

Key factors in the use of Agricultural Extension Services by women farmers in Babati District, Tanzania: *The role of societal gender norms*

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Department of Urban and Rural Development

Credits: 30 HEC

Level: Second cycle, A2E

Course title: Master's thesis in Rural Development and Natural Resource Management

Course code: EX0777

Programme/Education: Rural Development and Natural Resource Management – Master's Programme

Place of publication: Uppsala

Year of publication: 2018

Cover picture: Farmers attend an agricultural extension training session in a village in Babati District, 2016. Women farmers are present in smaller numbers than men farmers and sit towards the back. Men farmers sit at front in front of presenters. The person presenting to the farmers is the village chairman whilst the two male facilitators stand to the right. Photo: Caitlin McCormack, 2016

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Online publication: <https://stud.epsilon.slu.se>

Keywords: Agricultural Extension Services, gender, women farmers, Tanzania, agriculture

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Abstract

Agricultural Extension Services (AES) – defined here as a system of services providing advice, information and training to farmers – are critical for enhancing agricultural productivity and development in Tanzania. Women farmers often face particular constraints to using AES, and consequently have lower levels of access on average than their male counterparts. The constraints women farmers face comprise a range of practical, institutional and norm-based factors. Improving women farmers’ access to and use of AES requires identifying and understanding these constraints and exploring how AES can be designed and delivered to overcome them. In this thesis, I explore women (and men) farmers’ access to and use of AES in two villages in Babati District, Tanzania and identify the critical factors affecting this, with a particular focus on the role of societal gender norms. I also investigate if and how gender is considered within current AES services and explore perceptions of AES practitioners about women farmers as users of AES. Finally, I consider opportunities for (women) farmers to shape AES and how AES may be delivered to better meet their needs. The study is based on empirical data collected during six weeks of fieldwork in Tanzania in March and April 2017. Findings are from group interviews, in-depth individual interviews and observations. The thesis is informed by a liberal feminist perspective and I draw on theory around social norms and institutions, gender norms and relations, and knowledge systems to explore my empirical findings. I find that women farmers’ AES needs and preferences often differ from men farmers’ and that there are multiple factors that affect their willingness and ability to use AES. I argue that many, if not most, of these factors are rooted in societal gender norms. Critically, I also find that current measures within AES to target women farmers do not comprehensively address gender norms and there is an apparent lack of gender capacity amongst institutions and staff involved in providing AES. I conclude that in order to effectively deliver to women farmers and contribute to agricultural development, AES should involve efforts to address the multifaceted ways in which societal gender norms affect AES use and delivery.

Acknowledgements

Producing this thesis has been a hugely rewarding experience, though not without its challenges. I could not have completed it without the help of so many people, and I am incredibly grateful to all of them.

Firstly, I want to thank my supervisor, Opira Otto, for his guidance throughout this process, and in particular for his encouragement to trust my instincts to write the thesis that I wanted to write, and for his support and motivation to “keep hope alive” during some particularly challenging moments of both fieldwork and writing.

Secondly, I want to thank the people who made my fieldwork happen. My huge thanks first to Felister Peter, who not only acted as my translator in interviews, but also helped me with countless logistical arrangements and to navigate the society, culture and landscapes of Babati. She was an invaluable ‘sounding board’ in the field, offering insightful suggestions on the many challenges we faced. Also thanks to Evance Mancha for being our patient and easy-going driver and for soundtracking my fieldwork with incredible playlists. And thanks to both for their generosity and good company and reminding me to also enjoy my time in Babati with lunches, dinners, waterfall visits and hippo-watching canoe trips.

My thanks also to the rest of my invaluable field team; Nyandula Samwel and Seba Joseph for their skilled facilitation of my group interviews and for sharing their insights into field research in Tanzania and the Tanzanian Agricultural Extension Service, respectively. Also to the Government Extension Officers in Babati District and my study villages who put me in contact with my interview participants and took time from their schedules to be interviewed themselves.

I want to also thank Mateete Bekunda and Per Hillbur for helping me develop my early project ideas and for facilitating my collaboration with IITA through the Afirca RISING East and Southern Africa Project. Thanks also to everyone who made me feel welcome at the IITA Arusha offices. I particularly want to thank Sieg Snapp, Gundula Fischer and Simon Wittich for sharing their expertise on Babati farming systems and farmers and advice on conducting field research. Similarly, Isaac Jambo, who offered invaluable insights from his PhD and welcome beer-drinking company during field visits.

I also want to thank my friends; those I made in Tanzania, those who cheered me up/on via Skype, emails and care packages, and those in Uppsala for being my study buddies throughout this rollercoaster of a process.

And a huge thank you to my Mum and Dad for their ongoing support and encouragement, particularly during some moments of crisis/weariness/Typhoid in this project, and for taking the time and brainpower to review 75+ pages of Masters thesis; this is not something all parents could or would do, and I am very grateful to them both.

And finally, I want to express my thanks to each of the farmers who took the time to share their knowledge, experiences, opinions and humour with me - they made my fieldwork a hugely rewarding and educational experience and my thesis project what it is.

This project was funded by a Study Abroad Studentship from The Leverhulme Trust with additional financial support from IITA's Africa RISING project, through the Graduate Research Fellow scheme. Thank you to both for making this project possible.

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Abbreviations and definitions

AES	Agricultural Extension Service(s)
ASDP	Agricultural Sector Development Programme
DAICO	District Agriculture, Irrigation and Livestock Cooperatives Officer
Farmplot	The main agricultural plot belonging to, or used by, a household
FD	Field Day
FFS	Farmer Field School
FHH	Female Headed Household: household in which a woman is primarily responsible for decisions affecting the household and/or is identified as the household head by members of the household (see United Republic of Tanzania, 2007)
Homeplot	Plot at or near the homestead, often small and used for growing crops for home consumption
MHH	Male Headed Household: household in which a man is the household head (see definition for FHH above)

1 Introduction

Agriculture is a main component of the economy of Tanzania, contributing around a quarter of the country's GDP and employing around three quarters of its active workforce (United Republic of Tanzania, 2013). However, the growth of the sector is relatively slow, and below the level that the government anticipates is needed for significant wealth creation and alleviation of poverty, particularly in rural areas (United Republic of Tanzania, 2013). One contributing factor is that, despite comprising almost half of all agricultural labour in Tanzania, women farmers' productivity remains significantly lower than men farmers (Doss, 2011; FAO, 2011). This is at least partly due to the fact that women face disproportionate constraints in their access to resources needed for agricultural productivity (Doss, 2001; O'Sullivan et al., 2014; Tegbaru et al., 2015). The FAO and others estimate that if women farmers had the same access to such resources as men farmers, they could increase their productivity by around 20-30% and achieve the same yields as their male counterparts (Croppenstedt et al., 2013, p. 81; FAO, 2011, p. 42)¹. One such resource which is essential to agricultural productivity and development is agricultural extension services (Adomi et al., 2003; Lwoga et al., 2013; Mudege et al., 2016). Agricultural extension services (AES) comprise a system of advice, information, training and knowledge aimed at supporting farmers to improve their agricultural productivity (Haug, 1999; Rutatora and Mattee, 2001). AES are delivered via various methods including one-on-one advice, group instruction and training, and field demonstrations.

Both men and women farmers face challenges in accessing agricultural extension services but women farmers often face particular constraints, and consequently generally have lower levels of access to AES than their male counterparts (Adomi et al., 2003; Lwoga et al., 2013; Mudege et al., 2016). In Tanzania the proportion of female headed households that access AES is 5% lower than for male headed households (United Republic of Tanzania, 2007)² whilst within male headed households, women often do not use AES, even when they are involved in the household farming activities (Manfre et al., 2013; Mudege et al., 2016). The constraints facing women farmers include both practical factors and constraints posed by social norms (Croppenstedt et al., 2013). In particular, gender norms determine the accepted roles, actions and behaviours of women (and men), and are therefore critical in dictating their access to, and use of, AES as well as being embedded in how the services are designed and delivered (Mudege et al., 2016).

Constraints to their access to AES mean that women farmers have reduced access to agricultural information and often adopt new practices and technologies at a lower rate than men farmers, which restricts their agricultural productivity (Croppenstedt et al., 2013; World Bank et al., 2009). This has direct implications for the income, livelihoods and well-being of women farmers and the rural communities they are part of, as well as for broader food security, poverty reduction, agricultural output and economic development at a national level in Tanzania (Manfre et al., 2013; Meinzen-Dick, 2011). Access to extension also has implications for women's status and empowerment, particularly in terms of their ability to participate in farm management and decision-making, and to be independent actors in the generation and use of knowledge in AES. Improving women's use of extension could therefore, over time, contribute to changing broader gender norms and relations in society (Duveskog, 2013; Farnworth and Colverson, 2015). It also has potential benefits for actors and institutions who deliver AES, who could improve the efficiency and impact of their services by ensuring they reach women farmers as well as men farmers (United Republic of Tanzania, 2013). Women farmers' access to and use of extension services, and the factors which determine this, is therefore a critical research topic.

¹ From an FAO review of 27 studies comparing yields of men and women farmers in various countries (FAO, 2011).

² More recent agricultural census data from 2007/2008 was published in 2012 but the figures for AES use are not gender-disaggregated (The United Republic of Tanzania, 2012)

In order to identify ways in which AES could better deliver to women farmers, there is a need to explore women farmers' experiences of current AES, and to understand the factors that affect their willingness and ability to access and use services (Manfre et al., 2013). This thesis explores these themes. I investigate the access to and use of agricultural extension services by women farmers in two villages in Babati District, Tanzania. I use a liberal feminism perspective and draw on theory around gender norms, power relations, and knowledge to interpret the ways in which numerous practical and socio-cultural factors influence women farmers' use of extension services. The specific study aim and objectives are outlined below.

1.1 Thesis aim, objectives and research problem

The overall aim of this study is to investigate women farmers' access to and use of agricultural extension services in Babati District, Tanzania, and to explore and understand the factors that affect this.

The specific objectives were:

- **Objective 1:** To explore women (and men) farmers' experiences of AES in Babati District and their interest, willingness and ability to use different types of AES
- **Objective 2:** To investigate the key factors that determine women farmers' access to, and use of, different AES, and specifically consider to what extent and how these are influenced by societal gender norms
- **Objective 3:** To investigate to what extent and how gender is considered in the design and delivery of AES in Babati, including exploration of the attitudes of AES practitioners and opportunities for (women) farmers to shape AES

In exploring these objectives, I hope to provide valuable insight into women farmers' use of AES in Babati District and the major factors which affect this, with a view to revealing ways in which services may better reach women farmers and meet their needs and preferences. The study will also contribute to theoretical knowledge about how gender norms, power relations, and dynamics of knowledge influence women farmers' willingness and ability to use AES. My findings were generated during six weeks of fieldwork in Babati District in March and April 2017.

Improving women farmers' access to and use of agricultural extension services has the potential to enhance their agricultural productivity with benefits for income, food security, wellbeing and gender equality on both a local and national scale in Tanzania. This information will also be valuable to service providers designing and delivering more efficient AES to benefit men and women farmers equitably.

1.2 Definition of study scope and terms

This section briefly explains how some key aspects of this study were defined in order to delineate the scope of the study.

1.2.1 *Defining 'Agricultural Extension Services'*

There is no single accepted definition of 'agricultural extension services' (AES) (e.g. see Leeuwis, 2004; Oakley and Garforth, 1997). In this study, I use an interpretation which defines AES as a network of services delivered by both public and private service providers which deliver information, advice, training and demonstrations to farmers about agricultural practices and technologies (see also (Manfre et al., 2013; Meinzen-Dick, 2011)). I found during my fieldwork that some actors involved in AES delivery do not identify their work by the term 'extension', instead using terms like 'scaling' to refer to dissemination of agricultural practices and technologies or 'training'. In this thesis, these are all included under the term extension or AES.

There are myriad methods of AES delivery, such as demonstration plots, Farmer Field Schools and Field Days (Meinzen-Dick, 2011). They are often referred to by a range of

names and the details of how a method is delivered can vary depending on the local context³. It can therefore be difficult for an external observer to differentiate AES methods. In this study, I am primarily interested in the farmers' perspectives so the farmers were asked to define AES methods themselves. In order to recognise what the farmers described, I conducted a literature review to identify a list of AES methods. I reviewed this with contacts in the field to check which ones were used in my study villages and the names they were known by locally. During discussions with farmers this list was used to prompt for further suggestions. Throughout the study, I focused on field-based services, and excluded extension delivered via ICT or other media. Although I initially tried to focus on technical AES delivered to groups of farmers, it emerged that one-on-one advice from extension officers and general meetings were in fact most commonly used and familiar to farmers and therefore featured prominently in discussions. In this thesis, 'technical' AES refers to formal, structured sessions of instruction and training which are often delivered to groups of farmers, as opposed to individual meetings with an extension officer or general information or sensitisation meetings. The parameters farmers used to differentiate between AES methods included: whether it was delivered by the extension officer or by external organisations; if it was delivered to individuals, farmer groups or the wider community, and; where it occurred (their farm, a central demonstration plot, a plot on another farmers' land). In some cases, farmers referred to the methods by names also used by extension practitioners, although not always, as discussed in my empirical findings in Chapter 5.

1.2.2 *Women farmers*

In this study, 'women farmers' refers to women who are primarily involved in farming activities rather than other livelihoods. To begin with, I intended that my respondents should also be women who had responsibility for decision-making and farm management in their households. However, during data collection, I expanded my criteria to also talk with women who were involved only in implementing farming activities, as this revealed other interesting perspectives and represents a significant proportion of women in Babati District.

1.2.3 *A focus on gender norms and relations*

In this study, I did not initially seek to investigate broad societal gender norms. My intended focus was to evaluate the use of different AES by women farmers and the suitability of different methods to their needs and preferences. However, during my fieldwork, gender norms emerged as a fundamental factor determining women farmer's use of AES including, in many cases, whether they were willing and able to access them at all. I therefore adjusted my focus to primarily consider these norms, but maintained an emphasis on where these related directly to the women farmers' experiences and use of AES.

When considering gender relations, there is a need to be critically aware of researcher bias. Gender relations are strongly shaped by social and cultural norms and my interpretation of what I hear and observe will be significantly influenced by my background. In fact, the decision to study gender at all is shaped by my own values which are likely to differ to those of actors in the study context, who may not perceive gender inequality in the current system or may feel that the gender norms are accepted and not necessary or possible to change.

1.3 Focus of the study

³ For example, in my fieldwork, 'Farmer Field School' (FFS) in Njiro village referred to a group of farmers who received a single training session from an external organisation at a central demonstration plot and then implemented practices on their land with follow-up visits from the extension officer. In Ilboru village, FFS referred to a formal group of farmers who met regularly for training sessions with the extension officer at a plot which was designated for management by the group. There were penalties for non-attendance and a formal pass or fail assessment at the end. Graduates became contact farmers used by the extension officer to train other farmers (source: this thesis, see Appendix 1).

During my fieldwork, my conversations with farmers and practitioners revealed a multitude of fascinating issues around agriculture and extension services. Any one of these could have made a whole research thesis. However, as I refined my research problem, I had to focus only on the findings that relate most closely to this and leave out other data and analysis. I have suggested some areas as topics for further research at the end of this thesis.

1.4 Outline of thesis

The structure of this thesis is as follows: Chapter 2 is a background chapter providing contextual information about agriculture, agricultural extension services and women farmers, with a focus on the situation in Babati District and Tanzania. Chapter 3 outlines key theories and concepts which I use to interpret my empirical data. Chapter 4 details my methodology. I then present my empirical findings in Chapter 5 and Chapter 6. Chapter 5 addresses Objectives 1 and 2 to detail farmers' use of, and preferences for, different types of AES and the main factors that were found to affect women farmers' willingness and ability to use different services. At the end of the chapter, there is a discussion of the findings using my chosen theories and concepts. Chapter 6 addresses Objective 3 and details my empirical evidence about measures within AES for gender inclusivity, the perceptions and attitudes of practitioners about women farmers as extension users, and opportunities for farmers –particularly women– to shape AES. Again there is a short discussion with reference to relevant theory at the end of this chapter. Chapter 7 comprises my conclusions including a summary of my major findings, contributions my study makes to existing knowledge, implications of my findings for AES in Babati, reflections on my methodology and theoretical perspective, and some suggestions for further research.

2 Background

This chapter provides contextual information about the study area and about agriculture and AES with particular emphasis on the situation for women farmers.

2.1 The agricultural sector in Tanzania and Babati District

Agriculture comprises a major part of the economy in Tanzania, accounting for approximately 23% of its Gross Domestic Product (GDP) in 2012 and employing around 75% of the country's labour force (United Republic of Tanzania, 2016, 2013). The majority of agricultural land is managed by smallholder farmers with farm sizes between 0.2 and 2.0 Hectares and the most important and widely grown crop is maize, which accounts for over 20% of agricultural GDP (*ibid*). Much production is for subsistence, yet food security and nutrition remain a challenge with around 13% of children aged 0-5 underweight and over one third affected by stunting nationally (United Republic of Tanzania, 2014). As a main employer and contributor to national GDP and a main source of food and income for many households, agriculture is critical to Tanzania's economic and social development, and development of the sector is seen by the government to be of "*paramount importance*" (United Republic of Tanzania, 2013, p. 8). However, the growth rate of the agricultural sector over recent years has been low – 3.9% per annum on average between 2006-2014 (national GDP growth rate was between 6.0 and 8.1% over the same period) – and is considered insufficient to stimulate growth of the national economy and particularly to achieve wealth creation and alleviation of poverty and food insecurity in rural areas (United Republic of Tanzania, 2016, p. 1). The government sees a need to enhance growth of the agricultural sector as a driver of development and poverty reduction in rural Tanzania (United Republic of Tanzania, 2016)

My project is focused in Babati District in Manyara Region, Northern Tanzania. I chose Babati as it contains a variety of agroecological zones and farming systems and has been referred to as the 'grain basket of Tanzania' for its high farming potential (Hillbur, 2013). As such, it is also the focus of myriad agricultural extension efforts (Hillbur, 2013). At 3.1 hectares, the average land area per household in Manyara Region is higher than the national average of 2ha. Most farms grow cereals – predominantly maize – as the main crop, followed by pulses (beans, pigeonpea etc), oil seeds, roots and tubers. Fruits and vegetables comprise around 0.2% of crops in Manyara region (United Republic of Tanzania, 2012). As in the rest of Tanzania, farm practices in Manyara are often extensive and use of inputs such as improved seeds and fertiliser is relatively low at around 2% and 8% of the total planted area, respectively (United Republic of Tanzania, 2012). Most production is for subsistence, although some households sell surplus, often to neighbours or to traders at the farmgate. Around half of households in Babati District report often or always facing problems accessing sufficient food (The United Republic of Tanzania, 2012) and child malnutrition in Manyara region is slightly above the national average with around 14% of children aged 0-5 categorised as underweight and 37.4% affected by stunting (United Republic of Tanzania, 2014). There is therefore significant scope to enhance agricultural production and food security in the area.

2.1.1 Women farmers in Tanzania

In Tanzania, women comprise a significant proportion of the agricultural labour force (FAO, 2011; United Republic of Tanzania, 2013, p. 29). However, ownership of agricultural land and primary responsibility over farm management decisions is usually the role of men (United Republic of Tanzania, 2013). National census statistics show that the majority of agricultural land - 87% - is managed by male headed households (MHH) in which a man is the main decision maker (United Republic of Tanzania, 2007, p. 7). It is rare for women to have their own rights to land; only 12% of MHHs contain a female member who has access to land in their own right. Additionally, 50% of female headed

households (FHH) did not contain a female member with access to land, either because the land rights were still held by a man despite the female head or because these FHHs have no secure rights to land (United Republic of Tanzania, 2007, pp. 31, 33)⁴. In addition to land, women farmers in Tanzania often have disproportionately lower access to other productive resources and FHHs have fewer assets and higher rates of illiteracy than MHHs (Meinzen-Dick, 2011; United Republic of Tanzania, 2007). This gap in access to resources constrains women farmers' agricultural productivity with consequences for the income and food security of them and their households.

In addition to contributing a considerable proportion of agricultural labour, women are also traditionally responsible for the majority of caretaking responsibilities in the household, including cooking, childcare, collection of firewood and water, crop processing and milking livestock. In FHHs, women must complete these tasks in addition to assuming responsibilities traditionally fulfilled by men, such as livestock rearing and marketing. MHHs and FHHs tend to grow the same crops, although women within MHHs often have primary responsibility for production of vegetables, poultry and other small animals (United Republic of Tanzania, 2007).

2.1.2 Women farmers in Tanzanian agricultural policy

To date, gender has received relatively little focus in the numerous strategies to enhance the development of Tanzania's agricultural sector (Manfre et al., 2013; United Republic of Tanzania, 2013). However, the government does collect useful gender-disaggregated farm-level data, the stated rationale for which is that "*cultural, socio-economic, religious and sometimes political norms in society*" can "*determine access to resources, division of labour and household responsibilities*" and that exploring gender biases may allow the creation of more gender-responsive policies (United Republic of Tanzania, 2007, p. 6). The most recent agricultural policy, published by the Tanzanian Ministry of Agriculture Food Security and Cooperative in 2013, includes gender as a 'cross cutting issue'. Gender relations are identified as one of a number of constraints to agricultural growth and it is stated that; "*...there are inadequate skills and knowledge among women [farmers]; inequitable access to productive resources; inappropriate technologies; and inappropriate social-cultural practices and beliefs*" (United Republic of Tanzania, 2013, p. 30). Amongst the objectives to address this is a statement to pursue "*equitable participation of men and women*" in production, including ensuring "*participation of men and women in decision-making processes*" and enhanced access to productive resources, as well as "*sensitisation of communities [about] negative cultural attitudes and practices*" (ibid p. 30). Of particular relevance, it is stated that "*participatory approaches and gender aspects shall be promoted in the provision of extension services*" (United Republic of Tanzania, 2013, p. 14). There is therefore explicit recognition by the Tanzanian government of the need to incorporate gender considerations, and farmer participation, in agricultural policy, including AES. However, although such measures are promising, their meaningful impact depends on implementation which acknowledges and addresses constraints such as social norms and top-down institutional structures (Doss, 2017).

2.2 Agricultural extension

⁴These data are from a 2002/2003 agricultural census published by the United Republic of Tanzania (2007) which included a specific gender profile. It is the most recent gender-disaggregated data I could find with such detail about farming households. It defines household head as the person identified by members of the household as the head and who has main responsibility for decision-making (p. 7). It was assumed that the majority of households have one land holder and that this is the household head (p. 29). Land rights in Tanzania comprise statutory rights, administered by the government, and customary rights, administered by village officials. Despite legal measures to foster equal land rights for women, the persistence of patriarchal systems favours men. For example, inheritance of property including land traditionally passes down the male line (see (Duncan, 2014).

‘Agricultural extension services’ refers to a system of services which provide support, information, training and capacity building, technologies and inputs to farmers with the aim of enhancing their agricultural productivity and social and economic development (Haug, 1999; Rutatora and Mattee, 2001). It can be provided by both public and private actors including governments, non-government organisations (NGOs), research programmes and private companies, and is delivered through a variety of methods such as visits to individual farmers, group or community meetings, and training demonstrations (Meinzen-Dick, 2011). Extension services are critically important to agricultural development as they facilitate farmers’ access to information, knowledge and technologies which can be applied to enhance their agricultural productivity (Lwoga et al., 2013).

2.2.1 *Extension in Tanzania: historical to present day*

Historically, there have been a number of approaches to agricultural extension delivery. In Tanzania, following independence in the 1960s, extension services were delivered by the national government (Duveskog, 2013; Rutatora and Mattee, 2001). The ongoing influence of colonial power structures meant these tended to be centralised, top-down and instruction-based, the idea being that the transfer of technology and knowledge from scientists to farmers would facilitate agricultural development (Manfre et al., 2013). The role of extension officers was to put ready-made technologies into practice. There was little consideration of farmer preferences or their existing knowledge (Duveskog, 2013).

Following a period of stagnation of the agricultural sector during the 1980s and in response to a lack of funding and perceived lack of capacity within the Tanzanian central government, the agricultural extension system was reformed with the assistance of the World Bank (Mattee, 1994; United Republic of Tanzania, 2013). In 1987, the World Bank introduced a system of ‘training and visitation’ (T&V) (Duveskog, 2013). This aimed to enhance existing extension services by creating stronger links between research and extension. It established a system of regular scheduled visits by extension officers to contact farmers. The extension officers delivered information to these farmers about agricultural practices and technologies which had been developed by research organisations and the contact farmers were then responsible for passing the information on to other farmers in their communities (Friis-Hansen, 2004). It was intended that T&V would facilitate two-way communication between farmers and AES providers to allow tailoring of services to suit farmers’ needs and preferences (van den Ban and Mkwawa, 1997). However, in practice, although T&V led to productivity gains in some contexts, it was widely criticised for remaining unresponsive to local environmental and socio-economic conditions and to farmers’ needs and preferences (Mbo’o-Tchouawou and Colverson, 2014). In particular, it was acknowledged that T&V-based AES did not effectively reach women farmers (Manfre et al., 2013). From the 1990s, there were efforts to make T&V more demand-driven, less top-down, and better suited to farmers’ needs but success was limited (van den Ban and Mkwawa, 1997). Nevertheless, it remained the dominant extension approach in Tanzania until support from the World Bank was phased out in 2002 (Duveskog, 2013).

Over this period, control of extension services in Tanzania was decentralised and management responsibilities were transferred to District government authorities, based on the idea that they are better positioned to tailor extension services to local conditions (Mbo’o-Tchouawou and Colverson, 2014; United Republic of Tanzania, 2013). This was covered under a national policy called the Agricultural Sector Development Programme (ASDP) which was implemented by District Governments between 2006 and 2012⁵. Extension services have also increasingly been delivered by a combination of NGOs,

⁵Although the period of this policy had ended, the District Agriculture Irrigation Livestock and Cooperatives Officer (DAICO) reported that the government was still working to the rules within it as it hopes to get funding for a second phase of the programme (DAICO, 2017)

research organisations and private enterprise, alongside continued, but reduced, government involvement (Mbo’o-Tchouawou and Colverson, 2014; Rutatora and Mattee, 2001) .

Currently, the trend in AES amongst governments in East Africa is for demand-driven services which focus on taking into account local contextual factors and the needs and preferences of different farmers in order to find tailored solutions for different producers (Chowa et al., 2013; Manfre et al., 2013). It emphasises the facilitation of farmers to participate in shaping the content and delivery of extension services, with the aim of creating more responsive service delivery. Rather than aiming to transfer what research suggests is ‘best practice’ to all farmers, this approach emphasises efforts to find a ‘best fit’ approach tailored to the local contextual factors. In theory, this has the potential to facilitate better inclusion of the views, priorities and needs of women farmers to shape extension service delivery to meet their particular needs (Manfre et al., 2013).

2.2.2 Structure of the Agricultural Extension Service in Babati District

The public agricultural extension system in Tanzania is extensive and comprehensive. There are government extension officers at all administrative levels and observations and accounts during my fieldwork suggest that there is communication and coordination between them. In Babati District, as in other Districts in Tanzania, the management of extension services is the responsibility of the District-level government, coordinated by the District Agriculture Irrigation and Cooperatives Officer (DAICO). There are then several District-level extension officers, some of whom work on crops and some of whom work on livestock. They manage extension activities throughout Babati, including coordinating the work of NGOs and other private actors. The next administrative level is Wards, with each comprising a number of Villages. The intention of the Tanzanian government is to have a government extension officer in every Ward and one in every Village (Due et al., 1997). However, in some cases, one officer fulfils both roles. The responsibilities of the Village and Ward officers include advising farmers via; visits to their farms, phone calls, office hours at the village office, or informal interactions around the village. The officers may also present farming and extension information during quarterly Community Meetings and call emergency meetings to inform farmers in the case of a disease outbreak or similar. In Babati, the officers deliver regular training to Farmers Groups and Farmer Field Schools and coordinate AES activities delivered by other actors. During my fieldwork, I observed that there is a hierarchy of communication from Village to Ward to District level, and apparently relatively regular meetings between the Ward and District level staff, and between Ward and Village level staff. The hierarchy of administrative levels and the corresponding extension staff I interviewed in this study are shown in Table 1.

Table 1. Tanzanian Administrative Levels, Corresponding Study Areas and Respondents

Administrative Level	Name of area studied		My respondents	
Region	Manyara		DAICO	
District	Babati		Female District Extension Officer Male District Extension Officer	
Ward	Njiro Ward	Ilboru Ward	-	-
Village	Njiro	Ilboru	Female Field Extension Officer	Male Field Extension Officer
Sub-village	n/a		n/a	

There are numerous NGOs and research organisations involved in delivering agricultural extension in Babati District. In this thesis, I focus on a program called Africa RISING⁶ which focuses on the sustainable intensification of farming systems through ‘research for development’. Their objectives include research “*to identify and evaluate demand-driven options for sustainable intensification*” including effective land management practices to enhance agricultural productivity, soil fertility, and water conservation. They also work on ‘scaling’ of these management practices which involves facilitating “*partner-led dissemination of...innovations for sustainable intensification*” both within and beyond Africa RISING project areas (Africa RISING, 2014a, 2014b). In Tanzania, the Africa RISING program is led by IITA and includes work on maize production systems led by CIAT, and on vegetable production, led by AVRDC. I talked with staff from each of these two areas of the programme and observed training activities led by them in Babati villages in 2016 and 2017.

In all their activities, organisations involved in AES in Babati must coordinate with the government extension service. New projects and activities must be approved by the District Council, and the local Ward or Village extension officers are informed, and often involved with, all AES activities in their villages. The government extension officers are therefore prominently involved in most, if not all, extension activities throughout the district. The extension services in the two study villages are delivered using numerous methods (see Appendix I). Several respondents reported that there was a growing emphasis on using Farmers Groups to deliver extension, something which was confirmed by the DAICO and is outlined in recent literature (Duveskog, 2013; Manfre et al., 2013).

2.2.3 Woman and Agricultural Extension Services

It has been recognised since the 1970s and 1980s that agricultural extension services have generally failed to effectively deliver to women farmers by failing to acknowledge them as agricultural producers in their own right or to incorporate their needs and preferences in the content and delivery of AES (Manfre et al., 2013). Still today women farmers routinely have less access to agricultural extension than their male counterparts (Meinzen-Dick, 2011) including in Manyara region, where my thesis is focused (United Republic of Tanzania, 2007). As a result, women farmers are less likely to adopt new agricultural practices, seed varieties and technologies and their average production remains lower than that of men farmers and below its potential (Manfre et al., 2013).

The factors contributing to this inequity in access to AES are multiple and complex, and comprise a range of practical, institutional and norm-based constraints (Croppenstedt et al., 2013). Critical practical factors include; women’s lack of rights and access to land, and time and mobility constraints due to women traditionally being responsible for domestic work alongside physical farm work. Social norms additionally restrict women’s autonomy and independence, and their influence in household decision-making. Institutional constraints include the fact that there has been relatively little consideration of women farmers as producers or as recipients of extension services; in 1983 the World Bank stated that; “*...extension services are often biased toward work with men and neglect the very important role of women as farmers in most parts of the world*” (The World Bank, 1982, p. 73). Even today, many institutions involved in AES delivery work on the perception that “*women are not farmers*” (World Bank, 2010, p. xxv). Consequently, much extension is focused on production systems which women are generally less involved with and continues to be aimed at men farmers (Croppenstedt et al., 2013). It is also suggested that even when AES institutions aim for gender inclusivity, extension officers apply – consciously or not – unofficial selection factors to AES recipients including minimal land

⁶ I also conducted interviews with other organisations involved in delivering AES in Babati but did not have the time or space to include analysis of these findings in this thesis.

size, literacy levels and ability to purchase inputs, all of which will tend to differentially exclude women farmers as recipients of AES (Manfre et al., 2013).

Nevertheless, consideration of gender has improved since early AES. Earlier approaches tended to treat AES simply as a technical system involving a transfer of information followed by a set of rational decisions and actions on the part of farmer, who were treated as a homogenous group. However, there has been growing recognition that in reality, AES are embedded in complex systems involving multiple actors with different needs and agendas (Leeuwis, 2004, p. 24; Manfre et al., 2013). Critically, it is increasingly acknowledged that they are strongly affected by socio-cultural factors including deeply entrenched gender norms and power relations (Leeuwis, 2004). The T&V approach in particular did not account for these dynamics and tended to promote one model of 'best practice' to all farmers and assumed information would be transferred effectively and equitably from contact farmers to other farmers in their community. In reality, this approach was ineffective in reaching more marginal farmers, particularly women. More recently, the move towards 'demand driven' AES acknowledges that different producers have different needs, interests and preferences, and different abilities to pursue these. These services thus have the potential to include and respond to the views, priorities and needs of women farmers in AES. The move towards 'plurality' of AES providers and delivery methods also has the potential to improve the capacity of services to deliver to different types of farmers with different needs in different settings (Manfre et al., 2013). Some suggest that this has led to improvement towards AES better incorporating and responding to the needs and preferences of women farmers (Anderson, 2007; FAO, 2011). However, others say that gender dynamics are still rarely systematically included as an explicit focus in AES and many of the constraints to women accessing extension services remain overlooked (Manfre et al., 2013; Mbo'o-Tchouawou and Colverson, 2014).

Identifying, understanding and addressing the constraints to women farmers using AES is critical to enhancing their use of AES. This could improve the productivity, livelihoods and food security of women farmers and their households, which could contribute to achieving more efficient agricultural production for the Tanzanian agricultural sector as a whole, enhancing its role as a driver of rural development. Furthermore, the information generated in this thesis will be valuable for AES providers aiming to improve the efficiency and impact of their AES (Manfre et al., 2013). It is important to consider the suitability of different AES methods for reaching women farmers, and the capacity within AES institutions to effectively deliver gender-inclusive AES. There are significant knowledge gaps around how well extension services capture and address women farmers' needs and how well different AES methods and approaches facilitate equal benefits for women and men farmers (Manfre et al., 2013, p. 28; Mbo'o-Tchouawou and Colverson, 2014). I aim to contribute to addressing these gaps in this thesis.

2.3 The study sites

My two study villages are in separate but neighbouring wards in the lowland area of Babati District not far from the base of Mount Kwaraa. In this thesis I change their names - to Njiro and Ilboru - in order to protect my respondents' identities. The landscape around both is rolling hills and wide plains with a mix of shrubland, grassland and low trees. Soils are of volcanic origin and the average annual rainfall is around 750-900mm per year falling in two main seasons from October to December and February to May. Major crops in both areas are maize, pigeonpea, beans and sunflower (Babati District Council, 2014). Sociocultural data about the villages and respective Wards is difficult to find but according to the Ward Agricultural Extension Officers, the major ethnic groups in Njiro village are Iraqw, Rangi, Gorowa and Barbaig and the main religion is Islam, followed by Christianity. In Ilboru village, the major ethnic groups are Iraqw, Rangi and Gorowa and the main religion is Christianity followed by Islam. Ilboru village is larger, with a population of around 4,000, compared to around 1,400 in Njiro village in 2012 (Babati District Council, 2012).

3 Theories and concepts

This chapter details theories and concepts which I use to draw insights from my empirical findings about the use of AES by women farmers in Babati District, Tanzania. I outline two main branches of theory – social norms in relation to gender and power relations (3.1) and concepts of knowledge (3.2) – and link these to relevant aspects of my study. I then bring these inter-related theories together to create an analytical framework for my analysis (3.3).

3.1 Institutions, norms and power relations: a feminist perspective

A focus on the experiences of women, and specifically on inequalities in their use of agricultural extension services, means that feminist theory is highly relevant in this thesis. Broadly, feminist theory considers the oppression of women by systematic gender inequalities in society (Inglis and Thorpe, 2012). In particular, I will draw on ‘liberal feminism’, which focuses on material inequalities between men and women and sees that these can be addressed through the reform of existing institutions (*ibid*).

In liberal feminism, institutions are generally limited to political and legal rules and structures. However, in this thesis, I will apply the theory to a broader definition. One useful and commonly cited definition comes from North (1991, p. 97) who describes institutions as; “*humanly devised constraints that structure political, economic and social interaction*”, consisting of; “*...both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)*”.

Authors including Portes (2010) state that informal institutions originate from values that are deeply held by people and evolve out of particular historical and cultural contexts. These values shape social ‘norms’; unwritten rules which determine people’s choices and actions and the legitimate way in which things should be done (Friel, 2017). Williamson (2000, p. 597) argues that such norms, customs and traditions are the first level of institutions in any society and “*have a lasting grip on the way a society conducts itself*”. These norms do not exist in isolation, but instead come together in organised bundles to define ‘roles’ of different people in different positions in society, dictating their expected or accepted behaviours and responsibilities (Portes, 2010).

In this thesis, my focus is on gender norms which determine the respective roles of women and men. These have important implications for women farmers’ willingness and ability to use extension services (Manfre et al., 2013). In Tanzania, social norms dictate that women are rarely responsible for land ownership or farm decision-making (O’Sullivan et al., 2014). Instead, their roles are often farm labour and domestic work including food preparation and childcare. In some places, norms also restrict women from travelling away from the home or talking to strangers without the permission of their husbands. The ability of Tanzanian women to use agricultural extension services is therefore significantly influenced by gender norms.

North (1992) and Portes (2010) argue that social norms can become incorporated in formal institutions including markets, systems of education and organisations. Such structures are created by people enacting roles based on the norms of their society and consequently, informal norms become a ‘blueprint’ which shape and influence how formal institutions function. In turn, therefore, the functioning of these formal institutions contributes to reinforcing social norms (Portes, 2010). Although institutional changes can be triggered relatively quickly at an upper ‘surface’ level – for example, by the introduction of a new governmental policy – several authors argue that underlying value-based social norms are very resistant to change (Portes, 2010; Williamson, 2000). Consequently, this can result in a difference between how things *should* be, based on existing policies and guidelines, and how things actually *are*.

Relating this to agricultural extension, a number of authors argue that the content and delivery of extension services, and the structure and functioning of the formal institutions and organisations involved in delivering them, will be shaped by the gender norms of the

society they exist in (Inglis and Thorpe, 2012; Manfre et al., 2013, p. 255). In turn, the way in which these services are delivered can further perpetuate gender norms. As Farnworth and Colverson (2015, p. 20) argue; “*any intervention....by extension services will shape – and be shaped by – gender relations*”. The fact that norms are based on deeply held values that are slow to change offers a perspective to evaluate why extension services are still not delivering to women and men farmers equitably, despite efforts at a policy and governance level to make services more gender-inclusive.

Closely relevant to the theory of gender norms and inequalities is the theory of power, when seen as “*people’s capacity to make strategic life choices and exercise influence*” (Kabeer, 2010, p. 106). Historically, women have held less power than men in many societies, due to social structures rooted in norms (Kabeer, 2010). Power relations comprise several dimensions. In this thesis I apply an interpretation of Kabeer’s concepts of ‘*power to*’; an individual’s ability to make and pursue their own choices, ‘*power over*’; the ability of dominant groups to impose their choices on others, or, as interpreted by Tegbaru et al (2015), an individual’s access to and control over assets; ‘*power within*’; how actors view themselves and their sense of agency and self-worth which dictates what farmers (think they) are able, allowed and expected to do (Kabeer, 2010, p. 107; Leeuwis and Aarts, 2011), and, finally, ‘*power with*’; the greater power of individuals when they work together in groups and with the support of allies (Kabeer, 2010). Each of these dimensions of power will contribute to determining women farmers’ willingness and ability to access and use agricultural extension services.

The concept of power can be seen to be increasingly used in agricultural extension in the move towards ‘demand-driven’ services (Chowa et al., 2013; Leeuwis & Aarts, 2011). These approaches aim to grant more power to farmers to shape extension services to better meet their needs. In such services, farmers “*must be empowered to...articulate their demands*” (Duveskog, 2013, p. 15). This will be particularly true for women farmers who are often constrained from voicing their needs by systematic gender norms and unequal power relations.

3.2 Knowledge: sources and users, questions of legitimacy

Another branch of theory I will use relates to knowledge. Long (1996) states that within the field of knowledge there has been a transformation away from a belief in the superior role of experts, towards consideration of the contribution ‘local’ knowledge can make. He states that there has been increasing recognition that standardised solutions that experts produce are ineffective and that there is a need for more flexible strategies shaped by the input of local actors (Long, 1996). In AES, this is reflected in the move towards demand-driven services which aim to incorporate the knowledge, needs and preferences of farmers (Duveskog, 2013). This is intended to create more responsive service delivery, which could facilitate progress towards women farmers being better able to shape service delivery to meet their needs (Manfre 2013, page 27). Historically, extension has rarely been tailored to farmers’ needs and preferences and, in particular, services have failed to effectively deliver to women farmers (Röling, 1990). There is a need to identify the different needs and preferences of women farmers, so that AES service providers have the knowledge to tailor services to meet their requirements.

Another concept in knowledge theory is that of an ‘actor oriented perspective’ (Leeuwis et al., 1990). This view states that knowledge is socially constructed and different actors will have different interests and ways of creating and using knowledge (Leeuwis et al., 1990). Advocates of this concept argue that the generation and use of knowledge by farmers is strongly shaped by social and cultural processes involving “*aspects of power, authority and legitimation*” (Leeuwis et al., 1990, p. 22). Knowledge is not an equally accessible and used resource within a community and, in particular, gender norms and power relations will have an impact on an individual’s access to knowledge and on that individual’s ability to use such knowledge (Briggs, 2005). Applying this concept, it could

be seen that gender norms and power relations may affect the types and sources of agricultural extension used by men and women farmers, the ways and means by which they are able to access them, and if and how they are able to use the knowledge they receive.

3.3 Linking gender relations, power and knowledge

Together, the theories of gender norms, power relations and knowledge have multifaceted implications for women farmers' use of agricultural extension services and are closely interrelated. Some of the linkages between the theories as used in this study are illustrated in Figure 1 and described below.

Linking power relations and knowledge, Foucault (1977) discusses a power/knowledge nexus in which knowledge and knowledge systems are shaped by prevailing power structures in a society, and the functioning of these knowledge systems in turn contribute to shaping and reinforcing these power structures (McNay, 1992). Unequal power relations therefore create groups with differing abilities to access and use different knowledge resources. In turn, access to knowledge can be empowering and a lack of access can be disempowering with the result that inequalities in knowledge access will perpetuate inequalities in power (Leeuwis and Aarts, 2011; Portes, 2010). Gender is one dimension along which unequal power relations exist and, historically, social norms and structures have dictated that women hold less power than men in many forums. In relation to AES, in many cases, male heads of households have 'power over' whether their wives are able to attend AES activities (Kabeer, 2010). These 'structures of domination' therefore constrain women farmers' ability to autonomously access AES knowledge which then affects their power to participate and negotiate in household and farm decision-making (McNay, 1992).

This is also linked to societal (gender) norms. There are bodies of rules which define the identity, status and actions of 'knowers', creators and receivers of knowledge in a knowledge system (Phelan, 1990). In other words, norms dictate who is considered a legitimate receiver and user of knowledge. These are enforced by gender and power relations which dictate that men are often the decision-makers and farm managers whilst women are labourers and marginal farmers (Croppenstedt et al., 2013). Men are therefore seen as more legitimate receivers and users of knowledge and, consequently, extension continues to be aimed at them with the assumption that knowledge will 'trickle across' to other members of the household (Croppenstedt et al., 2013; Manfre et al., 2013, p. 8). On the other hand, women's agricultural practices – and their related knowledge – are often viewed as domestic, informal and unofficial, a norm which could constrain their participation in more formal forums of learning (Bourdieu, 2010, p. 41).

Power relations and gender norms interact to affect the ability of women to actively participate in public forums and therefore to effectively gain knowledge or to communicate their knowledge needs. Foucault's concept of 'subjugated knowledges' describes discourses and experiences of marginalised groups – such as women – which are not fully articulated and are therefore 'denied official status' (McNay, 1992). As Foucault sees it, within discourses, such as that around AES, there are rules which determine the spectrum of statements or 'speech acts' that can be taken seriously (McNay, 1992). As women are often not perceived as legitimate actors in AES, their ability to actively participate in formal AES forums is constrained. They are therefore also restricted in their ability to communicate their extension needs in these forums (Mosse, 1994). With a move towards demand-driven AES, this could mean that women are marginalised during consultations, resulting in services that do not reflect their interests and concerns (Briggs, 2005; Farnworth and Colverson, 2015).

AES practitioners are not exempt from the influence of societal norms and consequently, through their actions, such norms can become entrenched in the functioning of AES institutions and perpetuated in how AES are designed and delivered, with implications for women farmers' use of AES (Farnworth and Colverson, 2015; North, 1991).

Knowledge, power, and gender relations, and the links between them, need to be explicitly acknowledged if agricultural extension services are to meet the needs and preferences of women farmers (Briggs, 2005). I apply these concepts and theories to the analysis of my findings in order to generate insights into women farmers' access to and use of agricultural extension services in Babati District, Tanzania.

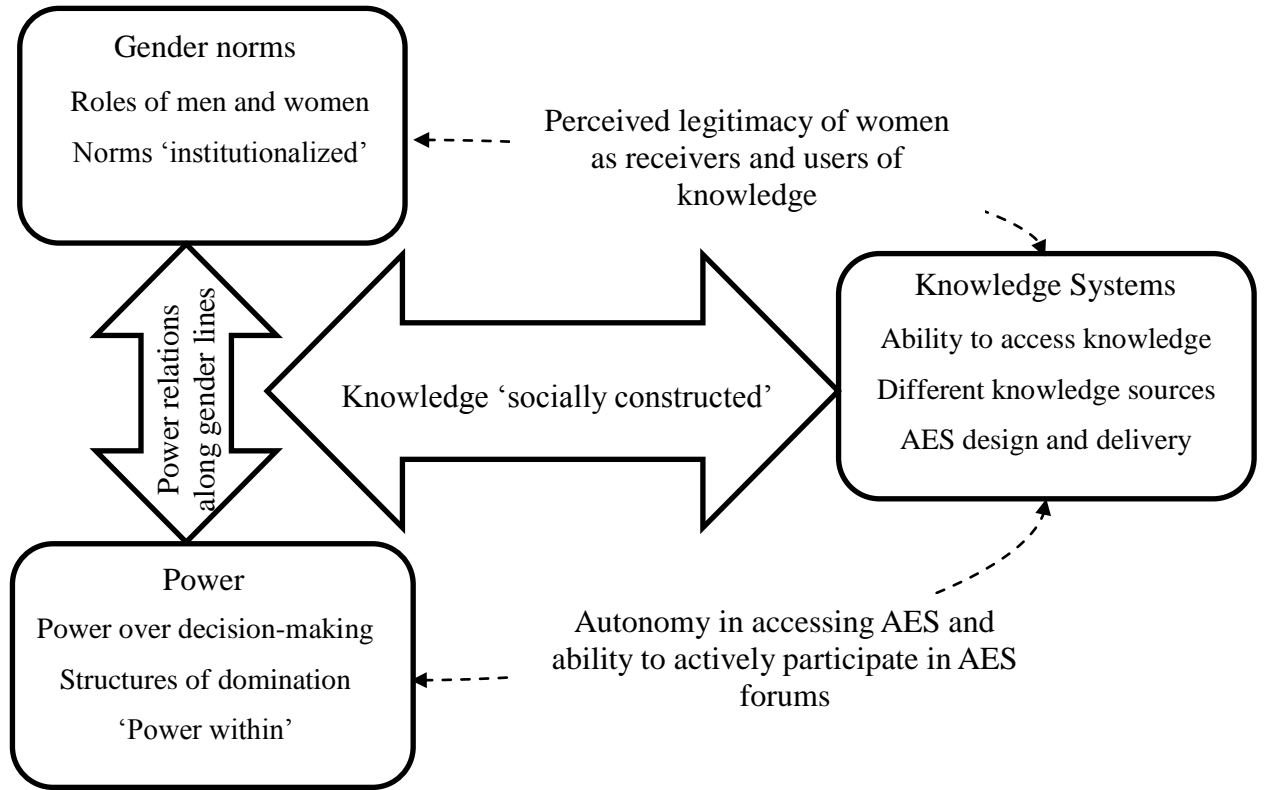


Figure 1. Schematic of analytical framework showing theories of gender norms, power relations and knowledge and interlinkages between them in relation to topics in this study.

4 Methodology

In this chapter I discuss and critique the research approach used in this study and explain how the study sites and respondents were selected. I also describe details of the methods and tools I used to collect my field data and how my findings were analysed.

4.1 Epistemology and Research Design

This thesis is informed by a ‘transformative’ epistemology which states that social science research should improve the situation for marginalised groups through the ‘transformation’ of existing institutions (Creswell, 2014). I also draw on the ‘constructivist’ view that people have different subjective experiences and that hearing actors’ own accounts is critical to understanding a situation (Creswell, 2014). This is best studied using a phenomenological research design which aims to explore “...*the lived experiences of individuals...as described by the participants*” (Creswell, 2014, p. 14). Specifically, ‘phenomenological feminism’ emphasises understanding the perspectives and lived experiences of women and sees gender as integral to how society works so that phenomena can only be understood by hearing from actors within the social system in question (Tegbaru et al., 2015). Such a research design is best served by a qualitative research approach which allows “*exploring and understanding the meaning individuals or groups ascribe to a social or human problem*” (Creswell, 2014, p. 3). A qualitative approach also emphasises research in a natural setting and presenting the perspective of actors involved, which suits my aim to investigate experiences and perceptions of women farmers themselves *in situ* in Babati (Creswell, 2014). Qualitative methods are suited to the collection of in-depth and complex descriptions and explanations of phenomena. The qualitative methods I chose to use were; group interviews, individual in-depth interviews and observations. I ‘triangulated’ different methods in order to build a detailed picture of the situation and to compensate for shortcomings of each method alone (Flick, 2006). Here I describe my chosen methods and some of their strengths and weaknesses.

4.1.1 Qualitative data collection

I conducted six weeks of data collection in March and April 2017. I chose to start collection with group interviews with farmers as they permit identification and exploration of the range of issues, perceptions and experiences amongst respondents in a particular context. This allowed me to identify at the start of my project some of the topics that were important to the farmers in relation to AES and different types or categories of respondents which could then be pursued further in in-depth interviews (Morgan, 1997). Compared to the more common ‘focus group’ structure, in which data is generated from discussion amongst a small group of participants, a ‘group interview’ uses a facilitator to pose questions to the whole group and collect answers from individuals (Flick, 2006). This allows data to be gathered from a larger group of participants and in a more structured manner. The benefit of this was that I could efficiently collect data from several farmers simultaneously and have greater control over the direction of discussions, especially with the need to translate between Swahili and English. However, it was still challenging for me to follow the discussion and check that it was staying on topic and a few times I had to revisit some questions for clarification. Another limitation of this approach is that relatively few questions or topics could be covered and the depth of detail in the collected data is more limited (Rubin and Rubin, 2005).

I complemented group interviews with individual in-depth interviews with farmers which allowed collection of more detailed data about individual opinions and experiences (Morgan, 1997). I used a semi-structured approach following a question guide. This allowed me to ensure that I covered all the necessary topics to answer my research objectives, but also allowed respondents to introduce the topics they found to be important (Flick, 2006; Rubin and Rubin, 2005). I led these interviews myself alongside a translator.

This allowed me to adapt the questioning during the interview to follow-up on interesting points and focus on questions that yielded valuable responses. Using a structure made it easier for working with an interpreter as it allowed us to prepare in advance (Willis, 2006). However, compared to an unstructured interview, it limited the opportunity for more free-flowing discussion or more in-depth exploration of relevant topics which I had not included in my question guide. Working through a translator also created challenges as sometimes questions became simplified and more direct as the nuance of the original question could not be fully translated, which sometimes led to shorter answers. Additionally, interviews took longer and less could be covered within the time available

I also conducted in-depth interviews with AES practitioners. This included representatives from the Babati District government extension service and from the research program Africa RISING⁷. These interviews were again semi-structured, but in some cases included aspects of expert interviews in which more strongly directive questions are used to gather information from their expertise in the field, alongside more open-ended questions to explore their personal perspectives (Flick, 2006). Some practitioner interviews were more like 'ethnographic interviews' which started as casual conversations which I asked to make into formal interviews. This allowed collection of candid perceptions and opinions and improved my efficiency in terms of how much data I could collect in the available fieldwork period as interviews could be done whenever the chance arose (Flick, 2006). However, the less planned nature of these interviews meant that they sometimes did not cover all relevant topics for my research objectives.

In addition to interviews, I conducted observations of two AES training sessions. This allowed me to observe events as they occurred and to evaluate the situation for myself (Flick, 2006). I could compare this to farmers' and practitioners' accounts and consider how and why there might be apparent differences between respondents' accounts and my observations. However, drawbacks of observations are that they provide only a snapshot of the conditions in the field and are from an outsider's perspective (Flick, 2006). The observers' own sociocultural background and context is likely to affect their perspective and interpretations of what is being observed. For this reason, it was important to conduct 'self-observations' to acknowledge potential research bias (Flick, 2006).

I applied several strategies to ensure the validity – the authenticity and credibility – of my project (Creswell, 2014). I triangulated my methods in order to create a detailed picture of the situation, and to compare and combine findings from different sources (Flick, 2006). I documented my process throughout including any challenges and changes to my planned methods. I also kept a notebook of observations to build a 'rich picture' of the context of my study and included self-observations to identify potential researcher bias. I tried to be constantly aware of potential bias whilst conducting interviews and interpreting my data; I continually reviewed my interpretation and coding of responses to ensure it remained the same between interviewees and true to the categories I defined. Finally, when my thesis was complete, I asked two people who were not familiar with my study to be external auditors to read and critique my thesis to ensure it is understandable to external readers.

4.2 Selection of study sites

I chose Babati District as the location for my research as it is an area of high agricultural productivity in Tanzania and the focus of myriad agricultural extension efforts (Hillbur, 2013). I also had existing contact with relevant actors in the area from an internship conducted in 2016, including government staff, research organisations and NGOs. Familiarity with actors and ways of working in Babati was critical for completion of the study in the available fieldwork period of six weeks.

⁷ I also interviewed representatives of several other organisations involved in AES delivery in Babati, but unfortunately did not have the time or space to include analysis of these results in this thesis

I selected two study villages. I have changed the names to Njiro village in Njiro ward and Ilboru village in Ilboru ward in order to maintain the anonymity of respondents. The villages were chosen for being in separate but neighbouring wards in Babati district and therefore having similar agroecology and socioeconomic characteristics but different ward-level agricultural extension officers and services. As my focus is on gender, I was also interested to have one site with a female field extension officer (Njiro village), and one with a male field officer (Ilboru village). The sites were also selected for being easily accessible from Babati town and each other.

4.3 Selection and definition of study topic

My research topic originated from observations I made whilst accompanying a team from the International Institute for Tropical Agriculture (IITA) as they delivered farmer training days in villages in Babati District in 2016. I began to observe apparent differences in how women and men farmers behaved and participated during the sessions. In particular, I noted that they often sat separately and that there were differences in how the men and women farmers were addressed and in their confidence and willingness to participate. These casual observations stayed with me and I began to wonder what effects these and other dynamics had on women farmers' experiences of AES. I wondered whether the women farmers found current AES to be useful sources of information, or if they had alternative needs and preferences. After a literature review, I identified that this was a critical knowledge gap in agricultural extension science (Manfre et al., 2013). This was the idea I entered the field with but I allowed my specific focus and theoretical ideas to emerge during my investigation as I heard from actors in the field.

4.4 Access to the field

I was supported in arranging my data collection by IITA which has a long history of working in Babati District and strong links with agricultural extension service actors. This affiliation made contact and cooperation with local actors possible. However, it will have also influenced how I was perceived by people I interviewed with implications for how respondents answered my questions, particularly when they were asked to critique AES. I observed this in some cases, although most discussions were candid. I also took steps to reduce this effect by explaining that my research was primarily for my own academic studies and not an investigation by IITA, and assuring respondents that their responses were anonymous so they were free to express their opinions. Triangulation of methods, particularly with my own observations, also allowed me to critique responses.

Before starting my fieldwork, it was important to follow local protocols and make courtesy calls to local authorities. I visited the District Agriculture Irrigation and Livestock Cooperatives Officer (DAICO) and then met with District Agricultural Extension Officers who made introductions with the Village and Ward Extension Officers in my study villages. Arrangements were then made directly with the Village and Ward Officers, facilitated by my translator.

I had previously worked with my translator, Felister, during my internship fieldwork in 2016 when we were put in touch by a mutual contact at Babati District Council. From this, I knew that we had a good working relationship and that Felister is knowledgeable about many of the issues related to my study topic from her Bachelor degree in Rural Development from Sokoine University of Agriculture. Felister is from Babati District and lives in Babati Town, so is also familiar with my study areas and with local institutions and ways of working. To prepare for the interviews, we had an initial briefing in which I introduced Felister to the objectives of my study, the aim and format of the interviews we would do, and her expected role. Although we had previously conducted interviews together, this was only the second time doing interviews with translation for both of us and it took a couple of interviews for us to find our rapport and the appropriate level of structure for our questioning. After each interview, we had a debriefing to discuss our observations

and interpretations and to review our technique so we could improve for the next interview. I found that Felister had good research instincts and was invested in collecting good data for my project. One challenge we encountered in early interviews was that sometimes Felister would re-phrase questions or ask follow-up questions without first translating the exchange to me. Additionally, she would sometimes summarise responses rather than translating them more fully. These are both common challenges of translating during interviews, and after I emphasised the importance of me hearing responses as fully and accurately as possible, our technique and the quality of data we collected continued to improve. As well as translating, Felister was invaluable in helping me to navigate local socio-cultural and logistical factors which affected my data collection such as hierarchies of communication, public holidays, and appropriate times for interviews. She also often 'translated' social norms that I was unfamiliar with and facilitated arrangements such as a car and driver and coordination with extension officers. I could not have conducted my fieldwork without her.

4.5 Methods

4.5.1 *Sampling farmer respondents*

Farmers were identified and contacted through the Village and Ward Extension Officers based on advice from local contacts that these officers would be familiar with the majority of farmers in their area, have the means to contact them, and that farmers would be accustomed to being recruited by their local officer for such purposes (Morgan, 1997). An important drawback of this approach is that my sample was consequently biased towards farmers with whom the extension officers were in easy contact. I was also dependent on the officers to follow my selection criteria rather than selecting only the best achieving farmers or most active users of extension to give a positive account of AES, which was initially challenging (see below)⁸. As my research problem is concerned with the experiences of women farmers, I spoke mainly to women farmers. However, I also interviewed some men farmers to gain broader contextual understanding of gender relations and farmer experiences of AES in Babati.

Group interview participants

For group interviews, extension officers were asked to select 10-12 male farmers and 10-12 women farmers. Participants were over-recruited to compensate for no-shows, but in the end, full numbers often showed up, particularly for men's groups, which had implications for the group interview process (see below). In two (of eight) cases especially, participants were selected for convenience so that the groups could be conducted at the pre-arranged time, which was critical when a translator, two facilitators, the Village Extension Officer, and a car and driver had been recruited and paid for that day; one group were recruited after a community funeral in Njiro village, and another group after prayer in the mosque in Ilboru village. The only sampling criterion was that the participants should be farmers, so I had little influence over the sample, however, in practice, the groups were generally a mix of ages, experience levels, and activeness in using extension which provided a broad range of farmer perspectives, although there was a bias towards members of Farmers Groups.

Individual interview participants

For individual interview respondents, I used purposive sampling. The extension officers were given criteria that respondents should be: women (plus two men in each village) and involved in the farming activities in their household. I also requested to talk with a mix of more active and less active users of extension and a mix of female heads-of-household

⁸ In Ilboru village the officer initially arranged interviews only with farmers who were very high-performing and active users of extension. I had to repeatedly request to also speak with individuals who were less engaged with AES.

(FHH) and women farmers within male-headed households (MHH), because this is an important factor in accessing extension (Doss, 2001). Towards the beginning of my fieldwork, there were a couple of instances where officers did not follow these criteria, either intentionally or unintentionally⁸. It also took me some trial-and-error to define the criteria I needed and identify caveats to these⁹. After I clarified my criteria, the officers connected me with suitable respondents. Respondents were also selected for convenience and availability; with limited fieldwork time, ease of access to respondents was an important factor (Flick, 2006). A summary of my farmer respondents is shown in Table 2.

My sampling was (re)defined as the research progressed based on emerging findings and theories. Further respondents were selected for the expected level of new insight they would bring, again using criteria given to the extension officers (Flick, 2006). I initially planned to talk only with women involved in farm management and using AES themselves, but I later adapted the sampling to also speak with women who were not involved in management decisions, as this represented a significant proportion of women farmers in the study area and yielded interesting perspectives. As far as possible, interview respondents were different from group interview attendees, in order to avoid responses being influenced by group responses. However, in Njiro village where the extension officer was relatively new to her role and seemed less able to contact a wide range of farmers, a few of the farmers I interviewed individually had also attended a group interview. This limited the breadth of my sample, but access via the extension officer was the most pragmatic option in the time available. The sample was determined to be big enough when there was 'saturation' of information with little new data added by each additional interview (Flick, 2006).

4.5.2 Group interviews

I started with group interviews with farmers. I conducted eight groups in total; four in each study village, two with men and two with women, done in two rounds. After a first round, I decided that follow-up groups were needed for detail and clarification on topics from the first discussions (see (Morgan, 1997)). Each group contained seven to 12 participants. Men and women were in separate groups. Discussions were semi-structured, following a framework of seven topics with guiding questions. A first group which was significantly delayed due to a community funeral and ran overtime so that not all topics could be covered was used as a *de facto* pilot to refine the topic guide in order to keep the discussion within two hours and focus on questions which yielded valuable answers. Discussions were led in Swahili by facilitators who had been briefed in detail about the aims of the project and of the group discussion. A male facilitator led the men groups and a female facilitator led the women groups in order to minimise gender power relations which could influence responses. The facilitators were recruited for their familiarity with agriculture and development in Tanzania, experience of academic field research, and for being local to Babati District. I sat at the side with a translator who summarised the discussions to me so I could follow the process and add follow-up questions or clarifications where needed. The local extension officers generally sat and observed. I initially intended that the officers would not be present in order to remove the possible influence of power relations on farmers' responses, particularly when they were being asked to critique AES. However, during the pilot group interview, I found that when the extension officer was absent, discussions were exceptionally slow and difficult, primarily due to confusion amongst the farmers about the different types of AES which the facilitators and I were unable to solve. Felister and the facilitators also advised me that farmers are not comfortable talking to unfamiliar external actors without the extension officer present, or at least without the

⁹ For example, when I asked to speak to 'less active' users of extension, the officer in Njiro village selected a farmer who had very recently moved to the village and this was the reason they were not engaged with local AES. I therefore had to clarify that respondents should be established in the area.

officers' explicit endorsement of me and my research activities. I therefore decided that in order to generate any data, it was necessary to have the extension officer present during the group interviews. They were asked not to contribute, except to clarify points of confusion. As far as I could observe, the farmers' responses did not seem to be significantly inhibited by the extension officer's presence. Groups were held in the Village extension office in Njiro village and in the Ward office in Ilboru village.

I took notes and recorded the discussions on a Dictaphone. The second facilitator also wrote key points on flip-chart sheets taped to a wall at the front of the room¹⁰. The discussions each lasted around two hours. The process started with an introduction of my project, and the names and roles of the facilitators and translator. The facilitators then asked questions and collected responses from the participants. The first task was for the farmers to construct a list of the different types of agricultural extension services in their village which was written on the flipchart by the facilitator. This list defined the scope of the rest of the discussion. One question involved a voting exercise; farmers were given stickers to put on the flipchart sheets to indicate which types of extension they; i) used most, ii) used least, iii) liked most, and iv) liked least (see (Silverman, 2013, p. 213). Each category was voted on separately. Each farmer had three stickers to use for each category and were asked to vote for three different types of extension in each case (Figure 2). For 'use most', they could return stickers if they used fewer than three types of extension. The three extension types with the most votes in each category were shortlisted for discussion. At the end of the sessions, farmers were given a chance to comment or ask questions.



Figure 2. Left: Women farmers vote for the AES they use most and least. Right: Votes on a flipchart sheet; pink stickers show 'use most', yellow show 'use least'

¹⁰ I had initially not planned for the second facilitators to be present during group interviews in order to avoid power and gender relations which may affect farmers' responses. However, I found that it was necessary to have someone to summarise the responses on the flipchart sheets, so they became involved as a matter of practicality. However, they were asked not to contribute to discussions and overall it seemed that their presence did not significantly affect farmers' responses.

Table 2. Details of farmer respondents in individual interviews

Identity in text	Gender	Age	Household head	Size of farm (Ha)	Production for consumption or sale	Responsibility for decision making*	Responsibility for AES use*	Member of farmers group	Date of interview
Njiro Village									
Woman farmer 1	F	36	FHH (widowed)	3	Mostly consumption	Herself	Herself	Yes	27/3/17
Woman farmer 2	F	31	MHH	9	Mostly sale (80:20)	Husband	Neither	No	27/3/17
Woman farmer 3	F	27	MHH	0.25	Mostly consumption, sell surplus	Both her and husband	Both	No	30/3/17
Woman farmer 4	F	33	MHH	5	Mostly consumption, sell surplus	Both her and husband	Husband	No (but last year)	30/3/17
Woman farmer 5	F	36	MHH	5	Mostly consumption	Husband	Both	Yes	30/3/17
Woman farmer 6	F	40	FHH (widowed)	1.5	Consumption	Herself	Herself	Yes	31/3/17
Woman farmer 7	F	46	MHH	8	Mostly consumption, sell surplus	Husband	Herself	No (but last year)	11/4/17
Woman farmer 8	F	34	FHH (husband lives elsewhere)	1	Both	Herself	Herself	Yes	19/4/17
Man farmer 1	M	40	MHH	5	Mostly consumption	Himself	Himself, wife if absent	Yes	11/4/17
Man farmer 2	M	44	MHH	7	Both	Himself	Himself	Yes	19/4/17
Ilboru Village									
Woman farmer 1	F	45	FHH (widowed)	3	Both	Herself, sometimes adult children	Herself	Yes	3/4/17
Woman farmer 2	F	40	MHH	8	Both	Husband	Husband	No	3/4/17
Woman farmer 3	F	42	MHH	2.5	Both	Both her and husband	Herself	Yes	4/4/17
Woman farmer 4	F	46	MHH	4.5	Mostly sale	Both her and husband	Herself	Yes	4/4/17
Woman farmer 5	F	45	MHH	8	Both	Husband	Husband	No	5/4/17
Woman farmer 6	F	38	MHH	2	Mostly consumption	Both her and husband	Herself	Yes (newly)	5/4/17
Woman farmer 7	F	38	MHH	4	Mostly sale	Husband, some cooperation	Both	Yes (newly)	5/4/17
Woman farmer 8	F	47	FHH (widowed)	0 (rents 1)	Consumption	Herself	N/A	No	10/4/17
Man farmer 1	M	46	MHH	6	Both	Himself, some cooperation	Himself	Yes	10/4/17
Man farmer 2	M	60	MHH	5	Mostly consumption, sells surplus	Himself	Himself	No	10/4/17

*Respondent asked directly to identify the person responsible for this role in the household. In-depth discussions later in interviews revealed more detail and nuances about the responsibilities.

Table 3. Details of AES practitioner respondents

Government Extension Service			
Identity in text	Role	Interview date	Interview format
Female District Officer	District Level Officer	10/3/17	Semi-structured in-depth interview
Male District Officer	District Level Officer	10/3/17	“ “
Female Field Officer, Njiro Village	Village Level Officer, Njiro Village	23/3/17 and 19/4/17	“ “
Male Field Officer, Ilboru Village	Ward/Village Level Officer, Ilboru Village in Ilboru ward	22/3/20	“ “
DAICO	Acting District Agriculture Irrigation Livestock and Cooperative Officer, Babati District	19/4/17	Ethnographic key informant interview
Research Organisation, IITA			
Identity in text	Description of Role		
Practitioner 1	Coordination of research in Babati District, Africa RISING	2/3/17 and 7/3/17	Semi-structured in-depth interview
Practitioner 2	Scientist, maize project	8/3/17	Ethnographic key informant interview
Practitioner 3	Field Officer, vegetable project	21/4/17	Semi-structured in-depth interview
Practitioner 4	Technology Scaling Specialist, Africa RISING	17/4/17 (together)	Semi-structured in-depth interview (together)
Practitioner 5	Field Officer, Seliani Agriculture Research Institute	17/4/17 (together)	Semi-structured in-depth interview (together)

4.5.3 Individual interviews

Following the groups, I conducted one-on-one interviews with farmers. I interviewed eight women and two men in each village. Interviews were semi-structured and lasted one to one and half hours. A translator translated my questions to Swahili and the responses back to English. The interviews followed an informal pattern of questioning guided by a framework which included some closed, survey-style questions to collect metadata such as age, farm size, crops and animals, and marital status (Silverman, 2013). The order of the questions was adapted to responses and follow-up questions were used to gather more detail about interesting statements (Rubin and Rubin, 2005). The guide was adapted throughout the interviews as it became clear which questions yielded more useful information (Rubin and Rubin, 2005). The focus was on gathering detailed individual accounts from farmers about; what AES they use and prefer, their ability to hear about and attend different AES activities, divisions of responsibility for AES use and farm management decisions within their households, their experiences of participation during AES activities, and their perceptions about opportunities to influence the content and delivery of AES. Interviews were recorded on a Dictaphone and in written notes.

I also conducted in-depth interviews with AES practitioners. These included government agricultural extension officers at the District, Ward and Village level as well as individuals within or working with the research programme Africa RISING led by IITA¹¹. A summary of these respondents is shown in Table 3. These respondents were identified by ‘snowball sampling’, starting with my existing contacts. I focused on staff involved in design and delivery of AES and/or those familiar with their organisation’s policies relating to farmer training and gender inclusivity. I made sure to talk with respondents of both genders. The

¹¹ I also interviewed actors from other organisations involved in local extension service delivery, but did not have the time to analyse this data to include it in my thesis

interviews were again semi-structured and guided by a question framework designed to gather respondents' expert knowledge, but also to explore their personal perspectives. The interviews lasted approximately one hour. A translator was used where necessary, although most interviews were conducted in English. Some began as informal conversations with field contacts and I then asked permission to develop them into a more formal interviews.

4.5.4 Observations

Throughout data collection, I kept a field diary of observations. I particularly focused on indications of attitudes and opinions relating to gender and the delivery of extension services. I noted descriptive observations as well as my own thoughts or impressions (Flick, 2006). I also conducted observations at two training events held in or close to each of the study villages, happening at a time when I was in the area and not busy with interviews. In Ilboru village I observed the first session of a new vegetable production group which involved establishing a vegetable demonstration plot. I also observed a training about Farmers Group management and crop row spacing techniques in a town near Njiro village. During these sessions, I took note of how training was delivered, the behaviour of the trainers and the farmers, and indications of factors relating to gender. I took notes and photographs, and asked some informal questions to those involved.

4.5.5 Data analysis

Throughout my study, themes and theories were 'emergent'; they were developed and became defined and re-defined as the data was collected and analysed (Silverman, 2013). Analysis started in the field; directly after interviews I made notes on the main points from the discussion, and my thoughts and impressions. I had a debrief with the facilitators and translator to obtain insights from those who were more familiar with the local context than me, and to clarify things I had missed. I identified some broad themes during this process.

Using my written notes as a starting point, I transcribed the interviews using a trial version of InqScribe. Where more detail was needed, I listened to the audio recordings and transcribed the English parts of the discussion. Particularly relevant sections were transcribed exactly but otherwise detailed notes were made (see (Flick, 2006). Where I felt details had been missed during the on-the-spot translation, I emailed the audio file and transcript to my translator and she added detail from the Swahili discussion.

After all interviews were transcribed, I constructed a matrix in Excel. I used my research questions and initial broad themes identified in the field as headings. I went through each interview and pasted responses from the transcript into the relevant sections. Headings were iteratively refined and sub-themes added as patterns emerged. These headings were used to structure the analysis of my empirical findings, which comprise the next chapters.

5 Empirical Findings: Women farmers' use of agricultural extension

This chapter is the first of two empirical chapters. In the first section (5.1) I focus on Objective 1 and detail my findings about the use of different AES by farmers in Njiro and Ilboru village, mainly based on responses and observations from group interviews. Specifically, I present indications of ways in which women farmers' access to, and use of, AES may differ from that of men farmers and initial suggestions of particular factors that women farmers face in using AES. At the end of the section there is a short discussion of these findings with reference to theories and literature. In section 5.2 I draw on individual in-depth interviews and field observations to address Objective 2 by exploring in greater detail the factors affecting women farmers' ability and willingness to use different AES, with a particular focus on the influence of societal gender norms. At the end of this section, I again discuss the findings using theory and literature. Further empirical data is then presented in Chapter 6.

5.1 Women farmers' use of, and preferences, for different agricultural extension services in Babati District

As a starting point for investigating my research problem, I identified the types of AES that women and men farmers in Njiro and Ilboru were familiar with. The first task in group interviews was for farmers to identify the extension services available in their villages. The first types of AES mentioned by almost all respondents – both men and women – were: Meeting with an Extension Officer; Phone Calls with an Extension Officer; Community Meetings; Farmer Groups; and Farmer Field Schools (see Appendix I for descriptions, Appendix II for summary of lists). Other types of extension, mostly comprising technical training, often delivered by private actors, were identified much more slowly and hesitantly and only with prompting from the facilitators¹². In some cases, the extension officer had to describe or clarify what certain types of technical extension were (e.g. 'Field Day' or 'Mother-Baby Plots') before farmers recognised it, even if they had used it¹³.

For farmers in Njiro and Ilboru, the primary source of extension therefore appears to be contact with their local government agricultural extension officer through one-on-one meetings and phone calls, in general meetings with the whole community, or sometimes through group training. Other types of technical extension are generally less familiar. This seemed to be particularly true for women farmers. During group interviews women farmers were particularly hesitant to talk about types of technical extension compared to men farmers. They were less certain when naming types of extension, and identified fewer unprompted than men, indicating a lack of familiarity with technical training amongst women farmers. Their hesitation was also partly due to shyness in front of unknown hosts; as one group explained, they did not speak freely at the start of the session because they were unfamiliar with us 'newcomers' and with the discussion topic. This reticence with unknown people and new topics suggests that women farmers may also be less willing and comfortable to fully participate in technical extension activities led by external actors.

There were also indications of differences in the types of AES that women and men farmers used and preferred. These emerged during an exercise where farmers voted to shortlist the three types of extension they use most, use least, like most and like least, and

¹²Prior to interviews, I compiled lists of the extension methods used in Njiro village and Ilboru village in collaboration with the local extension officers. It was left to the farmers to name the ones they knew but the lists were used by the facilitators to prompt for further suggestions.

¹³This was one of several indications that there are issues in how AES are communicated to farmers in general; farmers were apparently not familiar with the different extension types as defined by training providers, and perhaps do not see such a clear distinction between them or know them by the names AES providers use. This would be an interesting and valuable research topic.

then discussed the reasons behind these shortlists. Table 4 shows which AES methods were shortlisted for each category by women and men in group interviews in Njiro and Ilboru village, and the number of votes each received.

Table 4. Use of, and preference for, different types of AES as shortlisted by farmers through a voting exercise during group interviews. The extension types are shown in the order in which they were listed by farmers. Number of votes are shown and the total number of participants is given in the column headings ($n = x$). Source: field data for this thesis, first round of Group Interviews.

		Njiro Village		Ilboru Village		
		Men (n = 10)	Women (n = 10)	Men (n = 12)	Women (n = 7)	
Used most	Community Meeting	8	Community Meeting	6	Visit with extension officer	7
	Farmers Groups	5	Visit with extension officer	5	Demonstration Plot	5
	Field School	3	Farmer-Farmer Contact	4	Farmers Groups	9
Used least	Field Day	10	Field Day	6	Community Meeting	12
	Seed Plot	6	Demonstration plot	9	Field Day	12
	Phone call with extension officer	6	Study tour	6	Study tour	12
Liked most	Farmers Groups	5	Farmers Groups	7	Visit with extension officer	7
	Demonstration Plot	6	Visit with extension officer	6	Study tour	10
	Mother-Baby Plots	5	Farmer-Farmer Contact	6	Farmers Groups	6
Liked least	Field Day	9	Field Day	7	Community Meeting	12
	Phone call with extension officer	4	Phone call with extension officer	7	Field Day	9
	Seed Plot	4	Farmer Field School	5	Farmer to Farmer Contact	12

Overall, focusing on the types of extension used most, there were indications that women farmers primarily use forms of one-on-one contact with an extension officer, general community meetings and learning from neighbours and other farmers whereas men farmers were more likely to use technical training through formal groups and demonstrations (Table 4). Even when women in Ilboru village shortlisted Demonstration Plots amongst their most used forms of AES, discussions revealed different reasons for this compared to men farmers. Whilst both appreciated the opportunity to learn about improved seeds and to compare 'local' and 'best' farming practices, women farmers also saw Demonstration Plots as "...a learning place" where "one can meet with other farmers and have a discussion"

(Woman in group interview, Ilboru village, 17/03/2017). This, combined with the fact that the two other most used types of extension by Ilboru village women are one-on-one contact with the extension officer (in person or by phone) suggests that, for women farmers, Demonstration Plots provide a rare forum for group training and learning with other farmers.

It emerged during discussions that the observed differences were partly due to preferences of men and women farmers for different sources of extension knowledge. Women farmers in both villages voted Farmer to Farmer Contact¹⁴ amongst their most liked types of extension. Their reasons included the chance to add to their knowledge by discussing methods with others and benefiting from others' experience. They also liked being able to directly observe whether or not their neighbours achieved a good crop from using these methods. In contrast, men farmers voted Farmer to Farmer Contact amongst their least used types of extension, citing jealousy and competitiveness; "*If I teach another, they will overtake me*" (Man in group interview, Ilboru village, 17/03/17), and stating that they want to learn independently rather than be taught by their peers¹⁵.

Another difference was that men in both villages included Farmers Groups amongst the types of extension they used the most. On the other hand, neither of the women groups did, which indicates that they use Farmers Groups less than men farmers. Nevertheless, women in Njiro *liked* Farmers Groups most because they offer the chance to exchange ideas and discuss things with other farmers, which they felt made Groups particularly effective compared to learning alone. They also stated that Groups provide access to inputs, further training opportunities, and contact with the extension officer and NGOs. In Ilboru village women farmers included Farmer Field Schools amongst their most liked forms of AES (but not amongst their most used) for the chance to learn about the whole farming process from selection of seeds and land preparation through to harvesting, and because they offer practical education. These two examples demonstrate that there are types of technical extension that women farmers see as preferable but currently do not often use.

Discussions around the types of extension the farmers used least also revealed interesting patterns which suggested differences in men and women farmers' ability and willingness to use different AES. In Ilboru village, both women and men voted Community Meetings amongst their least used types of extension. However, whilst men farmers' reasons were because the meetings rarely include agricultural information, women instead said that they do not see the "*need*" or "*importance*" for them to attend the meetings and that it is not their concern.

Another interesting difference concerned Field Days (FDs). In both villages, both women and men farmers voted FDs amongst the types of extension they use least¹⁶ but the reasons given by men and women farmers for low attendance were notably different. Whilst men stated that it was because FDs happen infrequently and far from the village, women farmers again said that they did not see the importance of FDs or the need to participate. They also stated that they were rarely informed or made aware about the FDs, or at least not early enough to arrange to attend. In general, more men than women had attended a FD and several extension practitioners stated that attendance of women farmers at FDs was generally much lower than men farmers. This suggests, firstly, that information about

¹⁴ Farmer-Farmer Contact can be informal contact with a fellow farmer or neighbour, or with a specially trained 'contact farmer' (see Appendix I for more detail). In most discussions it could be inferred that farmers were talking about the former. Three out of the four of the women groups included it early in the list of extension types, compared to two of the four men groups, both of which only added it when it was remembered later in the group discussion.

¹⁵ Some of these points were also mentioned by women farmers in Ilboru village who, despite voting it amongst the methods they liked most, actually *used* Farmer to Farmer Contact least; again, jealousy was mentioned, but large distances between farms was also a factor for women.

¹⁶ All of the men in one of the group interviews in Ilboru village had attended a FD last season but perceived that they rarely use this type of extension; they stated that FDs are infrequent, which will mean that they use these less than types of training that happen more regularly.

extension activities primarily reaches men farmers - unlike the women, the men heard about FDs and had other reasons for non-attendance - and, secondly, that women farmers need notice in order to make arrangements to attend extension activities. When I asked one widowed woman who regularly attended extension how she had time, she described that she had to make time to complete all of her domestic tasks early in the morning before attending. This was similar to responses from women in Njiro who stated that they used Community Meetings more than other types of extension because they are announced a day in advance so they *“have time to prepare to attend”* (Woman in group interview, Njiro village, 18/03/2017).

Another interesting factor was revealed by the types of AES farmers liked least. Women farmers in both villages voted that they liked Phone Calls with an Extension Officer least, as did the men group in Njiro village. Most interestingly from a gender perspective, the farmers stated that this was because they can create conflict between husbands and wives. The women in Ilboru village stated that their husbands get suspicious of them using a phone, particularly to contact a male extension officer. In Njiro village, this issue was mirrored; men stated that calling the female extension officer could cause conflict with her husband.

One factor that emerged strongly throughout discussions was the importance of Farmers Groups as a determinant of farmers' access to AES. Farmers indicated that group membership is a gateway to extension. One described; *“most training is delivered within Farmer Groups”* (Man Farmer 1, Ilboru village, 10/4/17), and a woman in Ilboru village stated; *“...sometimes it is hard for me to get training, because if you want to get training you have to be a member of a Farmers Group”* (Woman Farmer 2, Ilboru village, 3/4/17). Overall, group members described that they now used much more extension than they had before they joined a group. Several stated that the only AES they had attended in the last year was their Farmer Group sessions, which demonstrates the primacy of groups as a source of extension, but others described that they also had increased awareness of, and access to, other AES due to their group membership. The field officers reiterated this, explaining that most, if not all, technical training is preferentially available to Farmer Group members. For example, participants on Study Tours are selected from Farmers Groups and Demonstration Plots are often managed by Farmer Groups. It was explained that it would be rare for farmers who were not in a group to access technical training. Instead, these farmers mostly get extension information through quarterly Community Meetings, contact with the extension officer, advice from fellow farmers, or from information boards displayed at demonstration plots. These provide basic and general extension information, and, as one woman stated; *“one needs to be in a group to get more detailed training”* (Woman Farmer 1, Ilboru village, 3/4/17). This has important implications when only a small proportion of farmers in both villages are in Farmers Groups and, critically, because there were indications that women farmers are less likely to be part of Farmers Groups than men (see Section 5.2.7)¹⁷.

5.1.1 Discussion

Overall, the primary source of extension for both men and women farmers was contact with their local extension officer. Generally, other forms of technical training were used less consistently and were also less familiar to the farmers. This was particularly true for women farmers who prioritised contact with an extension officer and peer-to-peer learning from other farmers as their most used and preferred forms of extension. On the other hand, men farmers seemed to use technical group training such as Farmer Groups and Field Days more commonly. More than men farmers, women farmers emphasised the chance for discussion, to exchange ideas and to learn as a group as a desirable feature of AES. This seems to reflect a concept from the actor oriented perspective which says that different actors will

¹⁷ See previous page and section 5.2.7. The rate of Farmers Group membership reported by extension officers was only 10-15% of farmers in the villages.

have different interests and ways of creating and using knowledge (Leeuwis et al., 1990). Furthermore, the generation and use of knowledge by farmers will be strongly shaped by social and cultural factors (Leeuwis et al., 1990), something which is reflected in my findings; there were indications that women's responsibilities for domestic work, perceptions about the 'need' for women to attend extension, whether women receive information about AES opportunities, and social norms about interactions between women and men all affect women farmer's access to, and use of, AES. The next section draws on in-depth interviews to explore these and other factors in more detail and consider how they affect women farmers' willingness and ability to use different types of AES.

5.2 Factors that determine women farmers' interest, willingness and ability to use different types of agricultural extension

Findings in this section are drawn primarily from in-depth interviews with farmers which revealed detail about a number of important factors that influence women farmers' use of agricultural extension services.

5.2.1 Domestic responsibilities

A major theme that emerged was that women farmers often have limited time to attend extension activities because social norms dictate that they are expected to spend a majority of their time at home doing domestic tasks. According to some, this made it difficult to attend extension activities in the morning "*when women are busy taking kids to school, feeding cattle, going to collect grass, making lunch for kids*" (Woman Farmer 5, Njiro village), whilst others reported similar restrictions in the afternoon. This is in addition to women providing the majority of labour on farms, as reported by both farmers and practitioners. This 'double burden of responsibility' means women's time is occupied by fulfilling both productive and household responsibilities, leaving little opportunity for other activities such as extension training (Manfre et al., 2013).

An illustrative example came from a woman in Njiro village who had last year been a member of a maize producers group but this year did not have time, because she had to stay home and "*do all activities at the house*" since her teenage daughter had moved out. During our interview, the woman was looking after a young son at home whilst her older son was out herding their cattle, which she did herself when he was at school. As she described it; "*Women have many responsibilities at home compared to men. Men deal only with farming, so if they have finished at the farm they can go anywhere. Women have to stay at home from morning to evening*". In this case, the woman was interested to use extension services but could not, whereas her husband had; "*...no interest or motivation to attend training*" (Woman Farmer 7, Njiro village, 11/4/17). Another woman reported that domestic responsibilities also constrain women's ability to implement extension training; "*I have a lot of family work to attend. When I sit down and think, I do not have time to follow-up on activities of the group, so I do not attend group trainings*" (Woman Farmer 4, Njiro village).

Domestic responsibilities were also found to play a part in determining the suitability of the location of AES for women farmers. Some women described that they needed training to happen at or near their homes in order to get back quickly for childcare and food preparation. This was illustrated in group interviews where, although both women and men used Contact with an Extension Officer most because they could get tailored advice, women also stated that; "*it is easy to contact him*" and "*he arrives quickly*" (Women in group interview, Ilboru village, 17/3/17) suggesting that they depend on the officer coming to them. In Njiro village, women used the extension officer most because "*she has a motorcycle*" so was able to visit them at home (Women in group interview, Njiro village, 18/3/17). Men farmers, on the other hand, did not mention ease of access but instead said they found it motivating to meet with an extension officer and felt pride if they were used as an example for other farmers.

As mentioned in the previous section, a number of women stated that they needed advance notification about AES activities in order to make arrangements to cover their domestic responsibilities so that they could attend. I observed evidence for this during an all-day extension training session in a town near Njiro village, where some women had young babies with them and breastfed during the session. The ability to bring their young children was apparently an important factor for these women to be able to attend.

I also encountered some of these factors when arranging my group interviews. Women generally attended in smaller numbers than the men and some had to leave early to attend to domestic responsibilities. I was also advised by local contacts that it was often more difficult to arrange groups of women because they cannot take time away from domestic work. In one case, where there were very few attendees at the arranged time, we took one woman – who had taken the lead for calling others to persuade them to come – in a car to collect other women from their houses, which demonstrates that they needed particular persuasion and facilitation to attend.

5.2.2 *Division of production: crops, plots and formality of production*

Another theme that emerged was that responsibilities for different parts of agricultural production were split between men and women along defined gender lines, with implications for extension use. Several respondents stated that local cultural norms dictate that, in general, maize and other crops produced in the main farm plot, sometimes for commercial purposes, are the domain of men, whilst women are primarily involved in the production of products such as vegetables and poultry on plots at the homestead, often for home consumption or local sale in small stalls. As one woman farmer in Ilboru village explained;

“The production of maize, sesame, sunflower, commercial crops is the domain of men. Women have no say about these products. After harvest a woman will just take maize for home consumption but she has no say in the selling of maize. However, it is easy for her to sell things like chicken, vegetables” (Woman Farmer 6, Ilboru village, 5/4/17).

Interestingly, women often had primary responsibility for home plots and men were rarely involved in decisions made about these plots, even when maize was grown here;

“...at the big farm where my husband plants maize and other commercial crops, I am not able to sell these for myself, but I deal with the home plot which is mainly used to grow vegetables, and if I plant some maize around the vegetables, I am able to sell this maize myself” (Woman Farmer 2, Ilboru village, 3/4/17).

A male respondent in Ilboru village similarly described;

“My wife is the one who is responsible for the farming on the home plot. She decides on all activities because the plot is small – I feel like I should let her make decisions here because women stay at home most of the time” (Man Farmer 2, Ilboru village, 10/4/17).

Although this indicates independent responsibility by women for some parts of production, interview responses suggest that these home plots are not seen as part of the formal agricultural production of a household. In most cases, interviewees did not mention the crops grown in these plots when asked what they farmed, and only discussed them if asked explicitly about the home plot. This included some women whose primary responsibility was this homeplot.

This division in responsibilities has implications for women’s use of extension in two main ways. Firstly, it became apparent that much of the agricultural extension services in Njiro village and Ilboru village were focused on maize and production methods for larger plots. The local extension officer in Njiro village confirmed that overall, there was more training about maize, pigeon pea and sunflower production whilst training about other topics, including vegetables and chickens, happened more rarely and often on an *ad hoc* and individual basis during visits to farmers at their homes. Mainstream agricultural

extension services in Babati are therefore focused on crops, plot sizes and production systems which are primarily the responsibility of men farmers and not on the types of production that women farmers are often responsible for. Consequently, extension services are often not relevant to women farmers; this was expressed by one woman farmer in Njiro village who felt that AES were not for her as she has only a small plot and mainly grows vegetables (Woman Farmer 3, Njiro village, 30/3/17). This biased focus of extension services may be self-reinforcing as several respondents reported that the farmers who are involved in deciding what training will be delivered are usually those who have large farms and grow maize; *“The people who contribute during consultations about extension needs are those with large farms, who mostly grow maize and sorghum, and sunflower.”* (Woman Farmer 3, Njiro village, 30/3/17). Consequently, farmers with training needs about other topics may not be heard. As this woman further explained, she is; *“...not comfortable to ask questions or make requests because at the meeting most people are not dealing with vegetables and most people want to hear about maize”* (Woman Farmer 3, Njiro village, 30/3/17).

The second way in which this gendered division of responsibilities influences women’s use of extension is that efforts to target women are consequently focused on types of production which are typically seen as ‘female’, rather than seeking to include them in mainstream extension. When asked to identify efforts to target extension to women, farmers and practitioners both primarily mentioned groups focused on vegetable production – some of which were explicitly linked with nutrition and cooking – and a group in Ilboru village focused on chicken rearing aimed at widowed women. Responses suggested that the focus on vegetables and poultry was decided by extension providers based on their own observations and interpretations of women farmers’ roles in farming production, as opposed to being based on the farmers’ articulated needs. This is discussed further in Chapter 6. Some women I interviewed in fact expressed interest in extension about commercial farming and maize production; *“Women should be given general training about maize production because they are the ones who do most of the work on the farm”* (Woman Farmer 7, Ilboru village). It was described that; *“Women are interested to join trainings about maize but there is little involvement of women. There is a saying “Your chance is still not yet” (nafasi yako bado tu)”* (Woman Farmer 6, Ilboru village). However, other women farmers were interested in learning about vegetables and poultry. In fact, several saw the fact that these were traditionally women’s domain as a way to gain autonomy over income and purchasing decisions normally controlled by men; *“According to the culture, men are not involved in vegetable farming, so if I had the means of producing vegetables it will be ‘more payable’ to me”* (Woman Farmer 2, Ilboru village), and; *“Women can sell chickens because men are not involved with poultry keeping”* (Woman Farmer 5, Njiro village).

The situation was often different in female-headed households where women were responsible for all parts of production which, in some cases, included traditionally male crops like maize. When these women used extension, they were the sole users of extension in their households. Also, in some married households, women shared responsibility for production and using extension with their husbands, as discussed in the next section.

5.2.3 Decision making and ability to implement training

Another critical factor affecting women farmers’ use of extension services was related to farm decision-making. Both farmers and practitioners reported that, in most married households, men are primarily responsible for decision-making about the main farm plot, whilst women are often involved only in implementation of practices; *“My husband is the one who makes decisions; I am not involved. I just work at the farm”* (Woman Farmer 5, Ilboru village, 5/4/17). The degree to which this was true varied between households. Some women said that they shared some decisions with their husbands; *“My husband makes the decisions but he also involves me. For example we discuss which crops to grow this year”* (Woman Farmer 2, Ilboru village, 3/4/17). Another woman reported a more equitable

collaboration on the whole process; *“Me and my husband cooperate from the beginning to the end of production – we advise one another”* (Woman Farmer 3, Ilboru village, 4/4/17). Another woman reported that responsibility was divided between different stages of the production, although her husband was still framed as the one who delegated responsibility and money; *“During the planting season, my husband takes responsibility, but when it is time for weeding, he tells me to take responsibility; he gives me money and I will be the one to decide what to do”* (Woman Farmer 6, Ilboru village, 5/4/17).

Accounts from men farmers during group interviews were illuminating. Some men in Njiro village stated explicitly that decision making was always done by men, because *“that is our culture and customs; men inherit the land so they make the decisions”* and described that even though women were heavily involved in all farming activities, the *“man still makes the decision about the timetable of those activities; he will say “today we will do weeding””*. However, others within this same group argued that women were involved in the decision making. There was lively discussion around this, and ultimately the group suggested that in around 80% of households men make the decision but *“20% of us involve women in the decisions”*. This indicates that these dynamics vary between households which was additionally demonstrated by a men’s group in Ilboru village reaching a different consensus that the majority of them involved women in decision making. They explained that *“My wife is a partner, we live together”* so they sought her ideas for the farm. Another man explained, light heartedly, that he did this to *“avoid family conflict”*, which indicates that there is negotiation and perhaps disagreement between him and his wife about responsibilities for farm decisions in his household. In contrast, the dominant opinion in another men’s group in Njiro village was that *“it is normal”* that men make all the decisions on the farm. A minority of respondents from this group suggested that this was because men and women have different thinking and decision-making capacities; *“If you have 100 women, maybe 4 or 5 have the capacity to make good decisions in the household”*, although other men in the group rejected this statement. Some linked it to confidence; *“Even if I gave my wife the opportunity to make decisions, she would wait for me to make the decision”*. The men in this group suggested some parts of Tanzanian society had a strong patriarchal system – ‘mfumo dume’ – which meant that women did not have the chance to participate in discussions or decisions. However, they did not perceive that this existed in Njiro village; *“Here, women have the opportunity to speak, but they don’t because they have fear”*. This was presented as an intrinsic behavioural trait of women.

Decision making responsibility was strongly linked by some to ownership of land. It was reported that agricultural land in Babati District is customarily the property of the man in a household which respondents explained gives him primary responsibility for management decisions; *“Women don’t have land; men own the farms and that means they make the decisions”* (Woman Farmer 4, Njiro village). This has direct implications for women farmers’ use of extension. For example, one woman in Njiro village stated;

“I don’t have a farm, it is my husband’s, so even if I attended training, where would I go to practice it? It is hard to ask a man to give me the farm, or to go and practice the methods on a man’s farm without his permission” (Woman Farmer 2, Njiro village, 27/3/17)

Women farmers’ lack of ownership of land means, firstly, they have no land of their own on which they are able to implement extension training, and secondly, that they do not have a say over how the land which is property of their household is managed.

5.2.4 Responsibility for accessing extension

Several respondents reported that, overall, it was a norm that primary responsibility for using AES generally fell to men. A number of women farmers in married households stated that only one member of the household would be a member of a group and that this was usually their husband; *“My husband is the member of the group, so I can’t be a member of group as well, because I have to do work at home”* (Woman Farmer 2, Ilboru village, 3/4/17). This is also suggested by one of the government extension officers; *“Sometimes,*

one member comes from a household so if the husband attends, the mother will remain at home. And it's not easy to tell the father 'Oh, you remain at home and look after the children, I'm going to the meeting'” (Female District Officer). In these responses, the ability to access AES is linked to a division of domestic labour along previously discussed gender lines.

However, beyond this, there also seemed to be a more implicit perception that training and education is the domain of men and not of women. One male farmer described “*mfumo maisha*” - a way or system of life – in which it is “*custom, culture that women stay at home and men attend training*” (Man Farmer 2, Njiro village). There was a perception that women are not interested or motivated to use extension services. As an extension officer stated; “*At the farm, women think that they don't have the need to attend the village meeting*” (Female District Officer), which is similar to statements made by women in group discussions who did not see “*the need*” or “*importance*” of attending AES events (see section 5.1). Amongst the men farmers I interviewed, some expressed a perception that women had no interest in extension information; “*My wife is not interested. Even if I try to share the information with her, she does not show motivation or interest in it*” (Man Farmer 2, Njiro village). As mentioned above, a few men farmers perceived that women did not have the intellectual or decision-making capacity to capitalise on knowledge from extension training, even if they did receive it. An extension officer described that it is a local perception that women are not recipients of education;

“...the idea in these cultural groups is that for a woman it is not necessary to get education. There is a belief that women are for domestic activities and they should do farm activities, but men are the ones who are responsible for decision making” (Male Field Officer, Ilboru village)

Consequently, education in the form of AES is seen to be primarily the responsibility of men. However, several women I spoke to indicated a desire to learn (more) extension information alongside their husbands and to be involved in decision making. One woman stated that her husband shared “*just minor stuff*” from the extension training he received and tended to make all decisions himself (Woman Farmer 4, Njiro village). Another woman indicated a lack of power to alter this *status quo*, saying; “*Most of the time, he does not share the information. He should, but because he does not and there is no means to force him to share it, I just feels like; ‘It's OK’*” (Woman Farmer 2, Ilboru village) Another woman described that she attended training when her husband was away and always shared the information with him, but that this was not reciprocated; “*He sometimes says he's going to the extension office and he just goes, he doesn't give details*” (Woman Farmer 6, Ilboru village). Men apparently have primacy as receivers and users of extension information.

Some men farmers stated that they did communicate extension information to their wives by sharing notes they had made or materials they had received during training sessions. Men in a group interview in Ilboru village stated that their reason for this was; “*so she can implement and make decisions when the husband is not around*”. However, this still frames the man as primarily responsible, with it falling to the wife only when he is absent, a perception which will contribute to women farmers' agricultural extension education being seen as of secondary importance to that of men farmers.

Some women perceived that access to extension would be a way to gain influence in farm management decisions; “*If I attended trainings, I would have more influence because I would also know about a lot of things relating to farming*” (Woman Farmer 2, Ilboru village). One woman described an example of negotiating with her husband to change their practices after she had attended extension training;

“I shared what I had learned with my husband who makes decisions like this (about farming practices). After I explained it to him, he agreed and I was given ½ acre to implement the practices” (Woman Farmer 7, Njiro village).

A small number of the women I interviewed reported a different dynamic in their households in which they were the main user of extension whilst their husbands were relatively inactive. When asked for reasons, they stated that their husbands were not interested in receiving advice on farming, and that women were more open to learning about new techniques and technologies. One woman in Ilboru village who was a group leader reported that her husband does not use any training because he is not interested. She suggested that; *“Most men feel like the issue of group trainings is the activity of women and that going for training is a waste of time”* (Woman Farmer 4, Ilboru village). This was similarly expressed by a male respondent in Ilboru village who did not use any forms of extension or training himself but who *“let”* his wife attend a vegetable training group because; *“I felt that it was a women’s issue, so I thought ‘She can just go’; other women attend it, so my wife can also attend it”* (Man Farmer 2, Ilboru village). It was unclear whether the ‘women’s issue’ in question referred to the topic of vegetables, but he seemed to imply it was about training more broadly. Responses in group interviews and from practitioners also indicated that men may often be more resistant to seeking advice from AES than women and other studies have similarly reported that men were more confident to rely on their own knowledge and make decisions independently and less inclined to follow extension advice compared to women farmers (Adomi et al., 2003; Due et al., 1997). This suggests that women farmers are particularly effective users of extension when given the opportunity.

In some households where both women and men used extension, this coincided with them also collaborating on decision making. However, in other cases, even when the wife was the main user of extension, the husband was still identified as having the overall decision making power or was at least involved alongside the woman in decision making. This indicates that access to extension and relative levels of knowledge are not the only factors determining responsibility for decision making, there are also strong norms about respective roles and power of men and women in making decisions within households (see previous section 5.2.3).

5.2.5 Women’s autonomy and permission from husbands

Several interviewees stated that women farmers were sometimes restricted outright from using extension by their husbands. This was discussed most readily and in most detail by three widowed farmers I spoke with. As one explained;

“There are local customs that a man will not allow his wife to attend any training whilst he is still there. So most women who attend training are those who live by themselves or their husband has passed away” (Woman Farmer 1, Ilboru village)

She named this ‘mfumo dume’, which roughly translates to ‘a patriarchal system’, which she said meant that *“men do not allow wives to attend any training”* (Woman Farmer 1, Ilboru village). A married woman in Njiro village described her own situation;

“I was given a chance by my husband to be involved in the Baby Plot¹⁸, but I was not given a chance to be a member of any other group or attend any other training” (Woman Farmer 4, Njiro village).

Even in households where the women I spoke to were active in using training, they often reported that they needed their husband’s permission to attend training. This included one woman who said that she was the main user of extension;

“I was the first to be motivated to join a farmers group before my husband, and my husband **allowed me** to join the group and attend different trainings” (Woman Farmer 3, Ilboru village).

¹⁸ This is part of a type of extension called Mother-Baby Plots, see Appendix I

Some farmers identified this as the ‘main thing’ or the ‘one thing’ affecting women farmers’ access to extension and a number of women stated that in order for women farmers to use extension, there needed to be efforts to sensitise local men;

“Education should be provided for both women and men so that if a man sees that his wife wants to join training he should not feel it’s a waste of time” (Woman Farmer 4, Ilboru village).

In Ilboru village, it seemed as though there were some efforts in this regard. A woman farmer described how the extension officer used her to gain permission from other women’s husbands to let their wives attend training;

“When the extension officer wants to talk with women, I go to a family and ask the husband; ‘Please can we write the name of your wife to attend vegetable training?’ I am used as a woman who can motivate other women to attend training and inform men about other men who have let their wives attend and about the progress of the women who have attended trainings” (Woman Farmer 1, Ilboru village).

This woman was widowed and was a very active user of extension. She had sole responsibility for farm management in her household which included both a home plot and a farm plot where she grew maize, pigeonpea and sunflower using improved seeds and industrial fertiliser. During the training event I observed in Ilboru village, she was involved in running the session, registering attendees and assisting the officer and NGO representatives to manage demonstrations. During our interview, she came across as particularly confident, articulate and independent compared to many of my other interviewees, and spoke fluently about the challenges facing women farmers and about societal gender dynamics and norms. Observing her interactions with the local extension officer, they appeared familiar and comfortable with each other and she lived within short walking distance of the extension office so met with him regularly and often on an informal ‘drop in’ basis. This combination of factors probably made her a unique candidate for the male extension officer to help him recruit women farmers to participate in extension. I suspect she was one of the women he had in mind when he told me;

“There are some women who are more competent than men at Ilboru village they are really women who know what they are doing, they are very challenging [implied: active, confident, motivated]” (Male Field Extension Officer, Ilboru village)

It is common practice for extension officers to use contact farmers to reach other farmers, but it seemed notable that this woman was specifically used for contacting women farmers and gaining permission from their husbands. This may demonstrate a barrier preventing the male extension officer contacting the women himself. Social norms may restrict interaction between married women and men who are not their husband – as was shown by the discomfort about phone calls in the previous Chapter – and/or because the extension officer himself prioritises contact with the men in a household (see (Manfre et al., 2013). It also clearly illustrates that different women farmers have very different abilities to, attitudes to, and experiences of using AES.

The restriction by husbands also extended to how far away their wives could travel to attend extension. Men in one group interview in Ilboru village stated that they allowed their wives to attend training at the village office, because they knew that they were close by. Similarly a number of women reported that it would be difficult for a woman to attend a study tour, not only because of her domestic responsibilities, but also because she would not be permitted to travel to another town by herself for an extended time; “*Your husband will not allow you to go to Tengeru for 3 weeks; that is forbidden*” (Woman Farmer 1, Ilboru village). In one of the group discussions with women in Njiro village it was mentioned that if training ran overtime, husbands would call their wives to see where they were and request they come home, or even come and collect them. This was acknowledged by men farmers in one group interview, who stated that “*men are more free to move, but*

women are less free to move”. This again suggests a reason that women farmers often used AES which they can access at or near their homes.

5.2.6 Active participation during training events

When women farmers do attend extension activities, their willingness and ability to actively participate has implications for how much they will benefit. When asked about their participation during AES sessions, many women farmers stated that they felt comfortable contributing to discussions; *“I take it as my responsibility when I attend training, I have to learn each and every thing. If there is something I didn’t understand, I have to ask, because that’s why I attended”* (Woman Farmer 3, Ilboru village). Others said that they actively participated because they are interested to learn; *“I am keen to get education, I enjoy it. It is motivating”* (Woman Farmer 5, Njiro village). A number of respondents suggested that it was in fact normally women farmers who participated during extension activities, because *“they seek knowledge and to know something new”* (Woman Farmer 6, Njiro village). However, each of these accounts came from women who were themselves active users of extension, and either the primary user in their household, or shared the responsibility with their husbands.

Other women described some reticence in contributing. For example, one stated she was not comfortable asking questions because she grows vegetables whereas she felt that most people want to hear about maize. Another woman, whose husband reportedly took all responsibility for using extension and decision making in her household, said that, although she feels that she *“would like to say something, or to contribute my opinion”* she has never done that, because *“I feel like there is not any reason for me to say anything”* (Woman Farmer 4, Njiro village). A couple of interviewees described that women may not ask questions during a training event, but may seek information from the extension officer individually afterwards; *“During the meeting, I don’t ask any questions, but when an extension officer comes to visit, I ask for advice”* (Woman Farmer 3, Njiro village).

None of the men farmers I spoke with expressed any hesitation about contributing during training and (in contrast to other responses in the first paragraph) many respondents perceived that men often spoke more than women, particularly in community meetings where; *“It is men who are free to ask questions and answer questions. Women feel shy because there are a lot of people, and because their husbands are there”* (Woman Farmer 8, Njiro village). Several practitioners observed that women were often hesitant to contribute during community meetings; *“In a community meeting there is a problem because both husband and wife have to attend and when her husband is there, a woman is not free to speak”* (Female Field Extension Officer, Njiro village), but also during other training events; *“During the field day, even when the female farmers are there, they cannot talk. Because when men are there, that’s when they feel shy to talk. That’s their tradition; the ones who talk more are the men farmers”* (Male District Extension Officer)¹⁹.

Willingness to participate seemed to vary in different training forums. It was suggested that in Farmers Groups, women felt more comfortable; *“In our groups, we feel free to talk”*. However, there were still differences in participation by women and men farmers; *“When there is the issue of participating, answering questions or doing what they’re told, it’s mostly women who do this. But when it is leading the discussion, it is mostly men”* (Woman Farmer 3, Ilboru village). Women’s participation was often described as more passive, whilst men take a more prominent role, something that is also described by (Manfre et al., 2013, p. 11). Other accounts suggested that women farmers tend to talk amongst themselves and rely on a confident spokesperson to stand up and communicate their point (see also Mosse, 1994)

I made observations of such dynamics during Field Days delivered by IITA in Babati villages in June 2016. During these sessions, men and women generally sat separately, with

¹⁹ These norms, and particularly practitioner attitudes towards them and the implications of these for extension delivery, are explored in Chapter 6.

women to the side or back of the group relative to where the facilitators were presenting (Figure 3). Men were usually keen to stand up and speak in front of the group to ask or answer a question. On the other hand, the women took some concerted persuasion to talk. They were generally addressed secondarily to the men. When they were, there was some mumbling and laughing amongst the men farmers, including jokes about the women not speaking Swahili and relying on one woman to speak on their behalf rather than standing up themselves. The (mostly male) facilitators took this light-heartedly. During some of this conferring between the women farmers, one woman was encouraged by the other women and the training leaders to stand up. She was hesitant and embarrassed and explained that she had used a certain animal feed for her goats instead of cows and wondered if this was wrong. There was some laughing about her question and her hesitance to ask this, but the trainer then repeated her question to the whole group and explained that it was fine to use the feed for any animals. Other women had to answer questions in their local language which was translated to Swahili by the (male) village executive director. As Mosse (1994) describes, the knowledge and input of women was therefore often articulated through men.



Figure 3. During a training session men farmers sit at the front and centre. Women farmers sit together towards the back and are present in smaller numbers. The majority of facilitators were male. The man addressing the group is the village chairman.

During training in the town near Njiro village²⁰ in 2017 (Figure 4), I again observed that women often sat and conferred together in groups. One or two confident women contributed most to the discussion, often after whispered discussions with others sat around her. In contrast, the men sat more independently and I did not observe them conferring in the same way. Both here and in training I observed in Ilboru village (Figure 5), some women – particularly those with children – were hesitant to participate during practical demonstrations and generally hung back and stood or sat in the shade of trees whilst male attendees participated. This was not the case for all women, and some – particularly older women – were more confident and willing to contribute; they mingled more with the men and got involved in the demonstrations of their own accord. The others often only became involved when the facilitators directly chose them, which happened at both training events. Amongst the men, some were more engaged and confident than others, but overall they seemed to be less reticent to volunteer an answer or to be part of a demonstration.

²⁰ This town is a larger settlement than Njiro village in the same Ward. It is the site of the ward agricultural extension office. Attendees at the training here had travelled from a number of surrounding villages, including Njiro village.

This evidence suggests that women farmers are sometimes less actively engaged and involved during extension training activities compared to men farmers. This has implications for how much knowledge they gain; for example, without concerted encouragement, it seems likely that the woman at the 2016 Field Day would not have had the confidence to ask her question and may have left without gaining this knowledge. It also has important implications for women farmers' input during consultations about extension needs, something which is discussed in Chapter 6.



Figure 4. Training at the town near Njiro village. The trainer has selected a woman to try the demonstrated technique. Some women stand closer to observe but several others stand back in a group in the shade.



Figure 5. Training at Ilboru village. Men farmers participate in practicing the digging technique, whilst many of the women stand to the side or sit in the shade and observe (left and background in photo) until the extension officer requested that they participate. The woman in the foreground is a trainer leading the session

5.2.7 Women farmers and Farmer Groups

As a final point in this section, and as previously mentioned, membership of Farmers Groups emerged as a key determinant of access to and use of extension services in Babati. Although many women farmers I met were members of groups and liked them as a source of extension, there were indications that they may face disproportionate constraints to joining a Farmer Group. Some women farmers described a bias against women during the process of signing up. They explained that groups are formed during community meetings and farmers write their names on a list to join. One woman in Ilboru village stated; *“Men are the ones who write their names, they don’t include women”* (Woman Farmer 7, Ilboru village). Another woman indicated that in Ilboru village the extension officer decided who would join, and often chose farmers he had closer contact with, which were often men; *“The extension officer forms the groups, he’s the one who calls the names and my name was not there. He picks his own people”* (Woman Farmer 8, Ilboru village). It was also suggested that there was some resistance to allowing women to become members of groups because it threatened existing gender and power relations, as one woman explained; *“There is a belief amongst men that if a woman is empowered, she will disrespect her husband; that’s the reason they don’t put women’s names down for the groups”* (Woman Farmer 7, Ilboru village).

However, women in one of the group interviews in Njiro village described a different situation in which women were more likely than men to be members of a Farmers Group because it had been particularly emphasised to women to join groups, and men were often less inclined or interested to participate in groups and to *“make follow-up”* on what was taught. This illustrates that these dynamics vary between contexts and the situation is not homogenous. It also suggests different approaches to recruiting Farmer Group members in both villages, although I did not capture strong data to support this theory.

Another barrier to women joining Farmers Groups was a lack of access to resources. One woman described that it was necessary to have *“means”* in order to join a group. According to extension providers I spoke to, this was not a formal requirement of joining a group, but it was clear that members had to be able to implement the training. This requires funds to purchase inputs and, critically, control over land.

As previously mentioned, domestic responsibilities and time constraints were also a challenge to women being member of a group and it was stated by some women that usually the man in a household was a group member, which meant the woman was not.

These constraints to women farmers joining Farmers Groups will mean they are differentially excluded from AES. As discussed above, groups are a critical gateway to accessing technical extension, both through training in the groups and because they are used as a channel for farmers to hear of other AES opportunities. There were suggestions that Farmers Groups could be a particularly beneficial source of extension for women farmers. One respondent suggested that groups allowed members to *“exchange ideas and educate one another on different things”* (Woman Farmer 4, Njiro village), which was a preferred attribute of extension amongst women in my group interviews. Another woman stated that she was *“more comfortable in a group; I can ask others when I have not understood something and there is time for sharing experiences”* (Attendee at Group Discussion, Njiro village). Another farmer alluded to groups providing the chance to collaborate on efforts which women could not do as individuals (Woman Farmer 3, Njiro village) and a number of women stated that being part of a Farmer Group gave them the chance to be involved in broader development activities in the village and a means to improving their *“life status”*. Interpretation of responses elsewhere also suggests that Farmer Groups have the potential to address many of the constraints to women farmers using extension; one respondent described that within groups the members themselves decide a meeting time that suits all members (Woman Farmer 8, Njiro village), group members also inform each other about upcoming training activities, and, if a group member misses a training, they get the information afterwards from others in the group. This could

overcome challenges that women farmers described about being constrained in attending AES due to the timing of activities and to not hearing about them with enough notice to arrange to attend.

5.2.8 Discussion

Here I use theories and literature to discuss the empirical findings from this chapter and draw out key themes and insights about women farmers' use of AES.

Norms and knowledge

The empirical evidence presented in this chapter revealed numerous factors influencing women farmers' access to, and use of, AES. My interpretation is that most of these stemmed from pervasive societal gender norms. As Portes (2010) and others describe, I found that norms defined the accepted and expected roles of men and women in farming households in both villages. The role of women was generally seen to be domestic work in addition to them reportedly also providing a majority of farm labour on the fields. This 'double burden of responsibility' meant that women had little time to attend AES activities happening away from their home, which is one reason why they particularly relied on visits from the extension officer and learning from other farmers, and why AES activities that take up a large proportion of a day – such as Field Days – may be particularly poorly attended by women farmers (Manfre et al., 2013). Being confined to the homestead also meant that women's responsibilities for production (at least in married households) were often focused on a small homeplot on which they most commonly produced vegetables and poultry. There was a strong norm in Babati that maize and other commercial crops were the responsibility of men, whilst women were perceived as being primarily responsible for vegetables and other home products. This production was perceived as supplemental to the main agricultural production of a household, even by the women whose primary responsibility it was (Manfre et al., 2013, p. 8). Women's production – and their associated knowledge – is therefore seen as domestic, unofficial and informal, a perception that may be internalised by the women themselves (Bourdieu, 2010, p. 41). This may constrain women from participating in more formal forums of learning, as suggested by the fact that some women did not 'see the need' to attend certain formal AES activities. Social and cultural norms therefore mean that different types of knowledge are not equally accessible to all actors (Briggs, 2005).

In addition, mainstream AES in Babati was reportedly primarily focused on maize and associated field crops, types of production traditionally associated with men. AES focused on vegetable and poultry production – traditionally associated with women – was reportedly delivered on an *ad hoc* basis during one-on-one visits with an extension officer, or via specific women-focused Farmers Groups. Although these methods may indeed reach women farmers, such a gender segregated approach can in fact exacerbate divisions between the genders in terms of access to extension knowledge. It segregates women farmers rather than integrating them in mainstream AES. It can also contribute to a perpetuation of stereotypes that women are only interested and involved in food crops for the household which “...ignores substantial evidence of women's contributions to the production and harvesting of [commercial, cereal] crops” (Manfre et al., 2013, p. 8). This demonstrates how the way in which current AES are delivered may contribute to perpetuating gender norms (Farnworth and Colverson, 2015). Several women I spoke to in fact expressed interest in learning about maize and other crops because they were heavily involved in the production of these in the field and felt that more knowledge would give them more power and influence in management decisions. However, interestingly, several other women felt that receiving more AES specifically focused on vegetables and other types of traditionally 'female' production could give them autonomy and power over production and finances in the home. There are therefore arguments both for segregated

AES training specifically targeted at women and for efforts to ensure they are better served by mainstream AES.

My findings also suggest that societal norms shape who are seen as ‘knowers’, authors and audiences of AES knowledge (McNay, 1992). Women were generally not perceived as decision makers or primary users of AES. The gendered divisions of production also meant that whilst men were seen as farmers, women are seen as having only a supporting role in agricultural activities (Croppenstedt et al., 2013). Several men farmers expressed a perception that women were not interested in extension knowledge and a small number suggested that women lack the intellectual capacity to use such information. Such social norms will influence whether women are perceived as eligible or legitimate receivers of AES, including by the women themselves who are likely to internalise such norms (McNay, 1992; Mudege et al., 2016). This was demonstrated by reports from both women farmers and an AES practitioner that the women do not see the “need” for them to attend AES. As Mudege et al (2016: 292) state; “*social beliefs are instrumental in shaping the perceptions of who is “the farmer” [and] who in the household is eligible to receive extension information*” (Mudege et al., 2016, p. 292)

This may be a contributing factor behind my findings that some women were hesitant to participate in socially formal AES activities. Mosse (1994) similarly reports that women contribute less during processes conducted in the presence of unfamiliar outsiders and in a public forum (Mosse, 1994). I theorise that this is due to women’s internalisation of the perception that their role in agriculture is informal or unofficial. This is on top of the reported norm that women are (or should be) shy or quiet in public discussions, particularly in front of their husbands. My observations during AES activities revealed ways in which these norms are enforced when women’s contributions to discussions are taken light-heartedly by other farmers in attendance, and by AES practitioners. This will affect women’s ‘power within’ which refers to their sense of agency and self-worth and determines what women farmers (think) they can do, are allowed to do and are expected to do (Kabeer, 2010; Leeuwis and Aarts, 2011). This has implications for women’s engagement with AES and their active participation during AES activities, as I saw during the training sessions I observed and in the behaviours and responses of men and women farmers during my own group interviews. Women’s reticence to actively participate in AES forums may mean their knowledge becomes a ‘subjugated knowledge’ in agricultural extension, one which is not fully expressed or perhaps only facilitated through male actors (as demonstrated by women’s contributions being translated to Swahili via male facilitators) (McNay, 1992). This has important implications for their contribution during consultations about extension and knowledge needs; if women farmers are less likely to contribute during discussions, they may have less input into requesting the AES they require. This is discussed further in Chapter 6.

Several women farmers expressed that they felt more comfortable contributing within Farmers Groups. Although they may contain a mix of genders, Farmer Groups are relatively small and meet regularly so participants are familiar to each other. A field officer also reported that it was rare that husbands and wives would be in the same group. This suggests that within Farmers Groups women are released from some of the power/gender relations which prevent them from fully participating in other AES forums. Farmers Groups allow women to build valuable social capacity which fosters communication and information sharing (Manfre et al., 2013). Working collectively can also enhance women farmers’ ‘power with’ making them a stronger force for change compared to if they act individually (Kabeer, 2010). This was explicitly described by some women who stated that being in groups allowed women farmers to pursue projects that they otherwise could not do alone. This suggests that women-focused or women-only Farmers Groups may offer a way to reach women with extension and enhance their confidence and willingness to engage in AES. Some men farmers also saw such groups as a ‘women’s issue’ so were inclined to

permit their wives to take part. Nevertheless, currently women farmers were less likely to be members of a group due to constraints in signing up.

Power relations

Gender-related power relations played a critical role in determining women farmers' use of AES. These were particularly clear in married households where women often reportedly needed permission from their husbands to attend AES, even when there was collaboration on household decision-making and AES use. Husbands also controlled where their wives were able to go and who they were able to interact with. Men therefore apparently had direct 'power over' the decision as to whether or not women farmers are able to attend AES activities (Kabeer, 2010). Women in these contexts lacked the 'power to' make and pursue their own choices (Kabeer, 2010) and this was a major factor affecting women farmers' ability to use AES. One woman explicitly described that there was resistance from men towards women joining Farmers Groups because it could upset such power relations and cause women to question their husband's authority.

There were also gender/power relations at the community level. During the process of signing up for Farmers Groups, which normally occurs during community meetings, it was described that men farmers add their names to the sign-up list whereas women generally rely on someone else writing their name for them. Societal norms about the relative autonomy of women mean that women lack the 'power to' pursue membership of Farmers Groups (Kabeer, 2010). In Ilboru village, it was additionally reported that the extension officer would sometimes exercise 'power over' selection of members for Farmers Groups (Kabeer, 2010). One woman stated that the officer would choose farmers he knew best and during my interactions with this officer, he indicated an apparent bias towards male farmers – both explicitly, and because he prioritised farmers who are high-performing and actively engaged in extension, as demonstrated by some of his responses in Chapter 6. Manfre et al similarly report that when field extension agents choose farmers to target with AES, agents' preferences and structural biases in selection criteria can mean comparatively few women farmers are selected (Manfre et al., 2013). These factors in relation to Farmer Group membership demonstrate how explicit enforcement of gender and power relations can prevent women from accessing AES. Constraints to joining Farmers Groups will disproportionately exclude women from accessing AES as they offer a gateway to further AES opportunities and may also be particularly well-suited to what women farmers require from AES (see Section 7.2.2).

The form of 'power over' defined by Tegbaru et al (2015) – an individual's access to and control of assets – was also an important factor in my findings. Societal gender norms dictated that agricultural land was most often owned by the man in a household and that he had primary decision-making power over how it was managed. This impacted women farmers' willingness and interest in using AES; several women perceived no point in using AES because they could not access land on which to implement the practices. A number of women suggested that better access to AES could give them more influence over land and this was demonstrated by the woman who, after attending training was able to negotiate with her husband and encourage him to adopt the practices on part of the farm plot. This demonstrates the close link between knowledge – in this case gained via AES – and power in decision-making described by Foucault (Foucault, 1977). The inability of women without land to implement AES training – on top of perceptions that their role in production is marginal – may also mean that women are not seen as legitimate receivers of AES (see Phelan, 1990). There were indications from a small number of practitioners that whether or not a woman had influence in the household decision making would, whether explicitly or implicitly, affect whether she was targeted with AES (see Chapter 6).

There were indications within some married households that extension information was primarily received by men (e.g. women reported not being informed about upcoming Field Days whereas men apparently did hear about them). Several women described that their

husbands often did not share the information they had learned, and they had no means to “force him to” share it. In contrast, women who attended AES apparently always shared the information with their husbands. There is therefore an apparent imbalance in ‘power over’ decisions about access to and ownership of knowledge resources within households; whilst women are assumed or expected to share any information with their husbands, the reverse is not true and women often lack the ability to encourage men to share information with them (Kabeer, 2010). Men retain ‘power over’ knowledge assets in a household which, in turn, determines power over decision making. The assumption that extension information will ‘trickle across’ between members of a household therefore seems not to hold and consequently, extension must be designed and delivered in a way that reaches women themselves (Manfre et al., 2013, p. 8).

The situation of several of the widowed women I spoke to demonstrated the effects of enhanced ‘power to’ and ‘power over’. In the absence of a man in their households, these women had sole responsibility for farming and management decisions and several were very active and motivated users of extension; they were members of Farmers Groups, regularly participated in formal AES such as Field Days, and one even hosted a Mother Plot on her farm. Practitioners also described how FHHs often ‘do better’ than MHHs when it came to using and implementing agricultural extension training. This demonstrates what McNay (1992) discusses in a feminist interpretation of Foucault, that there are “...differences that exist amongst women (in relation to knowledge systems)...which can be related to structures of domination” (McNay, 1992, p. 128). The relative domination of women by men, in this case by husbands within households, determines their access to AES. These widowed women indicated their husband’s absence allowed them to be involved in AES in a way that married women could not. It also critically demonstrates that when women farmers have the opportunity to use AES, they can be particularly motivated and effective users.

The imbalances in power and gender relations mean that men will need to be involved in changing the current status of women as users of AES. Several women farmers demonstrated insight into this when they suggested a need to sensitise men to allow women to participate in decision making and AES. It was also explicitly demonstrated by the Ilboru village extension officer’s use of the widowed woman farmer (Woman Farmer 1, Ilboru village, see page 41) to get permission from other women’s husbands to allow their wives to attend AES. However, many of the men I spoke to indicated strong acceptance of traditional gender norms and power relations. As Portes states, power-holders are often reluctant to give up the privileges that their relative status affords them (Portes, 2010). Power relations and structures founded on them – such as AES – will therefore be slow to change because it relies on action by those in positions of power. Additionally, the norms about the respective roles of men and women are entrenched in values which are deeply rooted in the sociocultural context. They are therefore often seen as the *status quo* or as intrinsic characteristics of men and women and consequently, some of my respondents demonstrated little recognition that these were factors that can, or should, be changed (Friel, 2017). There is therefore need for sensitisation to increase awareness and understanding about these social norms. There were some positive signs, particularly the fact that some men involved their wives in decision-making, shared extension information with them, and acknowledged the value of having their involvement in farm management. Additionally, the awareness of women farmers about the gender and power relations at play in AES use, and the desire of many to be more actively engaged in using AES and in farm management decisions, is a positive driving force for change. There were also some women who were active in using AES in their household and confident participating in AES activities.

Summary and key points

My empirical findings in this chapter reveal multiple, complex, and inter-related factors stemming from societal gender norms which affect women farmers' use of, and access to, AES. Norms define the respective roles of women and men in agriculture and create power relations which determine their involvement in farm decision making and their ability to autonomously access and implement AES. Norms around knowledge determine the perceived legitimacy of women and men as receivers and users of AES and their claim over (access to) knowledge resources in the household. These dynamics seem to affect the willingness and ability of women to access AES and to actively engage during activities. The capacity for AES to reach women farmers and meet their needs and preferences depends on how well these factors are considered and addressed within AES and the institutions that design and deliver them. This is the focus of the next chapter.

6 Empirical Findings II: Consideration of women farmers in the design and delivery of extension services

This chapter presents my empirical findings in relation to Objective 3 and is mainly drawn from in-depth interviews with AES practitioners, although some relevant accounts from farmers and some observations are also included. In the first section (6.1), I detail practitioners' accounts of measures within AES to reach and incorporate the needs and preferences of women farmers (subsection 6.1.1). I then explore practitioners' perceptions about gender and the implications of these for AES design and delivery (subsection 6.1.2). In the second section (6.2) I present findings about opportunities for farmers to influence the content and delivery of AES, and specifically the ability of women farmers to participate in shaping services to meet their requirements. At the end of the chapter, in section 6.3, I discuss these findings in the context of relevant theories and literature.

6.1 Suitability and responsiveness of agricultural extension services to women farmers' needs

6.1.1 *Measures within agricultural extension to reach women farmers, as identified by AES practitioners*

I asked AES practitioners about measures within AES to reach and deliver to women farmers. This included establishing whether there were any measures at all and then identifying what they comprised. Responses were mixed and suggested some inconsistencies in perceptions and approaches between different practitioners and also, critically, within accounts from individual practitioners.

Emphasis on women to attend and equal invitation quota

When asked if there were any efforts or measures within AES aimed at achieving equal access to, and use of, AES for both women and men farmers, the first suggestion of the male field extension officer was to simply persuade women to attend extension; *"It's a matter of emphasising; 'You women working in agriculture, you are many, so you are supposed to attend training'"* (Male Field Extension Officer, Ilboru village). Other extension staff described that there were specific guidelines from the government about gender-equal invitation to AES activities. As one District level officer described; *"From the government, the effort is to make sure that extension services reach both men and women equally. We are trying to make sure that there will be good representation of both at training events"* (Female District Extension Officer). And a field officer stated; *"We have to invite 50:50 men and women"* (Male Field Extension Officer, Ilboru village). The acting District Agriculture, Irrigation and Livestock Cooperatives Officer (DAICO) reported that this refers to a quota for gender-equal invitation within the national Agricultural Sector Development Programme (ASDP). Although explicit reference to inviting 50:50 male:female participants was not found within documents accessible to me, it was evidently how the ASDP aims were being enacted; several respondents stated that a 50:50 gender balance was the requirement, for example, when establishing Farmer Field Schools and Farmers Groups. The DAICO reported that attendance records which include gender are taken at all training events and are used to ensure that equal attendance is occurring.

Within the research organisation, one respondent indicated that there was a similar requirement to ensure equal representation of women and men farmers attending their training activities, as well as when selecting farmers for specific roles;

“We document the farmers by gender to see how many women and how many men are attending training. And when selecting farmers for positions like farmer trainers, we need to have at least 50% women. When it happens that there are fewer women, we consider why and how we can improve on that” (Practitioner 3).

However, the practitioners acknowledged that gender equal invitation does not necessarily result in equal attendance. As one male field officer stated; *“Women are sometimes reluctant in attending. So the percentage of women is a bit lower”* (Male Field Extension Officer, Ilboru village). Most other practitioners agreed that women farmers generally attended AES less than men farmers. However, a minority reported that more women attend training than men. The explanation from one field officer who stated this was because; *“Training is in the afternoon. Men work in the farm in the morning and return home tired. So women have more opportunity to attend, because men are resting”* (Female field Extension Officer, Njiro village). However, at another point in the interview this same officer indicated that women in fact use extension less than men farmers and discussed reasons for this. It is possible that the officer was referring indirectly to differences in relative attendance between different types of extension training. Other practitioners also reported that the number of men and women varied between types of AES. Field Days were identified as a specific example where women farmers attended in very low numbers compared to men. On the other hand, trainings about vegetables were reportedly attended by more women than men. This is supported by my observations; during training at Ilboru village and the town near Njiro village in 2017 – which comprised small group trainings about vegetable production and farmer group management, respectively – there were more women in attendance than men at a ratio of roughly 1.5:1 women:men. However, the opposite was true during my 2016 observations of a training day focused on maize production and open to the whole village to attend, where more men were present. This demonstrates that relying on equal invitation is insufficient to ensure gender equal attendance of AES and that norms about gendered responsibility for maize and vegetable crops and women and men farmers’ engagement in different AES forums are critical determining factors (see Chapter 5).

Other practitioners instead suggested that specific sensitisation exercises which raise awareness about the existence and implications of gender inequalities, and the need to involve women in AES, were needed to improve the attendance of women. Within the research organisation, respondents described sensitisation efforts; *“One of the projects reported that participation was lower for women. But when the farmers were sensitised, the number went up. It was still not 50:50, but maybe from 30% to 40% or so”* (Practitioner 4). One respondent suggested that sensitisation should specifically be targeted at men (a view which echoes a point made by farmers earlier); *“We can’t leave men aside. With gender there is the issue of control over resources. In most cases, men are the ones who have land. You find women are doing more of home activities and production, so you have to bring them together”* (Practitioner 3). This demonstrates acknowledgement of men’s predominance over decision making and the need to recognise this when delivering AES to reach women.

Targeted training for women farmers

When asked directly, all of the government extension officers stated that they did not use measures to differentiate between men and women farmers when targeting AES. In contrast to responses at the start of the previous section, one officer reported that there was no specific targeting in terms of invitation; *“We just emphasise to the whole village to attend. There’s not any method we can use to specifically target women”* (Male District Extension Officer). A respondent at the research organisation similarly said; *“I think we approach the farming community as a whole which includes both men and women”* (Practitioner 1). Another extension officer framed it as extension not intentionally excluding women; *“There is no segregating that says extension is only for men”* (Female District Extension

Officer), but did not report any efforts for their inclusion. In terms of delivery, a field officer described that there was no difference in how training was delivered to men and women farmers; *“Training women farmers is not different from training men. In our groups of farmers, we don’t separate males and females; we put them in one group”* (Male Field Extension Officer, Ilboru village). This indicates a ‘gender blind’ or gender neutral approach to AES which, although it does not discriminate against women farmers, does not account for the differential constraints that they face in accessing and using the services, revealed in my findings in Chapter 5. It also reveals some inconsistencies in practitioners’ accounts of their efforts to address gender, including clashes with earlier statements about emphasising women farmers’ attendance.

Additionally, elsewhere in interviews, several practitioners did mention AES training targeted at women farmers, most commonly focused on vegetable and poultry production, as previously mentioned in Chapter 5. This targeting was reportedly based on practitioners’ observations of women’s roles in production and strongly informed by social norms. One practitioner explicitly stated that the focus was decided because; *“...women are more concerned with vegetables because it’s their task to make sure their children have enough food”* (Female District Extension Officer). Other practitioners also indicated that the idea to focus on these topics came from observations by themselves and other extension actors that these types of production are *“easy to do at home”* (Male District Extension Officer) and *“women always stay at home whilst men work on the big farm plots”* (Female Field Extension Officer, Njiro village). However, some women farmers in fact expressed interest in receiving AES about maize and other commercial crops. Efforts to reach women farmers are therefore primarily focused on training about types of production perceived to be the domain of women, rather than their stated interests. This was most explicitly reflected in a farmer’s account that the extension officer in Ilboru village; *“...says ‘I need men, there is a training about maize’ and if it is about chicken or vegetables, he’ll say ‘I need women for training’”* (Woman Farmer 6, Ilboru village). It indicates segregated extension efforts to specifically reach women farmers, rather than measures to integrate them in mainstream services. Only one practitioner, from the research organisation, described overarching measures to meet the needs of women farmers within the organisation’s extension efforts;

“In terms of location, we have to consider; is it central? Such that ladies will be able to attend. We also consider timing; we have to be sensitive on the start time and the time taken. Then we have to consider the suitability of the day for women as they are the ones who take the children for immunisation when there are clinic days”. (Practitioner 4)

This demonstrates awareness of, and efforts to address, many of the practical constraints to women farmers attending extension activities. However, the respondent explained that this was not currently written into the organisation’s policies; *“These are not documented I would say; we assume that people know”* (Practitioner 4). It was on this person’s own initiative and verbal direction that they encouraged their team to consider these factors when delivering training. However, they indicated that there were moves within the organisation to consider gender more systematically, including the hiring of a gender specialist;

“The gender specialist trains implementers on how we can be sensitive to gender issues during farmer training and we integrate this in our activities. Now we are writing these into the policy for engaging with farmers” (Practitioner 4).

Another representative of the research organisation expressed interest in using increased capacity in the form of the gender specialist to better incorporate gender into their work;

“This year, we would like to really take a look and see; are the technologies we’re promoting gender-friendly, and could we potentially use a gender lens to recommend technologies that are more feasible for use for women?” (Practitioner 2).

From my time being supported by the research organisation, I knew that there was a gender specialist who was appointed within the past few years. Although I was unable to interview them as part of this study, others in the organisation reported that the specialist was currently making efforts to mainstream gender in the organisation's policy and to improve gender capacity of staff. This was presented as the first step so that the organisation would be able to incorporate gender in the work it delivers on the ground, including AES. I also observed work by the gender specialist to develop field assessment tools for evaluating the gender effects of agricultural technologies introduced through the organisations' extension work. There are therefore ongoing efforts to address gender in the research organisation.

6.1.2 Practitioners insights into gender and effects on extension use

In addition to asking about measures for gender equality within AES, I investigated the practitioners' perceptions of how gender may affect women farmers' extension use. Many demonstrated awareness of several factors also mentioned by farmers; domestic responsibilities, norms about decision making and divisions of responsibilities, shyness to actively participate in AES sessions, and the need for permission from husbands were all mentioned. One government officer – who initially stated that he did not know why women were “reluctant” to attend extension – went on to describe practices of early marriage and pregnancy that result in women staying at home to take care of children, rather than being involved in using extension. He also identified unequal access to education, partly due to early marriage but also to a local perception that women do not need to be educated. Other officers also acknowledged the control of husbands over their wives' attendance at extension activities and over who women are allowed to interact with; “In some cases, a woman needs to meet with an extension officer, but the husband will not agree; he will say 'Oh you are a woman, what are you going to talk about with that guy'” (Female District Extension Officer). A practitioner from the research organisation acknowledged the need to get husbands' permission for women to attend training; “We talked to the local leaders and they talked with the husbands to release their women to attend the training activities” (Practitioner 4). These gender relations were usually framed as a socio-cultural norm; “The men are very protective, but it's a cultural thing - a women doesn't go out, doesn't talk to strangers” (Practitioner 4).

Several practitioners recognised that women face particular practical constraints in using AES related to time, timing and location. A practitioner from the research organisation described;

“Recently we had a training with a schedule of almost a full day and the farmers started complaining because the ladies had to go and prepare food and attend the children. So we have to be sensitive on the start time and the time taken”. (Practitioner 4)

Several practitioners also observed that the topic of AES also affected attendance; “In the vegetables training, it is mostly women but otherwise it is mostly men” (Female Field Extension Officer, Njiro village), which again echoes accounts from farmers.

Perceptions about women farmers' role in using AES and implications for AES targeting

In relation to the relative roles of men and women farmers on the farm and in using AES, the practitioners echoed the farmers' perception that women comprise the majority of labour on farms, but men are generally the primary land owners and decision makers. A few acknowledged a direct link between this and the extent to which women farmers use AES; “It depends on decision-making in the home; if the mother has decision-making influence, it's easy for her to contact the extension officer. If they don't have influence on the decisions about the use of the fields, then they won't” (Female District Extension Officer). The field officers additionally observed that implementation of extension advice was more often done by men farmers than women farmers; “Through my experience, the adoption rate of women and men farmers may be 35:65 respectively” (Male Field

Extension Officer, Ilboru village). Critically, it was implied that this might, in turn, affect how the practitioners target AES. As one district officer stated;

“...you consider; this woman comes from a particular household and she has influence on the decisions about technology, so you give her the technology. If you go to a woman but she has no say in the field and you give her the technology, then that technology is lost”
(Female District Extension Officer).

A representative from the research organisation similarly indicated that whether new maize varieties were tailored to men’s or women’s preferences; “...depends on who makes decisions within the household, whether women have access to land to grow these crops, whether the varieties will be accessible to women” (Practitioner 2). These comments suggest that women farmers who are perceived to lack the ability to make decisions or implement AES may not receive focus as recipients of AES and that services will not be tailored to their needs.

Practitioners perceived that when women do have the opportunity to influence decision-making they can be particularly effective adopters of extension advice; “*When you find a woman has a say on the fields, you will see that they will work as they are advised by extension*”, and; “*If you find a woman who can decide what to do in the field, when you give her the technology, it is really easily adopted*” (Female District Extension Officer). One extension officer explained that female headed households, where women have sole responsibility for decision-making, sometimes perform better than male headed households in terms of AES use and implementation (Female Field Extension Officer, Njiro village).

Extension service providers’ attitudes about gender and a focus on women farmers

In addition to practitioners’ observations about women farmers’ use of extension I found that practitioners’ personal perceptions about gender had important implications for AES.

As described above, one male field extension officer started out by stating that he could not offer explanations for why women were “reluctant” and used extension less than men, saying offhandedly; “*I don’t know...That is the behaviour of these African women [laughter]. Maybe because they don’t care*” (Male Field Extension Officer, Ilboru village). However, when pressed on this, he then discussed several gender and societal norms in a fair amount of detail. This seems to indicate that he either did not perceive a direct connection between gender norms and women farmers’ use of extension until pushed to consider it, or that he sees these things as permanent features of the socio-cultural context which cannot be changed through the delivery of AES. It may also be that he wanted to downplay the constraints to women farmers accessing extension in order to frame the services he delivers in a positive light.

Several practitioners indicated awareness that gender relations impact on women farmers’ use of extension but these were often presented as socio-cultural norms. Comments like “...it is due to the culture”, “...that is the case in some areas” and “...that is their tradition” indicate that practitioners see this as the *status quo*. They were discussed as a backdrop to extension work and mentioned as though they were something that it would not be possible to change.

Some casual comments from some of the practitioners also revealed personal attitudes about gender that may affect how they deliver extension services. The male District officer I spoke to asked; “*Why do you want to focus on female farmers? You are including very few male farmers in your interview sample*” (Male District Extension Officer). The male field officer in Ilboru village similarly questioned the focus of my study; “*Why are you focusing on women farmers, not about farmers in general? Because you are a woman [laughs]*”. He also commented on my request to talk to women and men separately, and to prioritise women to avoid clashes with their domestic responsibilities; “*Why do you want to talk with women first? Why not men? Men are always discriminated against! [laughs]*”. The comments were made in a joking tone but throughout our interactions, this field officer

seemed keen to persuade me that women farmers were sufficiently able to use and benefit from extension services and did not require any special focus. This has implications for how extension is delivered in Ilboru village, as this officer is responsible for recruiting farmers to take part in AES, and is the person through which much AES is delivered. His apparent perception that a particular focus on women farmers is unnecessary suggests he may not acknowledge or make efforts to overcome the particular constraints to women's participation in AES. None of the female practitioners I spoke with commented on my focus on women farmers.

My observations at the AES sessions I attended also offered some evidence about practitioners' attitudes. During the sessions, men and women farmers generally sat separately (Figure 3) and the trainers generally faced the men farmers more directly and addressed them first, whereas women were addressed secondly, if at all. When asked about how farmers were involved during training discussions, some practitioners stated that they made efforts to ensure discussions were not dominated by one or a few farmers. However, they did not explicitly link this to gender.

Practitioners' perception of their expertise about gender

During conversations with practitioners from the research organisation, I also found that respondents were hesitant to discuss gender and expressed a lack of familiarity or confidence with the topic. When it was introduced, one interviewee light-heartedly said; *"For anything I know about women farmers, if there is anything!"* (Practitioner 2) whilst another was reticent to answer a question on the involvement of men and women farmers in training; *"...personally, I don't [...] I'm not very keen [...] I'm not very conversant on that aspect"* (Practitioner 1). Frequently, the respondents referred to the recently recruited gender specialist as the source of this kind of information. They described efforts by the specialist to improve gender expertise within the organisation so it could be addressed in their work; *"We have a gender specialist who is starting with sensitising the implementers. Then, when the implementers are developing their workplans, they can make sure that gender is one of the issues in the back of their mind"* (Practitioner 4). This and other responses implied that gender had thus far not been systematically included within the research organisation's work, but that there is a focus on improving this. The perception was that expertise were currently held by the gender specialist, with little existing capacity amongst other staff; *"There were no expertise on gender, so it was identified as a gap and the gender specialist was brought on board"* (Practitioner 2).

6.2 (Women) farmers' ability to shape AES

In this short final section of empirical evidence, I detail findings about opportunities for farmers to influence the content and delivery of AES in Babati and specifically draw out evidence about the ability and willingness of women farmers to participate in making AES more responsive to their needs.

6.2.1 *What women farmers report is missing in current AES*

As a measure of how current AES were meeting the needs of women farmers, I asked them whether there was anything they wanted from AES that they were not currently getting. Some reported that the current services met all their training and information needs. These were mainly women who were active users of AES or were focused on maize production using modern farming techniques. Other women stated that they needed more training about vegetable and poultry production which were currently delivered on an *ad hoc* and one-to-one basis. Conversely, other women stated that they needed training about maize, which indicates that some felt they were not receiving sufficient training about this currently, despite it being a major focus of mainstream extension services. This indicates that there are arguments both for AES efforts that specifically target women with training

about vegetables and poultry production, and for measures to better integrate women farmers in using mainstream AES.

6.2.2 *Farmers' perceptions about opportunities to shape AES*

Most of the women farmers I interviewed perceived that the content and delivery of AES was decided by the extension officers. Some women therefore felt that they did not have any opportunities to influence the services. However, a small number reported that the extension officer consulted them about their extension needs; *"We are asked what kind of training we need by the extension officer at the community meeting"*. As with perceptions about how well AES met their needs, the differences in these responses seemed to stem from how engaged the respondent was in AES; those who were more engaged generally reported that they had opportunities to influence AES and vice versa. Several farmers indicated that if they wanted to request specific training, they would ask the extension officer who would either then provide it themselves, or contact an external organisation to deliver the training. This highlights the primacy of the local extension officer as the means for farmers to access and shape AES. However, even this reportedly happened infrequently, and farmers generally could not give an example where they had done this.

Farmer Groups seemed to again provide an important forum, this time for farmers to influence what training they received, both within the group; *"When a farmer group needs certain training they communicate it to an extension officer and then the officer provides it"* (Man Farmer 1, Ilboru village) and in relation to the broader AES agenda decided in community meetings; *"Group members discuss what they want to learn and then come to the community meeting and raise this matter"* (Woman Farmer 3, Njiro village). Several farmers stated that it was primarily through groups that farmers could request training and men in a group interview in Ilboru village stated that this was a particular reason they liked Farmer Groups. This has important implications for the representation of women's needs and preferences in the requests that are made as, as established in Chapter 5, they are differentially constrained from being in farmers groups.

For AES delivered by NGOs and research organisations farmers perceived that the main chance to communicate extension needs to these organisations – other than by making a request through the government extension officer – was during ongoing AES activities; *"The institutions come with their agenda, farmers listen and then they request what they want to learn"* (Woman Farmer 5, Njiro village), and; *"During the training, farmers raise their hand and say 'We don't want to learn about this, we want to learn about this'"* (Woman Farmer 6, Njiro village). It was suggested that such requests resulted in ongoing sessions being adapted to incorporate the farmers' topic, or a future training session being arranged. However, farmers perceived that the organisations' broader agendas were pre-determined and this limited what AES they would deliver; *"People from [name of organisation] only deal with maize production so even if you ask for something else, they don't consider it"* (Man Farmer 2, Njiro village). This again has implications for women farmers' representation as, firstly they may be less likely to attend AES activities hosted by external organisations or, if they do attend, to contribute to discussions in such a public forum (see Chapter 5).

An apparent example of unequal representation of women and men farmers during consultation comes from group discussions in Njiro village where one group of men farmers stated that they had a requested training about sunflower production, which a certain organisation had then delivered. Conversely, one of the women's groups specifically cited this as an example of a training that they had not requested; *"[name of organisation] came to train us about sunflowers but it was not us that decided to learn this, it was [name of organisation]"* (Woman in group interview, Ilboru village, 18/3/17). This discrepancy came up within a broader discussion towards the end of group interviews when time constraints prevented follow-up questioning. However, it indicates interesting evidence that

women and men farmers may have different experiences of being consulted about extension needs.

6.2.3 Practitioners' accounts of opportunities for farmers to shape AES

Practitioners, on the other hand, described a number of different efforts to identify farmers' AES needs. A district extension officer described a process of 'needs assessment', in which; *"We go and sit with farmers, they tell us their problems, possible solutions, and which are the priorities"* (Male District Extension Officer). A representative within the research organisation similarly described conducting a needs assessment through a baseline survey; *"...to let farmers identify their knowledge gaps by themselves"* (Practitioner 3), which they stated had been used to inform the focus of their project. Another respondent in the research organisation described using a survey to assess farmers' Knowledge, Awareness, Skills and Aspirations (KASA) before and after extension training sessions which; *"Provides an evaluation tool for assessing that training activity and stakeholders' opinion of extension more broadly i.e. what is missing, what are the gaps"* (Practitioner 2). Several practitioners also described holding feedback meetings at the end of the year to get input from farmers; *"We get feedback and then we discuss within our project groups what to do in response"* (Practitioner 4). However, these measures were apparently not recognised by farmers; as the previous section demonstrates, they did not mention them when asked about ways to communicate their extension needs. This is important as farmers may not engage with opportunities for feedback if they do not recognise them as such.

Despite these examples of measures to gather farmer feedback, when practitioners were asked about the participation of farmers in shaping AES, they mainly talked about the capacity for farmers to choose between different technologies or varieties; *"We don't give prescriptive answers, we give a basket of options suited to different conditions. It depends on cultural conditions, agroecology of the area and many other factors. It's context specific"* (Practitioner 2). This indicates efforts to identify 'best fit' farming options suited to different farmers (Manfre et al., 2013). This illustrates that participation of the farmers was mainly expected at the level of comparing and choosing technologies and varieties, rather than having an input into the broader design and delivery of AES. However, there was a frequently mentioned example which indicated a limit to how much farmers' feedback is considered even in this capacity; several farmers, particularly in Njiro village, stated that they did not use industrial fertiliser because an initial increase in yield was not sustained without regular inputs of expensive fertilisers. Others stated that it *"weakened"* their soil. When asked how they addressed these concerns, the AES practitioners generally indicated that they continued their efforts to persuade farmers about the benefits of fertiliser, rather than exploring the farmers' strong opposition to it and considering alternative practices.

One district extension officer specifically stated that AES *"mostly top-down"* and perceived that there is no systematic gathering of feedback from farmers; *"It is very little and in most cases it comes from individual farmers. There's no specific way that farmers give feedback; the extension officers mostly get this by visiting farmers and observing the results for themselves"* (Female District Extension Officer). The officer stated that sometimes farmers gave feedback about their needs, but that this was usually from *"serious"* and *"business-oriented"* farmers by their own volition (Female District Extension Officer). Farmers similarly described that the farmers who contributed most to consultations tended to be those *"who like modern farming techniques"* (Woman Farmer 5, Njiro village) or *"with large farms, who mostly grow maize"* (Woman Farmer 3, Njiro village). Other responses indicated that it was farmers who were already active AES users who contributed most; *"It is mostly those who are involved in demonstration plots"* (Woman Farmer 4, Njiro village). It was also linked by some to confidence; *"Those who speak a lot are confident farmers and those with more experience in farming"* (Woman Farmer 6, Njiro village). This suggests that extension generated to meet 'farmers' demand'

will be skewed towards the needs of these especially vocal farmers. This has particular implications for women farmers who, as discussed in Chapter 5, are less likely to fit this farmer profile and may attend and contribute to extension activities less frequently than men farmers, particularly when external actors are involved. This again suggests that they may therefore be less represented during consultations about AES needs.

Responses indicated that the consideration of gender in consultation processes was relatively limited. A practitioner working on the vegetable project in the research organisation indicated some awareness of the need to include both men and women in needs assessment processes; *“You look at: who is doing the agricultural activities? Women are the ones who are in the field most of the time. So when you are doing training needs assessments, you need to make sure that you ask the right people (i.e. women farmers).”* (Practitioner 3). They stated that they used Community Meetings do this; *“You bring people together and gender issues come in – you are able to listen to women and then to discuss with men about the same topic”* (Practitioner 3). However, as reported to me by other respondents, women may be particularly shy to contribute during Community Meetings, a factor which is not acknowledged by this approach. A representative involved in the maize project in the research organisation alternatively perceived that there had thus far not been any differential consideration of women and men farmers; *“Have we done this; 'based on this assessment, men like this more, women like this more'? No, we haven't”* (Practitioner 2). This suggests that there is some consideration of different needs of men and women farmers within the research organisation, but it is apparently not currently systematic or standardised across the whole programme. Seemingly, from these responses, it has been considered more within the project concerned with vegetables and not within the project about maize, which may demonstrate systematic assumptions within the organisation about the association of women with vegetables and men with maize.

The government extension officers did not describe any particular emphasis within government services to identify if, and how, AES needs and preferences of men and women farmers differ. In fact, one field officer saw no difference in what men and women farmers were interested in; *“Of course they ask for the same thing. They need the same, they ask for the same”* (Male Field Extension Officer, Ilboru village). Another stated; *“When the men and women farmers are together they say together "We need this"”* (Male District Extension Officer) suggesting a perception that men and women farmers have homogenous AES needs and requests.

6.3 Discussion

Here I discuss the empirical findings presented in this chapter using theories and literature.

Gender norms and knowledge systems

The empirical findings in this chapter indicate that consideration of gender and the particular needs and preferences of women farmers do feature to some extent in the design and delivery of AES in Babati. Specifically, practitioners reported efforts to ensure equal invitation of men and women farmers to attend AES activities, based on guidelines within Tanzanian agricultural policy. However, practitioners observed that this did not necessarily ensure equal attendance. Equal invitation does not acknowledge or address the significant underlying factors that constrain women from attending AES, such as their ‘double burden’ of domestic responsibilities or, in some cases, the need for permission from their husbands. As Doss (2017, p. 555) states, the *“emphasis on ‘women as half the beneficiaries’”* as the aim and measure of gender inclusivity in extension efforts is *“not intrinsically bad; but is not the same as a focus on women’s equality”* which instead entails efforts to specifically address the constraints that women farmers disproportionately face and to go beyond goals of equal invitation and attendance to consider women farmers’ more comprehensive inclusion in the design and delivery of AES. Some positive efforts in this direction were indicated in the form of sensitisation exercises conducted by the research organisation to

increase awareness and change attitudes amongst farmers about women using AES. This had led to some reported improvement in the attendance of women in AES activities. However, it was notable that such targeting efforts had apparently been made within the project focused on vegetables – a traditionally female area of production – but apparently not within the maize project. Beyond these efforts, progress towards systematically integrating gender considerations in the design and delivery of AES appeared limited. Current services in Babati are a long way from the kind of ‘gender transformative’ extension system that Farnworth and Colverson suggest is needed (Farnworth and Colverson, 2015). It could be argued that the comprehensive addressing and transforming of societal gender norms suggested by these authors is beyond the scope of what AES can and should be doing, but my evidence suggests that such an approach may be necessary if AES are to effectively reach all farmers and improve agricultural production. Adjusting the content and delivery of services to better suit women farmers’ needs – although also essential to improving their use of AES – would be insufficient without efforts to address unequal gender relations which currently restrict women farmers from being able to access or implement AES at all. As the authors argue; “*tackling the underlying gender relations that hamper access and implementation of extension is a priority*” (Farnworth and Colverson, 2015, p. 20).

The AES practitioners demonstrated varying awareness about the implications of gender in the design and delivery of AES. Several showed awareness of societal gender norms and recognised that these influence women farmers’ actions and behaviours. However, they did not always make explicit links between this and their use of AES. For example, relying on equal invitation to achieve gender equal use of AES is a relatively ‘gender blind’ approach which does not acknowledge or address underlying norm-based constraints discussed in Chapter 5. Furthermore, in relation to extension needs, several practitioners perceived no difference in the needs of men and women farmers. This perception of farmers as a homogenous group conflicts with accounts elsewhere that women farmers are particularly interested in – and targeted with – training about vegetable production, and my findings that women preferentially use different types of AES compared to men. It also demonstrates a lack of awareness of power relations that occur amongst groups of farmers which will mean that more engaged and high-status farmers are more vocal during consultations, which will tend to create a structural bias towards responses from male farmers and lead to women farmers’ participation in AES becoming ‘subjugated’ (McNay, 1992). This lack of explicit awareness may mean that practitioners become agents of this subjugation. During AES activities, I observed that practitioners tended to primarily address men farmers and engage women farmers secondly, if at all. AES practitioners are in a particular position of power to affect how women farmers are engaged in AES.

Norms were also often presented by practitioners as ‘the way things are’. Practitioners discussed them as a feature of the context in which extension is delivered, rather than something that could be addressed through the services. There were also indications of a clash between the official AES guidelines that practitioners discussed and their own underlying attitudes. This was particularly evident in discussions with the male government extension officers; although they cited policy guidelines for equal inclusion of men and women farmers, their off-hand comments seemed to suggest underlying attitudes that the current system did facilitate fair access to AES, or at least to the degree suiting the relative roles of men and women in farming, and that women farmers did not require special focus. As Portes (2010) describes, values can be deeply held and resistant to change. They can also be internalised and not recognised by the actors who hold them (Friel, 2017). Consequently, although there are policy guidelines intended to improve gender equality in AES delivery, if these clash with practitioners’ deeply held values, they may not strongly believe in or endorse them which will create a barrier to their meaningful implementation.

Responses from a couple of practitioners hinted at unofficial selection criteria in targeting farmers with AES; the ability to access land, influence farm management decisions and

purchase inputs were mentioned as factors influencing whether or not a farmer would be prioritised as a recipient of AES. This creates a structural bias against women farmers who generally have less access to such resources and less autonomy in farm management decisions (FAO, 2011; Manfre et al., 2013). This indicates that some women farmers are not seen as legitimate receivers of AES by AES practitioners (Phelan, 1990; World Bank, 2010). This bias was not explicitly acknowledged by the practitioners who stated at other points in the conversation that they did not differentiate in how they approach men and women farmers. This suggests a lack of awareness by the practitioners of how societal gender norms affect their perceptions and actions (Friel, 2017).

Practitioners identified that efforts to specifically target women farmers in AES generally comprised specific training focused on vegetable and poultry production. It was usually described that this focus was based on practitioners' observations about the roles of women in production, and one practitioner explicitly linked this to women's responsibilities for household nutrition. This demonstrates how norms can become 'institutionalised' and reproduced by formal structures (North, 1992, 1991); social norms about gender roles in agricultural production manifest in extension services that target women based on these norms. In agreement with Williamson (2000), who suggests that informal institutions shape institutional environment and governance, my findings indicate that norms about roles of men and women in farming feed into the formal institutions involved in delivering AES. These institutions are made of people – AES practitioners – whose views and actions are shaped by the norms of the society they exist in. As Farnworth and Colverson (2015:20) state; *“any intervention...by extension services will shape – and be shaped by – gender relations”* (Farnworth and Colverson, 2015, p. 20). This can also be seen as a 'self-fulfilling prophecy'; extension practitioners' perceptions that women are primarily involved in home production means that they direct AES in this direction (Leeuwis, 2004). In reality, whilst many women did express interest in AES about vegetables, a small number were also interested in learning about maize and other commercial crops.

Despite efforts at a policy level to include gender considerations within extension services in Babati District, the use and implementation of AES by men and women farmers was observed by practitioners to still not be equal. As North (1992) describes, superficial changes to policy can be made relatively quickly, but value based norms, which affect how these things are enacted by people on the ground, will be slow to change. This can explain the gap between what should be – based on written policy – and how things actually are in practice. I would argue that the measures currently in place in AES in Babati address a symptom rather than an underlying cause. They focus on the observable issue that at a majority of AES activities other than training about vegetables, women reportedly attend less than men. However, equal invitation does nothing to address the many constraints that women farmers disproportionately face in responding to that invitation, in fully participating in discussions and activities if they do attend, or in implementing AES afterwards. The relatively 'gender blind' approach described by several practitioners, whilst based on good intentions that extension should be equally available to men and women, does not acknowledge and address these constraints (Doss, 2017). It demonstrates a current lack of understanding and capacity amongst extension practitioners – acknowledged by several of the practitioners themselves – to address gender dynamics through their practice. This a major challenge to achieving more gender-equal AES (Manfre et al., 2013).

Opportunities for 'demand driven' AES

There were reportedly some efforts by practitioners to gather feedback from farmers about the content and delivery of AES, but overall these seemed to be minimal and mostly limited to a choice between different practices or technologies. The overall agenda or focus of AES - such as the focus on maize - were apparently set before any opportunity for farmers to communicate their training and knowledge needs, particularly when external organisations were involved. AES practitioners have much greater 'power over' determining how

extension services are designed and delivered compared to farmers (Kabeer, 2010). According to farmers, the main opportunity for feedback was during ongoing extension activities. They did not recognise the various methods of farmer consultation described by practitioners, which indicates an issue in how these are presented to farmers. The *ad hoc* nature of giving feedback during ongoing AES sessions limits the influence of farmers' input to AES, arriving as it does at the point at which the services are already being delivered, and in a way that is unstructured and unsolicited by the AES providers. Additionally, it will only capture the input of farmers who are present during the AES session and not of those who are currently unwilling or unable to attend sessions, which may disproportionately exclude women farmers. According to both practitioners and farmers, the individuals who respond during consultations are also generally those farmers who are more engaged and confident, have larger farms and produce maize and associated field crops. Additionally, it was reported that Farmers Group members would particularly make requests for training during Community Meetings. This suggests a bias against women farmers who are less likely to fit this farmer profile or be members of a Farmer Group and were observed and reported to be particularly hesitant to contribute in socially formal forums. Consequently, women farmers' ability to request the AES they need or want may be subjugated (McNay, 1992). In order to move towards more responsive and demand-driven AES, there is therefore a need to empower farmers to articulate their needs and demands, and this appears to be particularly true for women farmers (Duveskog, 2013).

Summary and key points

My findings revealed that there were some efforts within AES in Babati to better reach women farmers, and to incorporate their needs and preferences in the design and delivery of services. However, these efforts were generally *ad hoc* and did not comprehensively address the critical underlying constraints to women farmers imposed by societal gender norms and power relations. The apparent perspective of many AES practitioners was that such norms are the context within which AES function, rather than something that can be addressed through the services. Many practitioners also demonstrated – or explicitly identified – a current lack of expertise about providing gender responsive AES and, in some cases, personal attitudes about gender which may prevent them from meaningfully implementing gender equality measures. This is critical as AES in Babati apparently remains relatively top-down, with limited opportunities for farmers – and particularly women – to have input to shaping AES. This means that practitioners hold disproportionate power to determine the content and delivery of AES and therefore to change them to better meet the needs of women farmers. The current lack of gender capacity amongst practitioners is therefore a critical limiting factor which must be addressed in order to make AES responsive to the needs of women farmers (Manfre et al., 2013). It is positive that there are efforts in this direction within the research organisation.

7 Conclusions

In this chapter, I reflect on the key findings I made in relation to each of my study objectives and outline my main conclusions. I consider how the study contributes to existing empirical and theoretical knowledge and then suggest implications for agricultural extension services in Babati. Finally, I reflect on my methodological and theoretical approach and suggest some topics for further research.

7.1 Key findings

My empirical findings in this thesis provide some important insights into women farmers' access to, use of, and experiences and perceptions of, agricultural extension services in Babati District, Tanzania.

In relation to my first objective, I found apparent particularities about the types of AES that women farmers use and prefer compared to men farmers. Overall they seemed more likely to use more informal sources of extension and particularly appreciated the opportunity for group discussion and learning with and from fellow farmers. They were generally less likely to use more formal, technical AES compared to men farmers and were less familiar with the various methods, which indicates overall lower engagement with technical AES. This demonstrates what the actor oriented perspective describes; different actors have different knowledge interests and ways of creating and using knowledge (Leeuwis et al., 1990). Interview responses and observations revealed multiple factors contributing to this including women's domestic labour burden, relative responsibilities of men and women for farm management and decision making, and women's ability to autonomously attend AES and participate in public forums. My interpretation is that many, if not most, of these were rooted in societal gender norms. I investigated this through my second objective which became the major focus of my study. I found that societal gender norms – and related power relations and norms about knowledge – played a fundamental and multifaceted role in determining how women farmers access and use AES and, in many cases, whether they are willing and able to at all. This supports what Briggs (2005) states; societal norms and relations are critical in determining individuals' access to knowledge.

My findings showed that norms strongly defined the expected and accepted roles of women and men in agricultural communities. Women's responsibilities were primarily seen to be domestic work at the homestead and informal production on small homeplots. In relation to the main farm plot, women were often solely involved as labourers, whereas men were responsible for land ownership and farm decision-making. This had various implications for women farmers' use of AES. Firstly, the 'double burden' of domestic responsibilities on top of farm labour work meant that women farmers often lacked the time to attend AES. Secondly, because they often stay at the homestead, women were more reliant on forms of extension which could be accessed from the home, including visits from the extension officer or contact with neighbouring farmers. Thirdly, their primary involvement in homeplot production of vegetables and poultry means that mainstream AES – which reportedly focused primarily on maize systems – were not relevant to the types of production women farmers are often responsible for. Furthermore, their production was seen as informal and supplemental to the main plot production which meant that women were not perceived as legitimate receivers of AES (see Bourdieu, 2010). There was also an apparent perception that women are not recipients of education in general and, additionally, because women often lack power over land and farm management decisions and therefore over the implementation of AES practices, their participation in AES was seen as of secondary importance to that of men. This was self-reinforcing as the ability to access extension was seen by several women as a way to enhance their power in decision making.

Another major branch of my findings revealed power relations which resulted in apparent domination and subjugation of women farmers which constrained their participation in AES. Firstly, in many married households, men controlled what their wives were allowed

to do and where they were allowed to go. Even in households with apparently more equitable collaboration on decision-making and AES use, women farmers described that their husbands ‘allowed them’ to attend AES. Several women farmers saw this as a main factor determining women farmers’ use of AES. Secondly, when women were able to attend AES, there was evidence that they were less confident to actively participate in discussions and demonstrations. This seemed to stem from a social norm that women should not speak in public forums, particularly when their husband is present, as well as a lack of ‘power within’ amongst women, which relates to their sense of agency and self-worth (Kabeer, 2010; Leeuwis, 2004). The implications were that women were less likely to speak up to pursue the knowledge they needed from AES.

In relation to my final objective, I found some attempts within AES in Babati to incorporate gender considerations and to better deliver to women farmers. Within the government extension service, this mostly comprised equal invitation of men and women farmers, based on policy requirements. However, practitioners reported that this did not result in equal attendance. It seems likely that this is because it does not acknowledge or address the many constraints that I found women farmers disproportionately face in using AES. Other measures with the research organisation included sensitisation of farmers, which apparently improved women’s participation, and some apparent attention to gender during trainings needs assessments. However, the major efforts to reach women with AES were reportedly specific training activities for women. These were mostly focused on traditionally female production (vegetables) and often delivered through groups, some of which were women-only. Only one practitioner described taking measures to address women farmers’ needs within broader AES and these were apparently not currently included in the organisation’s policy. There seemed to be a lack of comprehensive strategies to address gender within AES in Babati. There is also currently an apparent lack of gender expertise amongst many of the staff involved in delivering AES, which is a critical factor limiting the ability of institutions to provide gender-inclusive AES. As a result, AES is delivered in a relatively ‘gender blind’ way which does not acknowledge and address differential constraints that women farmers face. AES practitioners were also not exempt from being influenced by societal gender norms and some held values and opinions which clashed with efforts to target women farmers. As North (1992) describes, social norms therefore become reinforced through formal institutions (North, 1992). Both men and women farmers additionally reported minimal opportunities to influence the content and delivery of AES, despite practitioners describing various efforts to gather feedback. Women were apparently disproportionately constrained from participating in consultation due to many of the sociocultural factors mentioned above, and as a result, they have less agency to shape AES to meet their needs and preferences.

7.2 Main conclusions

When I started this study, my intention had been to investigate what types of AES women farmers preferentially used in order to identify features that could make AES best suit their needs and preferences. I had anticipated that societal gender norms would factor into this, but early in the collection of my empirical data it became evident that they play a fundamental and multifaceted role in determining how women farmers use AES and, often, whether they are able to use it at all. I found that these societal gender norms were strongly interlinked with power relations and norms about the creation and use of knowledge. These factors not only created dynamics within households and communities that affected women farmers as users of AES, but also affected how AES is designed and delivered by extension practitioners. Therefore, I argue that any progress towards AES which deliver to women and men farmers more equitably will require efforts to better acknowledge and address these gender norms. In this way, AES could better meet the needs and preferences of women farmers’ and lead to potential benefits for their agricultural productivity as well as for gender equitability.

7.3 Contributions to knowledge

Despite recognition since the 1970s that agricultural extension services have failed to adequately deliver to women farmers, significant knowledge gaps remain around the factors that affect how well AES capture and address women farmers' needs, and how well different AES methods facilitate gender-equal services (Manfre et al., 2013). In this thesis, I have contributed knowledge towards these gaps by providing evidence about differences in the types of AES that women and men farmers prefer and use, and insights into current efforts to capture and respond to (women) farmers' AES needs. However, the biggest contribution to knowledge is evidence of the persistent and pervasive effect that societal gender norms have on women farmers' use of AES. This provides support for a body of literature which argues that in order to effectively and equitably deliver to women and men farmers, AES must comprehensively address societal gender norms (Doss, 2017; Farnworth and Colverson, 2015). Critically, I have demonstrated that this will require efforts to enhance gender awareness and capacity amongst AES providers (Manfre et al., 2013).

The study has also contributed to theoretical knowledge. Findings about differences in the use of AES by women and men farmers suggest support for the actor oriented theory that different actors will have different ways of creating and using knowledge (Leeuwis et al., 1990). I have also strongly shown that knowledge is socially constructed and that gender and power norms impact on individuals' access to and ability to use knowledge (Briggs, 2005). In support of theories of North (1992), Portes (2010) and Williamson (2000), I have demonstrated an example of informal institutions – in the form of sociocultural norms – strongly influencing the structure and functioning of formal institutions, in this case through actions of AES practitioners whose perspectives are shaped by societal gender norms (North, 1992; Portes, 2010; Williamson, 2000). I have also presented evidence which supports the theory that although surface level policy changes can be made relatively quickly, deeply held values are slow to change (Portes, 2010). There was also good evidence for the implications of power over, power to, power within and power with for women farmers' use of AES (Kabeer, 2010; Tegbaru et al., 2015).

7.4 Implications for Agricultural Extension Services in Babati

It is clear from my empirical evidence that in order to effectively engage women farmers and meet their needs and preferences, AES in Babati must address the various constraints that affect women farmers' willingness and ability to use these services. Here I suggest some factors that should be considered, based on insights from my findings.

7.4.1 *Practical factors*

At a practical level, measures can be taken to ensure that AES account for practical challenges that women face. For example, one of the main constraints I found was that women lack time to attend training due to their domestic responsibilities. Extension providers could therefore be more conscious to schedule training when women can be available and take care that sessions do not take up too much time, perhaps by dividing training into shorter modules for women farmers. They could also systematically check for potential clashes with other village activities on the planned day of the training and especially events such as clinic days which specifically occupy women farmers. To address the need for women to remain close to their homes, training could be conducted on a farmers' own plot or on a plot which is central to several women requiring training. Offering childcare on-site can also be a critical factor for women's attendance at AES activities away from their home, as I observed during the training at the town near Njiro village (Manfre et al., 2013, p. 14).

7.4.2 *Gender norms and the potential for 'gender transformative' AES*

In addition to practical constraints, AES must also acknowledge and address gender norms which strongly affect women farmers' use of AES. The starting point for this needs to be

improved gender sensitisation and awareness, not only of both women and men farmers but also, crucially, of practitioners involved in delivering AES. I found that many norms were strongly entrenched and perceived as the natural order of things. There was little awareness amongst farmers of the ways in which they strongly dictate women's (and men's) behaviours. There is therefore a need to sensitise farmers, particularly men, about the value of women being able to use AES and participate in farm decision-making. This is especially critical as so many women described relying on the permission of their husband to attend AES activities. There were indications of such sensitisation meetings already being conducted by the research organisation, including an example where there was a subsequent observed increase in attendance by women. However, increases were reportedly small. Such a change is likely to be slow as it challenges entrenched power and gender relations and will be met with resistance from those in positions that are favourable to them. Sensitisation therefore needs to be regular and sustained and the outcomes monitored. However, it was positive that some women and men reported collaboration on farm management and decision-making in their households and perhaps such individuals could be used as 'contact farmers' to inform other households about such practices, similar to how the woman farmer in Ilboru village was used to recruit others to using AES.

There are arguments for and against addressing gender norms through AES. It could be argued that changing widely accepted societal norms which are rooted in deeply held values is beyond the scope of AES, particularly in terms of limited resources and staff capacity within AES institutions. Some would argue that AES should focus instead on improving farming practices within the existing context (Mbo'o-Tchouawou and Colverson, 2014, p. 9). However, the World Bank states that an explicit gender dimension must be included in AES in order to adequately remove inequalities that constrain women from becoming active agents in agriculture (Doss, 2017; World Bank et al., 2009). I would argue that my evidence shows that without addressing gender inequalities, AES cannot effectively deliver for women farmers. As Farnworth and Colverson (2015) argue, there is a need for 'gender transformative' extension systems in which gender inequalities are explicitly incorporated and addressed in the design of AES (Farnworth and Colverson, 2015). In doing so, there is the potential for AES to not only address inequalities in the use of AES but also wider gender relations. For example, Friis-Hansen et al (2004) found that when men and women were equally involved in Farmer Field Schools, gender relations in the involved communities changed, not only due to the empowerment of women but also to a change in men's views about women.

In order for a shift to such gender-responsive AES to occur, there is first a need to enhance capacity within AES institutions (Mbo'o-Tchouawou and Colverson, 2014). I found that AES practitioners in Babati currently lacked necessary expertise related to gender inclusivity which is a critical limiting factor to making extension responsive to the specific needs of both women and men farmers (Manfre et al., 2013). Progress towards more gender responsive AES will therefore require enhancement of capacity amongst extension practitioners, and sensitisation to address deeply held attitudes about gender and women farmers stemming from internalised socio-cultural norms (Mbo'o-Tchouawou and Colverson, 2014). There were indications of such efforts within the research organisation, which are a critical step towards comprehensively incorporating gender within the work they deliver. Efforts within the government extension services seem to so far be limited to measures for equal invitation of men and women farmers which, although positive, do not address underlying factors constraining women from attending AES (Doss, 2017). The gender capacity and awareness within the Babati District government AES is especially critical given the primacy of government officers as source of extension for farmers and their involvement in the delivery of most AES in Babati, and could therefore be a priority in efforts to improve the gender-equitability of Babati AES (see (Lwoga et al., 2013).

7.4.3 The potential of Farmers Groups for delivering gender inclusive AES

Farmers Groups played a critical role as a means to access AES in Babati and there were indications that they may be a particularly beneficial AES forum for women farmers for a number of reasons. Firstly, group members could decide the timing of sessions and reportedly contacted each other about upcoming activities. This could overcome two key constraints reported by many women; that the timing of AES activities did not fit with their domestic responsibilities, and that they did not hear about upcoming extension events. Secondly, it was reported that if a group member misses a session, they can get the information afterwards from a fellow group member. Groups therefore allow women farmers to build social capacity which could facilitate communication and information sharing, which could be particularly valuable for women who are otherwise isolated at home (Manfre et al., 2013). Additionally, when women collaborate, they are better able to create momentum for changing the status quo (Kabeer, 2010). Furthermore, Farmers Groups seem to suit the preferences of women farmers for AES that facilitate discussion, sharing of ideas and collaboration with fellow farmers. Women reported being more comfortable and confident to participate in discussions in Farmers Groups compared to larger, more public and 'socially formal' forums like Community Meetings or Field Days. It is therefore positive that there is apparently an increasing emphasis on Farmers Groups as a means for AES delivery in Tanzania (DAICO, 2017; Manfre et al., 2013). However, there were evidently current biases, at least in Ilboru village, which restricted women farmers from joining groups. This further indicates that effective, gender-responsive AES will necessitate gender sensitivity training for both farmers and practitioners.

It is also a consideration as to whether Farmers Groups for women farmers should be women-only or mixed gender. On one hand, women-only forums remove the constraints of gender relations and women may participate more freely than in AES forums where men were also present. Such groups could offer opportunities for empowerment of women farmers and can build confidence and leadership skills (Manfre et al., 2013). They could also help by engaging and familiarising women with AES which may then encourage them to participate in other AES forums. In cases where women farmers have different knowledge needs than men, women-only groups also create a forum for women to learn about these topics. However, as previously discussed, such gender-segregated AES risks perpetuating divisions between the genders and reinforcing stereotypes about the types of production women are involved with. Mixed-gender AES approaches could instead enhance communication, collaboration and solidarity between women and men farmers and foster the kinds of changes in broader societal gender relations observed by Friis-Hansen et al (2012) in mixed-sex FFS groups (Friis-Hansen et al., 2012; Mbo'o-Tchouawou and Colverson, 2014). The attitudes and behaviours of men towards women, and their willingness to ally themselves with women, are critical in determining the kinds of change women are able to achieve (Kabeer 2010). Ultimately, both women-only and mixed-gender AES approaches have the potential to contribute to more gender-equitable AES; it is dependent on the capacity of AES institutions to assess whether one or the other – or some combination or hybrid – will be most appropriate in a given context (Manfre et al., 2013).

7.4.4 Positive indications and starting points

There were some positive examples and promising signs which suggest there is potential for progress towards improved access of women farmers to extension services in Babati. Firstly, the widowed women I spoke to were very active and engaged users of extension. They demonstrate that when freed from certain household gender and power relations, women farmers can be particularly effective users of AES. This could encourage AES practitioners to target more women, whilst the widowed women themselves could be used to encourage other women farmers to attend AES. Secondly, some women in married households did report some level of collaboration with their husbands on AES use and farm decision making. Some men also recognised the value of their wives gaining extension

knowledge and participating in farm management. There was also a general ambition amongst many of the women I spoke for increased involvement, influence and autonomy in using AES and in farm decision-making, which is an important driving force for change. On the side of AES delivery, promising signs included reported existing efforts to sensitise farmers about involving women in AES as well as internal efforts to improve the capacity of staff to deliver gender responsive AES. There were also indications that the increasing use of Farmers Groups to deliver AES could particularly benefit women as groups seemed to meet many of their specific needs and preferences as a forum for AES, providing that barriers to women farmers joining groups are addressed.

7.5 Methodological and theoretical reflections

The choice of methodological approach and theoretical framework critically shapes the outcomes of any social science study. I found that my decision to use qualitative methods was well suited to my aim to investigate individual experiences and perceptions of farmers in the local context. The semi-structured approach I used in interviews was efficient given the time I had available and the fact that I was working with a translator and facilitators. The structure allowed us to prepare in advance and ensure that I covered all the necessary topics to answer my research questions. However it also provided enough flexibility for follow-up questioning and for respondents to bring up topics which I had not identified. Observations provided a valuable alternative source of evidence about phenomena reported by interviewees to allow a more detailed critique of the situation. With more fieldwork time, observations of different AES activities could have provided additional useful data.

Nevertheless, there were some challenges and drawbacks with my chosen methodology. Firstly, as noted in a few places in my empirical chapters, there were some apparent contradictions between different interview responses, or between responses and observations. I have suggested in the text as to what these may indicate but they could perhaps have been better investigated with a more conversational, unstructured interview approach to allow more in-depth exploration of phenomena. Alternatively, a larger number of interviews with more respondents may have provided accounts of the same phenomena from different perspectives which could have further supported the validity of my findings.

It is also very important to consider the potential for researcher bias. Coming as an external researcher from a socio-cultural context that is very different from Babati was an advantage in terms of being able to recognise things that actors embedded in the local context did not find notable. However, it also meant that there was the potential for me to interpret accounts and observations differently from how an actor in the local context may understand them. I tried to be constantly aware of this and to reflect on how I was interpreting observations and respondent accounts. Working with a local translator and facilitators helped to reduce this effect somewhat and I made sure to consult with them after every interview to hear their interpretation of what they had heard and seen.

There was also a potential source of bias in my method of selecting farmer respondents. I relied on local extension officers to connect me with farmers. This meant that my sample was biased towards farmers with whom the officer has easier contact. It is therefore likely that my respondents are more familiar and engaged with AES compared to the broader farming population. This is demonstrated by the fact that the majority of my respondents were members of Farmers Groups, whereas the rate of membership in both study villages was only around 10-15% (based on numbers provided by the field extension officers). It is likely that farmers from outside of the extension officers' circles of contacts will have reported different experiences of AES which could have revealed other important factors affecting AES use. I attempted to counteract this by providing criteria for extension officers to select farmers which included specific requests to speak with some less active users of extension. With more time or familiarity with the area, an alternative approach would be to select farmers myself without the influence of the extension officer.

Finally, I was supported during my fieldwork by IITA. It is therefore likely that I was perceived by my interviewees to be representing an organisation involved in AES delivery which may have affected some responses when I was asking people to critique AES. I reduced this effect by clearly explaining that my research was primarily for my own academic studies and not an investigation by the organisation. I also assured my respondents that their responses were anonymous. After these explanations, respondents often noticeably relaxed and spoke candidly about their opinions.

My decision to use a theoretical approach based on gender norms and feminist theory allowed investigation of gender in AES which is an issue which is recognised as having received relatively little attention to date. However, by choosing a perspective which focuses on the situation of women farmers, gender relations and women farmers' experiences will have become more prominent in my findings and analysis. Although several of the factors I discuss in this thesis are certainly exacerbated and intensified by gender inequalities, they are not necessarily unique to women farmers. For example, men farmers – although they did report using technical training more than women farmers – also used contact with an extension officer as a major source of AES. They also made broadly similar reports about the (lack of) opportunity to influence the agenda of AES. This indicates apparent issues with how AES is communicated to farmers *in general* and not just to women farmers. An alternative theoretical perspective, for example more strongly rooted in communication theory or focused on the power relations between practitioners and farmers, could have highlighted and explored this issue differently.

Another important factor to note is that it was clear that women farmers and men farmers are not two distinct homogenous groups. Individual experiences varied due to factors including age, marital status, length of time living in the area, membership of Farmers Groups, as well as individuals' personalities. It is therefore not accurate to draw a line between 'women farmers' and 'men farmers' and compare the two groups only according to this binary. I have attempted to avoid this in my analysis and to represent the complexity amongst individual responses, yet an inter-sectional theoretical approach could provide more nuanced exploration of individual experiences of AES and may reveal other important factors alongside gender that affect farmers' use of AES (Bose, 2012).

7.6 Ideas for further study

My empirical data was very rich and revealed a multitude of issues relating to AES and gender in Babati. I could have written a whole thesis on any of several different subjects, but ultimately had to narrow my focus to my chosen objectives. Here I suggest a number of topics which could yield interesting and important further investigation:

- Further observation of AES activities to investigate the relative attendance, behaviours, engagement and participation by women and men farmers with different types of AES
- Detailed document analysis and in-depth interviews with a broader sample of AES practitioners to further investigate how gender is considered in major AES institutions
- Interviewing husband and wife pairs about their relative AES use and responsibilities in household production and decision-making in order to compare perspectives about household dynamics from actors within the same household
- Assessment of how AES are communicated to farmers in Babati by AES providers and the implications of this for farmers' engagement with the services
- Assessment of the extent to which AES in Babati are 'demand driven' and more detailed investigation of how gender relations impact women farmers' participation in consultation processes
- Consideration of power relations between AES practitioners and farmers and the implications for 'demand driven' services
- Evaluation of the potential for Farmer Groups to improve the delivery of AES to women farmers

8 Appendix I. Methods of agricultural extension in Njiro village and Ilboru village

Method of extension	Description (<i>see (Oakley and Garforth, 1997) unless otherwise indicated</i>)	Group, individual or community	Location	Type of AES, as used in this thesis	Notes about method as used in Njiro village and Ilboru village from interviews and observations
Visit by an Extension Officer at House or Farm	Extension officer visits farmer. Usually by appointment but can be informal. For: specific advice, to learn about a farmer's problems, explain a new practice, generate interest in extension activities, follow-up on previous visits, or sustain contact	Individual	Farmer's home	Advice or sensitisation, informal	
Visit to Extension Officer at Office	Farmer visits their local extension officer at the village or ward office	Individual	Village office	Advice or sensitisation, informal	
Phone Calls or SMS with an Extension Officer	Phone calls or SMS between farmer and extension officer. Mainly for communicating about specific problems and advice, or for officer to inform farmer about a specific AES event	Individual	Farmer's home	Advice or sensitisation, informal	
Community Meeting	Local community meeting in which all community matters are discussed, including farming and extension. Quarterly. Announced using a loud debe drum to call all villagers. Can be used as 'sensitisation' for new practices, technologies or policies. Sometimes NGO or research organisations may attend and present. Also used to gather feedback, to review particular problems, and discuss solutions. Emergency meetings can be called e.g. if there is a pest outbreak.	Community	Village office or meeting hall	Advice or sensitisation <i>OR</i> technical training and information (depends on content of meeting)	In Njiro and Ilboru villages, community meetings are quarterly. All members of the community are expected to attend. In Njiro, the extension officer presents in every meeting. In Ilboru, only some meetings include extension information.
Farmer-to-Farmer Contact	Informally, farmers may learn from the practices of fellow farmers or neighbours through observations or discussions. A formal version of Farmer-to-Farmer Contact involves 'lead' or contact farmers who are selected for being particularly experienced and innovative in their farming. They are trained by the extension officer or other AES provider and then go on to train other farmers on these methods.	Individual	Various: informally at home, around neighbourhood, or at community gatherings Formally at demo plot, or Mother Plot on a farmer's land	Advice or sensitisation, often informal	In Ilboru village graduates of the FFS become contact farmers. They are used as a primary point of contact between the extension officer and other farmers. In Njiro village, the lead farmers sign an agreement which commits them to train other farmers.
Farmers Groups	Groups of around 15-30 farmers. May be established by farmers, but usually formed by extension officers or NGOs and other actors. During a community meeting, interested farmers register their name and then come together to form the group. Often focused around a particular crop, practice, or interest.	Group	Various: village office, demo plot on group member's land, centralised demo plot	Technical training	Farmer groups are increasingly being used to deliver agricultural extension, including in Tanzania (Manfre et al., 2013)
Farmer Field School	A group of farmers meets regularly to receive training about	Group	Various: village	Technical training	In Njiro village, the term 'Farmer Field

	improved farming methods. A plot is established on land of one high-performing member who prepares the plot and keeps the harvest at the end of the season. The group manages the plot together and observes and compares 'local' and 'best' practice over a season. At the end of the season, they may present to policymakers, government extension staff and other farmers in a 'Field Day' (see below). FFSs are often facilitated by extension officers, but can also be by other AES providers.		office, meeting hall, demo plot on group member's land, centralised demo plot		School' (shamba darasa) was used to refer to something different; farmer groups attend training delivered by an NGO at a demonstration plot. The farmers then implement the practices on their land and the extension officer makes follow-ups with them to observe progress and offer advice.
Field Day	Event for the local community in which a particular farmer, farmer group or AES provider showcases results of using a new farming practice. Often used to disseminate new practices, technologies or crops to other farmers. Can be on an experimental station, but more usually on the land of a farmer.	Group	Demo plot on farmers land, or centralised demo plot	Technical training	
Demonstration ('demo') Plot	A demonstration plot is established, often on a farmers' land or sometimes in a centralised location. Different variations of farming practices are established e.g. seed varieties, fertiliser types and application rates, row spacing etc. Farmers visit the plot, either informally or for formal training, to compare 'improved' and 'local' practices. Can be part of sensitisation activities when a new technology is being introduced. Plots are placed close to main roads so they are visible to passers-by.	Group (or individually as passers-by)	Demo plot on farmers land, or centralised demo plot	Technical training <i>OR</i> sensitisation (via signage)	In both Njiro village and Ilboru village, demonstration plots are close to main roads and have signage to communicate information to passers-by. They are also used as sites for training events and activities, including with farmer groups and FFSs
Mother-Baby Plot	A Mother Plot contains different seed varieties under different practices such as fertiliser type and rates, spacing etc alongside a control of 'local' practices. It is established on the land of a high-performing farmer. Farmers visit the Mother Plot and select a small number of varieties or practices to try in a small Baby Plot on their own farm. Farmers record yields and rate the performance of new varieties and practices.	Group	Mother plot on one farmer's land, baby plot on farmer's own land	Technical training	In Njiro village, the mother-baby plots are used by a specific training group. This group attend training at the mother plot – which is established on the land of a high-performing farmer – and then each group member establishes a baby plot on their own land
Study Tour	Selected farmers – individuals or a small group – are facilitated to visit other areas to see different practices, crop systems, and solutions to common challenges. High-performing farmers are usually selected. When they return, they share what they have learned with their farmer group or at a community meeting	Individual, or small group	Villages and towns outside of own village	Technical training	Destinations include neighbouring wards as well as longer trips. Visits to the annual nanenane agricultural festival in Arusha were also defined as a study tour by farmers
Quality Declared Seed (QDS) plot	A trained and certified farmer establishes a plot on their land in which they produce 'Quality Declared Seeds'. A QDS production system was adopted by the Tanzanian government in 2000 with the aim of multiplying certified seeds at village and farm level using trained farmers.	Individual (plot owner)	QDS plot on one farmer's land	Technical training	In Njiro, there is one farmer with a QDS plot selected by an NGO called COSITA. The extension officer has little involvement in the plot. Farmers were generally unaware of the QDS.
In Njiro village, there is some overlap between techniques; the Mother Plot (i) is used for training for Farmer Field Schools (ii) which are used as a method of training for Farmer Groups (iii)					

9 Appendix II. Lists of AES compiled by farmers in Group Interviews

First Round of Group Interviews

Njiro Village						Ilboru Village					
Men Farmers			Women Farmers			Men Farmers			Women Farmers		
List order	AES type	Number who attended within last year (n=12)	List order	AES type	Number who attended within last year (n=7)	List order	AES type	Number who attended within last year (n=10)	List order	AES type	Number who attended within last year (n=10)
1	Farmer Field Day	3	1	Visit by extension officer at farm	7	1	Community meetings	7	1	Meet with extension officer	3
2	Community meeting	10	2	Farmers groups	3	2	Farmers groups	7	2	Phone calls with extension officer	4
3	Farmers groups	7	3	Phone calls with extension officer	3	3	Demonstration plot	12	3	Farmers groups	4
4	Phone calls with extension officer	4	4	Community meetings	8	4	Visit by extension officer at farm	10	4	Farmer Field School	5
5	Farmer Field School	5	5	Farmer Field School	1	5	Farmer Field School	9	5	Community meeting	4
6	Demonstration plot	7	6	Learning from fellow farmers	9	6	Study tour	0	6	Demonstration plot	7
7	Seed production plot	1	7	Demonstration plot	2	7	Field Day	12	7	Farmer to farmer contact	3
8	Mother-baby plots	6	8	Field Day	2	8	Farmer to farmer contact	9	8	(added later): Field Day	0
9	Visit by extension officer at home	5	9	Study tour	3						
<i>Notes</i>			Farmer Field Day was suggested by facilitator and extension officer after one farmer mentioned 'learning from research outputs' – indicates farmers' lack of familiarity with name of methods						After Community Meeting, no other options were spontaneously suggested until facilitators prompted; Field Day was not remembered until during the next exercise		

Second Round of Group Interviews

Njiro Village						Ilboru Village					
Men Farmers			Women Farmers			Men Farmers			Women Farmers		
List order	AES type	Number who attended within last year (n=8)	List order	AES type	Number who attended within last year (n=12)	List order	AES type	Number who attended within last year (n=7)	List order	AES type	Number who attended within last year (n=9)
1	Community meetings	7	1	Visit with extension officer	5	1	Farmers groups	7	1	Community meeting	11
2	Visit with extension officer	5	2	Phone calls with extension officer	5	2	Community meetings	8	2	Farmer groups	11*
3	Phone calls with extension officer	2	3	Farmers groups	7	3	Farmer Field School	4	3	Visit with extension officer	7
4	Farmer Field School	7	4	Community meetings	9	4	Meet with extension officer	7	4	Phone calls with extension officer	2
5	Farmers groups	4	5	Farmer-to-farmer contact	7	5	Phone calls with extension officer	4	5	Farmer Field School	8
6	Demonstration plot	5	6	Media	1	6	Media	5	6	Demonstration plot	3
7	Farmer Field Day	6	7	Study tour	6	7	Demonstration plot	6	7	Seed production plot	1
8	Media	5	8	Demonstration plot	8	8	Farmer Field Day	4	8	(added later): Farmer Field Day	1
9	(added later): Learning from fellow farmers	2	9	Farmer Field School	7	9	Study tour	4	9	(added later): Study tour	1
			10	Farmer Field Day	4	10	Farmer-to-farmer contact	n/a			
Notes	Much confusion about demo plot vs FFS; learning from others was remembered and added during next exercise		Quick process until farmer-to-farmer contact (#5), then it took time and prompting to come up with the rest; Study tour, demo plot, FFS and FFD were all suggested by one participant			After #5 there were fewer answers and prompting was needed			Almost no responses to begin with; question re-phrased as <i>any</i> AES types that they had even <i>heard</i> of; much prompting; list took ~30 minutes; farmer field day and study tour were only remembered later. *Most had joined a new group the previous day		

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