources	Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit	Ownership of assets Purchase, sale, or transfer of assets Access to and decisions on credit	1/15 1/15 1/15
Income	Sole or joint control over income and expenditures	Control over use of income	1/5
Leadership	Membership in economic or social groups and comfort speaking in public	Group member Speaking in public	1/10 1/10
Time	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload Leisure	1/10 1/10

A-WEAI					
Dimension	**Indicator**	**Survey Questions**	**Aggregation method**	**Inadequacy cut-off**	**Weight**
Production	Input in productive decisions	How much input did you have in making decisions about: food crop farming, cash crop farming, livestock raising, fish culture? To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: food crop farming, cash crop farming, livestock raising, fish culture?	Achievement in two	Inadequate if individual participates BUT does not has not at least some input in decisions; or she does not make the decisions nor feels she could.	1/5
Resources	Ownership of assets	Does anyone in your household currently have any [ITEM]? Do you own any of the [ITEM]?Agricultural land, Large livestock, Small livestock, Chicks etc; Fish pond/equip; Farm equip (non-mech); Farm equip (mechanized) Nonfarm business equipment House; Large durables; Small durables; Cell phone; Non-ag land (any); Transport	Achievement in any if not only one small asset (chickens, nonmechanized equipment and no small consumer durables)	Inadequate if household does not own any asset or if household owns the type of asset BUT she/he does not own most of it alone	2/15
	Access to and decisions on credit	Has anyone in your household taken any loans or borrowed any cash/in-kind from [SOURCE] in the past 12 months? Who made the decision to borrow/what to do with money/item borrowed from [SOURCE]? Non-governmental organization (NGO); Informal lender; Formal lender (bank); Friends or relatives; ROSCA (savings/credit group)	Achievement in any	Inadequate if household has no credit OR used a source of credit BUT she/he did not participate in ANY decisions about it	1/15
Income	Control over use of income	How much input did you have in decisions on the use of income generated from: Food crop, Cash crop, Livestock, Non-farm activities, Wage& salary, Fish culture? To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: Non-farm economic activities? Your own wage or salary employment? Major and minor household expenditures?	Achievement in any if not only minor household expenditures	Inadequate if participates in activity BUT has no input or little input in decisions about income generated, or does not feels she/he can make decisions regarding wage, employment and major household expenditures	1/5
Leadership	Group membership	Are you a member of any: Agricultural / livestock/ fisheries producer/mkt group; Water; Forest users'; Credit or microfinance group; Mutual help or insurance group (including burial societies); Trade and business association; Civic/charitable group; Local government; Religious group; Other women's group; Other group	Achievement in any	Inadequate if is not part of AT LEAST ONE group; inadequate if no groups reported in community	1/5
Time	Workload	Worked more than 10.5 hours in previous 24 hours.	NA	Inadequate if works more than 10.5 hours a day	1/5

Weights for Asset Index									
		Low	**Scores**	**Lower Middle**	**Scores**	**Higher Middle**	**Scores**	**High**	**Scores**
House Structure	Roof	Grass/Clay Tiles	0.5	Iron Sheets	1	Iron Sheets	1	Iron Sheets	1
	Walls	Mud/Mud Bricks	0.5	Burnt Bricks/Wood	1	Stone	2	Concrete	3
Tropical Livestock Unit (TLU)		0-2	1	2.1-5.75	2	5.76-8.1	3	>8.1	4
Land Owned (ha)		0-0.25	1	0.26-0.5	2	0.51-0.75	3	>.75	4
PSNP Dependancy	Type of payment	Food	0.5	Both	1	Cash	1.5	No PSNP	2
	Proportion of HHs Income	>50%	0.5	25-50%	1	<25%	1.5	0%	2

Comparison of WEAI & A-WEAI

	Original WEAI	A-WEAI
Domains	Indicators (10)	Indicators (6)
Production	-Input in productive decisions Autonomy in production	-Input in productive decisions
Resources	-Ownership of assets -Purchase, sale, or transfer of assets -Access to and decisions on credit	-Ownership of assets -Access to and decisions on credit
Income	-Control over use of income	-Control over use of income
Leadership	-Group membership -Speaking in public	-Group membership
Time	-Workload -Leisure	-Workload

Group Statistics

	WEALTH_CATEGORY	N	Mean	Std. Deviation	Std. Error Mean
HDDS_SUM	2	115	5.8783	2.06112	.19220
	3	35	7.1714	2.02173	.34173

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HDDS_SUM	Equal variances assumed	.022	.882	-3.264	148	.001	-1.29317	.39616	-2.07603	-.51031
	Equal variances not assumed			-3.298	57.205	.002	-1.29317	.39208	-2.07823	-.50811

Descriptive Statistics

	Mean	Std. Deviation	N
HDDS_SUM	6.1776	2.10676	152
FCS	34.5987	18.80935	152
WEIGHTED_AWEAI	.7706	.17972	152

Correlations

		HDDS_SUM	FCS	WEIGHTED_AWEAI
HDDS_SUM	Pearson Correlation	1	.832**	.248**
	Sig. (2-tailed)		.000	.002
	N	152	152	152
FCS	Pearson Correlation	.832**	1	.266**
	Sig. (2-tailed)	.000		.001
	N	152	152	152
WEIGHTED_AWEAI	Pearson Correlation	.248**	.266**	1
	Sig. (2-tailed)	.002	.001	
	N	152	152	152

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