Gender relations and agricultural production in rural Mozambique

Understanding the cash and non-cash flows at plot-level in central Mozambique



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Summary

Key concepts: Mozambique, small-scale agriculture, gender relations, cash and non-cash flows

Agriculture is the main economic activity for 80% of the population in Mozambique. The relatively low contribution to the country's GDP reflects the informal nature of agriculture, where many women are involved through transactions not always by monetary means. Numerous households are involved in both commercial and subsistence farming through landholdings managed by different members of the household. The impact of gender relations on plot management and organization are poorly understood due to the heterogeneity and gender norms specific to place-specific cultures.

The division of rights, responsibilities and labor of different members of the household are characteristic of how men and women access, control and participate in decision-making processes. Cash and non-cash flows are research to better understand the roles of each sex within the full cycle of agriculture. Women's participation is suggested to be limited, however in this thesis the concept of market participation only based on cash is challenged by answering the following research question: how do men and women attribute economic value in small-scale commercial agricultural production in Bárue District, Mozambique; and to what extent are these economic values represented in cash and non-cash flows?.

An ethnographic methodology is used to perform an in-depth study of gender relations in the locality of Inhazonia in central Mozambique. Through two case studies this thesis documents the related cash and non-cash flows with a gender perspective with the goal to inform policy makers to safeguard women's involvement as productive agents when designing development projects. To summarize the main findings, it is important to consider that commercial and subsistence agriculture are not perceived as completely separate and that decisions and control over resources are deeply entrenched in how men and women understand their role within their agricultural plots, their household, and the wider community.



Abbreviations

- GDP Gross domestic product
- MZN Mozambican Metical
- SDAE Serviço Distrital de Actividades Económicas, District Service for Economic Activities
- SSA Sub-Saharan Africa



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1. Introduction

1.1 Setting the context

Agriculture is the main economic activity in Mozambique but data on economic contribution and percentage of population involved points to an interesting puzzle. While involving 80% of the Mozambican population (Morgado & Salvucci, 2016), agriculture officially contributes to only 24.4% of the GDP (FAO, 2019b). This large disparity between the economic contribution of the farming sector (in terms of GDP) and the number of households involved reflects the informal nature of agricultural activity, which predominantly involved women and where transactions are not always monetary. It is small-scale farmers, defined here as individuals who are involved in both subsistence and commercial agriculture and are the main workers on their land, who account for the majority of production and are said to produce 95% of food consumed on the national level. As such, small-scale informal agriculture – while made invisible in many official statistics - remains an important type of family farming in Sub-Saharan Africa (SSA), and also in Mozambique, where approximately 99.98% of agricultural holdings are family held (Reyes Tejada, 2018).

While both men and women play important roles in small-scale agriculture in rural Mozambique, their roles and access to inputs differ substantially. Women's agricultural participation in Mozambique is characteristic of many SSA countries where women participate in most activities including land preparation, planting, weeding and harvesting (Marenya, Kassie, & Tostao, 2015). However, women farmers face limited access to and control over resources such as cash and land due to their lower status within the household (Arndt, Benfica, & Thurlow, 2011; De Brauw, 2014). Research frequently characterizes men as cash crop agricultural producers and women as (subsistence) food producers (Marenya et al., 2015; Quisumbing, Brown, Sims Feldstein, Haddad, & Peña, 1995). However, some studies highlight the importance of women's contribution to agricultural production, implying the need to address it for local growth, development, and poverty reduction (Carney, 1988; Vijfhuizen, 2003; Zakaria, 2017). Vijfhuizen (2003), exposes the economic value added to produce by women farmers by expanding the concept of economic value beyond monetary terms to include exchange, barter and gifts. This interpretation is relevant for the thesis in order to understand both cash and non-cash flows of agriculture production and engaging with both genders. For the purpose of this research gender is defined as the characteristics of men and women that are socially constructed, such as norms, roles,



and relationships among them and between groups of women and men (World Health Organization, 2012).

Agricultural production in SSA normally occurs in one or several plots managed by different members of the household (Marenya et al., 2015; Udry, Hoddinott, Alderman, & Haddad, 1995). While is agreed upon in the literature that gender relations have a big impact on plot management, the extent and nature of this impact is still poorly understood due to the heterogenicity of localities and place-specific cultures. In order to prevent misguided policies for rural economic development it is important to understand the nuanced aspect of gender relations and avoid overgeneralizing. While research by Van den Bergh-Collier (2007) suggest a clear division of responsibilities, where cash income is men's responsibility and subsistence farming is responsibility of women; research by De Brauw (2014) highlights the importance of women beyond subsistence agriculture, as they are involved in decision-making about commercial plots and cash flows. The tension between these two research perspectives provides the rational for this thesis, and for a general need for more research to be done on understanding the complexity of gender relations in rural SSA as it relates to agricultural and economic decision-making.

While women are said to be responsible for the reproductive work of the household, taking care of children and food, and it has been proven that cash income controlled by women leads to food security and good family nutrition compared to when men keep the cash (Quisumbing et al., 1995), the control over non-monetary resources is not always clear within households. Studies about women's participation in agricultural production beyond subsistence should include participation in decision-making processes regarding production, marketing of produce and the investment of income generated at plot-level (Zakaria, 2017). Observing that the invisibility of women in agricultural production stems from a research focus on cash flows exclusively, it is important to focus on both cash and non-cash flows in order to get a more accurate understanding of the value added by women in the agricultural sector. As such, this research investigates gender relations in agricultural production, focusing especially on cash and non-cash flows of both irrigated and non-irrigated agricultural plots in central rural Mozambique. Moreover, the emphasis of this research is to understand how women and men add value to non-cash products, rather than using economic tools developed from an outsider perspective.



1.2 Research Aims and Questions

The aim of this thesis is to understand the gendered dynamics of commercial, small-scale agricultural production in the District of Bárue in central Mozambique and document the related cash and noncash flows from a gender perspective, by understanding how women and men economic value is put to agricultural produce and how much is reflected in the cash flows. The goal is to inform policy makers about ways to safeguard women's involvement as productive agents of commercial production in new development interventions, such as projects like APSAN-Vale which focus on improving water productivity and small-scale agriculture practices.

The following research question and sub-questions guided the field work in Mozambique. The following research question and sub-questions are proposed.

Main Research Question: How do men and women attribute economic value in small-scale commercial agricultural production in Bárue District, Mozambique; and to what extent are these economic values represented in cash and non-cash flows?

Sub-question 1: What type of plot-based, commercial agricultural production takes place in Bárue District, Mozambique?

Sub-question 2: How are agricultural rights, responsibilities, activities and labor distributed among men and women?

Sub-question 3: How are the cash and non-cash flows gendered?

The main research question is a combination between descriptive and analytical. It provides an overview of the main target group, the area for the research while being analytical by characterizing both cash and non-cash flows with gender and how these are given value. The first sub-question is merely descriptive, and it guided the criteria for sampling research participants and understanding the agricultural production at their plots. The second research question places emphasis on the division of agricultural tasks for each active members of the household in agricultural production. The last sub-question is the analytical focus point where gender plays the main role in understanding how cash and non-cash flows are characterized and perceived locally among men and women. Sub-questions 2 and 3 are complimentary to each other but are separated based on the fundamental basis of the full circle



of agricultural production and are therefore addressed separately. All combined, they provided guidelines as to what plots to study as well as the households behind its agricultural production activities. Moreover, they guided the research study to focus on the details needed to achieve the gender perspective of agriculture in rural central Mozambique.

1.3 Societal and Scientific Relevance

Societal Relevance

It has been noted that it is paramount to analyze the gender division of agricultural production at plotlevel to understand the decision-making schemes and the allocation of the outputs within the household, addressing and shifting the past tendencies for researching household headship and focus on encompassing both sexes by including all individuals managing the plots within the household (Twyman, Muriel, & García, 2015). Additionally since commercial agriculture production creates an important source of cash income for households, decision making processes and bargaining power within a household are paramount to study, with an emphasis on who makes the cash and how it is invested (Quisumbing et al., 1995). By addressing these two research needs, this thesis hopes to provide information for development workers and policy makers to enable them to design interventions that better serve the needs of both men and women in rural Mozambique.

Scientific Relevance

This research takes place in the context of ongoing research and pilot project called APSAN-Vale in the Zambezi Valley in Mozambique whose objective is to design interventions on water and land productivity to improve profitability of farmers' agricultural practices and agricultural production. The project's specific aim is to create a set of strategies to increase the cash income and improve livelihoods of the rural smallholder farmers, emphasizing women farmers with a desired outcome of increased food security. It is hoped that such interventions could be upscaled and integrated in development support programs on a national level (HUB, Resilience BV, & FutureWater, 2018). This thesis seeks to support the APSAN-Vale project.



1.4 Thesis Outline

To serve as a guide, chapter 2 outlines the theoretical framework where gender and agriculture, smallscale farming, and cash and non-cash flows are conceptualized. Chapter 3 explains the research methodology carried out during and after field work, including limitations and ethical considerations. The research area and context are described in Chapter 4. Then two case studies are presented in chapter 5, characterizing two households involved in subsistence and commercial agriculture and related cash and non-cash flows. Discussion, future research and recommendations can be found in Chapter 6 followed by the conclusion in chapter 7. Lastly, there are the bibliography used for this thesis and the annex providing additional information about the research, such as the interview guide and complete list of research participants.



2. Theoretical and Conceptual Framework

There are several important concepts within the study of small-scale agricultural production and gender relations in SSA that need to be considered. This chapter provides an overview of the main concepts guiding the research, and challenges some assumptions related to small-scale agricultural production, cash and non-cash flows, and gender in rural central Mozambique.

2.1 Gender and Agriculture

In SSA, women have always played an important role in agriculture (Morgado & Salvucci, 2016). The role of women in small-scale farming has become a crucial point of interest in the academic sphere as the gender relations in rural agriculture are trying to be understood in depth, beyond the general assumptions of men as cash income makers and women as subsistence farmers (Reyes Tejada, 2018). Small-scale agricultural production normally occurs in one or more plots managed by different members of the household, encompassing both subsistence and commercial agriculture, despite the general limited description of small-scale agriculture as only subsistence and managed generally by women only (Marenya et al., 2015; Morgado & Salvucci, 2016). Women's participation in agriculture in Mozambique is similar to that of other SSA countries. In the province of Manica, for example, women participate in almost all activities at plot-level, including preparation of the land, planting, weeding, and harvesting (Marenya et al., 2015). Moreover, a case study in Mozambique by Aalerud (2010) estimated that women participate in approximately 43 percent of agricultural labor, yet women continue to lack access to and control over key household resources, including cash. This lack of access and control over cash and non-cash resources can hinder women's bargaining power within the household and they tend to have less autonomy to participate in the decision-making processes (De Brauw, 2014). Regarding market participation, compared to the men's role of cash providers, access to the market can be limited to women, reducing their opportunities for generation of income (Njuki, Kaaria, Chamunorwa, & Chiuri, 2011). More importantly, the participation in markets is commonly done through the means of cash, however, women do participate in barter and value attribution on a regular basis creating another market that is often undervalued (Vijfhuizen, 2003). Market



participation is therefore researched as means of both cash and non-cash to ensure related activities by both women and men are included in livelihood strategies related to agriculture.

Gender norms sometimes limit the understanding of how women contribute to agriculture, and thus to go beyond these limitations we can observe the social organization at the intra-household (Twyman et al., 2015). Farmer households are also made up of different members and the relationship among them is guided by preexisting gender roles entrenched in beliefs, culture and traditions (Garcia & Wanner, 2017). Many policies target health and nutrition for women due to their reproductive roles within the households, neglecting to recognize their roles as productive agents (Quisumbing et al., 1995). Understanding these dynamics at plot-level with additional intra-household organization can provide new insights in the development of commercial agriculture in Africa, beyond a dominant understanding of cash crops for men and subsistence farming for women and understand decision-making processes and bargaining power in households in rural central Mozambique. This thesis addresses this theoretical underpinning by challenging the dominant assumption of markets participation being only driven by cash by including other forms of market participation through non-cash flows.

2.2 Small-scale Agriculture

Small-scale agriculture represents the reality of agriculture in most of rural Mozambique and provides livelihood, source of food and cash income to the large percentage of its rural population (Morgado & Salvucci, 2016). Small commercial agriculture has been increasing among small-scale farmers and has become a driving force of rural agriculture in Mozambique in the past twenty years after the war (Smart & Hanlon, 2014). It is suggested that small-scale agriculture production can be efficient and productive due to the farmers' ability to manage the plot closely and carefully leading to a higher familiarity than bigger plots can have (Smart & Hanlon, 2014). The method of intensive small-scale agriculture production is surprising to policy makers, yet a reality in Mozambique, where private investment's focus on bigger farms can be suggested as one reason behind the increase in productivity of smaller, more effective agricultural farming systems.



Within the discourse of small commercial farming, it has also been suggested that an overall increase in inputs can lead to more effective and productive farming techniques (Njuki et al., 2011; Quisumbing et al., 2015; Veldwisch, Beekman, & Bolding, 2013). While productivity can vary from plots managed by women to plots managed by men there are different views on their effectiveness. Morgado & Salvucci (2016) attributes the lower productivity of women's plots to limited access to inputs and lack of time due to their reproductive duties. The difference in access and control over resources is then crucial to tackle the claimed lower productivity of women.

Increased access to inputs is suggested to increase the engagement of small-scale farmers in commercial agriculture and ability to penetrate the market (Smart & Hanlon, 2014). Morgado and Salvucci (2016) studied the gender gap in agricultural productivity and concluded that male-headed households have an advantage in accessing markets or the production of cash crops. While this relationship is made by using the unit of household head, and not plots, it does suggest that measuring agricultural productivity of small-scale farmers should consider the role of women and men separately within the household. Moreover, the gender gap is only analyzed on the basis of accessing the market by means of cash, and does not consider non-cash interactions of farmers which are very valued locally (Vijfhuizen, 2003). Additionally, many times small-scale agriculture is often regarded as subsistence farming by the local governments, paying little attention to the reality of the rise of the commercial purpose of many plots, especially those which are irrigated (Smart & Hanlon, 2014). Commercial agriculture can increase profitability of agricultural produce for many small-scale farmers and goes beyond earning cash, and for example, it provides a livelihood and food security for many women in rural Mozambique (Pellizzoli, 2009). Furthermore, the right of men and women who are responsible for the agricultural activities of a plot to use, control and own assets is gendered and efforts to promote market-oriented crop production can transform these gender relations (Quisumbing et al., 2015).

2.3 Cash Flows, Economic Value and Exchange in Agricultural Production

Agricultural production requires the use of inputs in order to meet the needs of each household or for the commercialization of certain products. Throughout the agricultural calendar plots produce outputs that are then used for household consumption, sold in the nearby markets, exchanged or gifted. Inputs can be in the form of labor, seeds, fertilizers and pesticides, and agricultural tools, while outputs refer to agricultural produce, such as staple crops, fruits and vegetables. The inputs require investment prior



to the harvest period and agricultural output that is commercialized provides a source of cash income for the household. Instances where agricultural production in plots managed separately, decisionmaking processes and control over inputs and outputs of the different plots can be held differently among different members of the household (Udry et al., 1995). Also important, the distribution of agricultural resources and their allocation within the household are governed by the bargaining power of each member within the household (Alderman, Chiappori, Haddad, Hoddinott, & Kanbur, 1995; Udry et al., 1995). Furthermore, the position of women within the household has been shown to be related to how decision-making power and access to resources is divided among the members of the household (De Brauw, 2014; Van den Bergh-Collier, 2007). Research by De Brauw (2014) suggested that when women have decreased access to resources this can lead to lower bargaining power within the household for the allocation of resources or about how income is spent. Moreover, research by (Quisumbing et al., 1995) shows that women tend to receive cash income more frequently and in smaller amounts and it is spent in household needs compared to a bigger amount received less frequently by the men which is normally spent on more expensive items, or on items not intended for the household.

Both cash and non-cash flows are involved in agricultural activities of households in rural Mozambique. For the purpose of the thesis, cash flows include those transactions where cash is present, from purchasing inputs to selling produce and non-cash flows include those transactions where economic value is attributed for the purpose of exchange or gift giving but there is no cash present. These non-cash flows have been regarded especially important for women as they become involved in the negotiations of cash crop values to exchange produce beyond receiving cash in exchange (Vijfhuizen, 2003). Importantly, the economic value attributed to the produce depends on social relations within the community, for example, the exchange value attributed to a crop based on previous non-monetary exchanges and how the person perceives this person involved in the transaction (Vijfhuizen, 2003). In the example provided by Vijfhuizen (2003), who followed two women and two crops (groundnut and tomato) reveals the difficulty to assess and investigate how women put economic value on their produce. Moreover, much of this economic value is not 'transferred' in cash, and hence, invisible for outsiders such as project staff and researchers.

Both cash and non-cash flows can be appropriated by different members of a household to improve the livelihood of all members of the family as well as to wisely allocate the resources needed to do so



(Valdivia & Gilles, 2001). Special emphasis in the constructions of gender relations at plot-level in central Mozambique is therefore essential to understand the more 'hidden' rights and responsibilities of women and men as well as the developments surrounding the decisions and allocation of resources.

In Mozambique the social dynamics of agricultural production, and their associated family systems, can be studied at the plot level (Reyes Tejada, 2018). Different crops are produced throughout the agricultural calendar, which occurs in different crops due to the presence of rain or lack thereof, in which case plots require irrigation. The organization of agricultural activities through the plots can add a gender perspective that household-head-based research has failed to depict (Bieri, 2014; Reyes Tejada, 2018). The relationship between access to and control over inputs, outputs, land and water resources for commercial agricultural production, and the organization of labor comes together in the plots as the research entry point. Therefore, I focus on how men and women put economic value on their produce, and how this translates into cash and non-cash flows, and how women and men manage commercial small-scale agricultural production in the District of Bárue, in central Mozambique.

Below, Figure 1 shows the theoretical and conceptual framework guiding the research. Total resources include all cash and non-cash resources for any given household. Their resources are then converted into inputs needed for the plot, such as water, seeds, labor, and fertilizers and pesticides. The blue arrow indicates that the inputs can be obtained through the means of cash and/or non-cash. These inputs are then used in two different plot types, rainy season and irrigated. For the purpose of illustrating the need for irrigation water, the plots have been divided in the diagram. After time has past (not included in the diagram), agricultural produce is conceptualized as the output. From here the produce can be sold at the market implying a cash flow back to the household's resources or it can become part of the household resources. This produce can then be used for household consumption or exchanged with other households depicted by the dashed blue arrows. The household can also sell their produce at the market, shown by the orange arrow going into the market box. In this transaction, produce that was purchased goes to the household. The dash blue lines also represent other less visible transactions such the exchanges of inputs and outputs. The green arrow from other household to the market depicts the possibility of selling produce that is either from your plot or has been exchanged in a prior transaction. This conceptual framework represents concepts about small-scale agriculture present in current literature with the addition of the less visible market participation and household



members interactions to attribute economic value described by (Vijfhuizen, 2003). The gendered lens is applied through these flows and showcased in the two case studies in chapter 5.



Figure 1. Conceptual framework depicting the cash and non-cash flows of agricultural production. Gender relations is not specified for simplicity; however, they are present in all flows within the diagram. ¹ *Total resources represent a given household with both cash and non-cash*



3. Methodology

This section presents the methodology carried out throughout the research project, where 13 weeks were spent in rural Mozambique for field research. Data collection and analysis summarizes all the approaches taken followed by the limitations encountered throughout the research and important ethical considerations.

3.1 Host Organization

Resilience B.V. was the main host of this research. Resilience B.V. is a Dutch company focused on water and agriculture interventions for farmer-led irrigation development projects in the Zambezi Valley in central Mozambique (Resilience B.V., n.d.). This research took place in the context of ongoing research and pilot project called APSAN-Vale. Their objectives are to design interventions on water and land productivity to improve profitability of farmers' agricultural practices and agricultural production (HUB et al., 2018). Their presence in the community of Mutangadzi helped to arrange a local guide to assist with participant recruitment and translation from Chibárue into Portuguese.

3.2 Data Collection

Most of the data collection was done in central Mozambique during the 13-week field research period from March to June 2019. Data collection included a literature review on development history, agricultural practices in the past and other relevant information for central Mozambique and the greater Sub-Saharan region. This relevant information has been compiled from academic papers and reports published by international organizations and development agencies. Once in the research area in central Mozambique, data was collected in a time period where the rainy season was ending, and the dry season started. Harvest of maize is done in the month of May coinciding with my last month on the field. Locally there are two types of plots identified based on seasonality of rain in the area, and the types of crops planted in each type. The two types of plots are: *machamba*, plot mainly dedicated to staple crop production during the rainy season, October to February, and *horta*, irrigated plot dedicated to horticulture cultivation, also known as vegetable *horta*, during the dry season between



April and August. Throughout the thesis *machamba* and *horta* will be the terms used to refer to these two types of plots. The period of data collection coincided with the initial pilot phase of the APSAN-Vale project carried out by Resilience B.V in the community of Mutangadzi, which facilitated the participant recruitment process.

In order to answer the main research question and sub-questions different qualitative research methods were used. Due to the nature of the research and aim to go in-depth within the community a variety of qualitative methods was most appropriate to understand complex flows in relation to plot-based agricultural production and household dynamics. Furthermore, studying gender requires time and different strategies for the researcher to gain trust, build rapport, and gain acceptance by all members of the community as well as all members of a household, including both men and women. Information about prices and costs of agricultural product and other relevant needs for the household supplies was collected to provide a general representation of cash values locally, however these are not analyzed quantitatively.

An ethnographic approach was used throughout the field research. This approach focuses on understanding societies and cultures from their own perspective (Bryman, 2016). Consequently, the aim was to use a variety of methods under this approach to understand the complexity behind agricultural production and the human relations, norms, beliefs, customs that dictate the behavior and practices of the participants. It is important to disclose that due to the short period afforded for field work this thesis does not classify as an ethnographic study and does not pretend to be one, rather it is a research project whose methodology borrows heavily from the ethnographic method. Methodologically I used a variety of tools to understand the dynamics locally: focus group, semi-structured and serial interviews, participant observation, plot mapping, and formal and informal conversations.

The target group in this research study was all adult household members, female and male, involved in the organization and management of both *machambas* and *hortas*. Additionally, non-household members who work the land of a given household were included to better follow the cash and non-cash flows of their labor. This inclusive target group allows for the consideration of women as productive agents and acknowledged the need for research to go beyond the household head to understand intra-household dynamics (Quisumbing et al., (1995); Twyman, Muriel, & García, (2015).



There were some criteria used in order to select participants for the research as well as to build the case studies presented in chapter 5. The research area was chosen thanks to our host organization, Resilience B.V., whose pilot project was being developed in Inhazonia. Possession of agricultural land, both irrigated and non-irrigated, was the main participant selection criteria used in the community. The previous criteria mentioned meant the households selected had both machamba(s) and horta(s) and respective agricultural productions. I therefore focused on participants with small-scale agriculture production who managed and organized their plots individually or collectively with other members of the household. Both women and men were selected, and then, other members of her/his household would be included in the sample to understand the household dynamics derived from agricultural production.

The interpreter chosen to work with me was a woman, member of the community of Mutangadzi, originally from Zimbabwe. She acted both as interpreter from Portuguese to Chibárue, local guide and gate keeper to facilitate entry into the communities and to help with participant recruitment in the communities of Mutangadzi and Nhamuzarara II. Due to the sensitive nature of gender studies and the inclusion of some sensitive questions about household dynamics, control and decision-making processes to both men and women in the communities, a woman was chosen as my interpreter throughout the field work. Once my interpreter and I had agreed on the aim and methodology of the research, a focus group was organized as the first interaction with some community members. These community members were summoned based on the selection criteria that my interpreter and I had agreed upon: they all were small-scale farmers who had one or more plots, irrigated and non-irrigated, with presence of commercial and subsistence agriculture. This initial focus group served to introduce the research, purpose and ask general questions about seasonal use of plots and agricultural practices in the communities. Secondly, it served as a first point of contact with participants of interest from the community to make the participant sample of the study more concrete.

From the focus group, snowball sampling with a specific purpose was carried out to determine who were going to be the first participants to conduct preliminary interviews with. Preliminary interviews were carried out with both women and men in the community involved in small commercial agriculture with both irrigated and non-irrigated plots. These initial interviews served to understand their plot organization and management along with their household dynamics in a more general basis. The great majority of households had plots dedicated to agricultural production destined both to feed the



household and to commercialize their products. The co-existence of both subsistence and small-scale commercial farming provided a well-rounded picture for the organization and management of agricultural production, respective cash and non-cash flows, gender dynamics, decision-making processes and responsibilities. All plots organized and managed by a household were included, whether they were managed jointly or separately. Focus interviews were then set up to gain in-depth knowledge about the agricultural production at plot-level and gender dynamics. Focus interviews of the selected households were carried out with all adult members who were involved in agricultural production, subsistence and commercial. In this way sex-disaggregated data was collected to contribute to a better understanding of women's role in agriculture to include this research in the broader discourse on gender and agricultural research in development (Twyman et al., 2015). A total of 21 focus interviews were carried out in a total of 9 households in the communities of Mutangadzi and Nhamuzarara II. Two different households involved in both commercial and subsistence agriculture with both rain season and irrigated plots in the community of Mutangadzi were chosen to create the case studies. Research in the context of gender requires trust-building and a familiar environment for the interviewee and the researcher and this requires a set of interviews to tap into more personal topics and favor sharing of confidences, in-depth explanations, motives and justifications of certain dynamics. Serial interviews were then carried out with different members of the household and some non-members to construct each case study. Table 1 summarizes the total household interviews and key informant interviews carried out in central Mozambique. In annex 2 a sample preliminary interview guide can be found. Several key informant interviews were carried out to understand the local and district-wide agricultural production context. Key informant interviews were carried out with the District Director of SDAE, the Supervisor of Agriculture of SDAE, the Advisor and General Manager of Nzara Yapera and with an extension worker involved in the APSAN-Vale project in Inhazonia. These interviews were carried out in Portuguese by me. Table 2 contains more information on the main points discussed during the interviews.



Method	Participants
Household Interviews	21 (8 male and 13 female respondents)
Key Informant interviews	4 (3 male and 1 female)
Total respondents	25 (11 male and 14 female)

Table 1. Total number of community participants and key informants

Table 2. Summary of key informants, position, institution and main points discussed

Respondent	Position and Institution	Main points					
Lucas Josefa Raice	District level Director of SDAE	 Aim to help small-scale farmers transition from subsistence to commercial agriculture Measuring progress and impact Agricultural resources and farmer associations 					
Peter Waziweyi and Elisabeth Sikoya	Advisor and General Manager respectively, Nzara Yapera	 Out-grower of seeds (maize, soya and sugar beans) Contract farming Education through demo plots to local farmers 					
João Gomes	Extension Worker, HUB, Project APSAN-Vale	 APSAN-Vale criteria for participant selection Monitoring and evaluation progress Educational aim with local farmers Short- and long-term goals 					
Feliziano Constantino Chicoche	Supervisor of Agriculture, SDAE	 Demographic information of Bárue District General information about social dynamics in agriculture in rural areas of Bárue District 					

To accompany the different interviews, plot visits were also included. I visited the plots of most households I interviewed to observe closer how the organization of the plots is done and gained knowledge about the daily operations that take place in these plots. Furthermore, the division of labor, space, responsibilities and decision-making processes could be more closely observed at plot-level. It also served as a checking point for the crops and other information gathered in the previous interviews. At the plots, specific follow-up questions were asked depending on the context and background of



each participant or household in the study. As an interactive research method, I used plot mapping with each household chosen to build a case study and asked them to map out all their plots, crops, and how inputs and outputs are acquired and managed by the different members of the household. This plot mapping technique aided in understanding more in detail the dynamics behind agricultural production, cash and non-cash flows as well as observing the gender dynamics of the household members. Photograph 1 depicts an example of plot mapping done by the household included in case study 1 in chapter 5 and an example of a plot visit and interview with a research participant.



Photograph 1. Plot mapping of a household in the community of Mutangadzi (Left); Plot visit and semi-structured interview with research participant (Right)

Lastly, throughout the 13 weeks of field research I did participant observations, especially with the three households for the case studies. In my case, participant observation consisted on spending time with the households for specific periods of time, for example, one full day from breakfast to sunset. These opportunities to be part of their daily activities allowed me to observe directly the intrahousehold dynamics and how each member would spend her/his time performing different tasks and responsibilities. Furthermore, the role of children, who in many cases are also involved in harvesting the produce in the plot, or helping around the household with cooking, washing, etc., could be better understood. Participant observation was sometimes done without the presence of my interpreter because the members of the household could speak Portuguese. This gave me the advantage of participating in their daily lives alone and build more trust and create relationships with the different members of the household, including children.



My aim was to get an emic perspective on plot management and intra-household organization through the different methodology carried out in the District of Bárue. The purpose of using an emic approach in ethnographic research is to present subjective perceptions and understandings of those involved in the field research and reveal their interpretations and relations to culture, beliefs, behavior and lives (Bryman, 2016). Key informant interviews and focus interviews with other members of the community were used to triangulate those observations made on the field.

3.3 Data Analysis

On a continuous basis, data collected from interviews, participant observation, informal conversations and literature search was triangulated and analyzed until the point of saturation, the different dynamics could be understood, and blind spots could be identified to understand some of the limitations of the research. Triangulation occurred through different members of the community, key informants, and stakeholders who participated directly or indirectly in the research.

3.4 Limitations

The nature of the field research with an ethnographic approach in a short period of time points out a few limitations to be considered. Firstly, the rather small participant sample shall not generalize to the greater population of the area, country or geographical region. As this research put emphasis on emblematic examples of small-scale agricultural production to create concrete and specific case studies, the purposeful participant sampling resulted in common findings that apply to that specific sample. Hence, the generalizations, normally seen with bigger sample sizes, here it is done through making inferences to previously existing literature and theories to accompany and interpret the results, in the way Lund (2014), suggests analyzing and interpreting qualitative data. Consequently, the case-studies pretend to contribute empirical evidence to a specific theory.

Being a woman researcher and having had different life experiences could have led to certain biases while interviewing research participants. As a woman in a different culture and setting, trust had to be earned by both women and men. An inevitable bias towards women could have been present while, for example, listening to information where wife and husband differ in statements and a preference



was made towards the woman statement. Nonetheless, all findings, statements and information received during field work were constantly triangulated with information from other participants, key informants and the interpreter.

Finally, the interpreter for the field research was a member of the community where the interviews were carried out and the treasurer of the nutrition group under the APSAN-Vale project. This could have led to respondents not stating everything in detail due to privacy or possible misunderstanding of their situations Furthermore, previous development projects in the area have raised the expectation of local community members to receive certain inputs for their plots, such as seeds or pipes, or support to gain entrance in further projects. This aspect of in-depth field research in the community as an external person was tackled by stating expectations, objective and purpose of the research from the beginning and making clear I was not part of any development project.

3.5 Ethical Considerations

The research was characterized by in-depth approach to the community the research was carried out. Hence, the ethnographic characteristic of the field work in the community had to always be guided by ethical principles to relationship building, culture, norms and behaviors. Informed consent was granted by all participants, including the use of information gathered through interviews, conversations as well as the use of their first name. Field guidance was offered by field extension workers of the APSAN-Vale project and the local guide mainly. Given the background of the presence of development projects where people would come in for a day or two and create expectations at the community level, it was necessary to be clear about meeting these expectations and in what way the research had a different approach to the community. Hence, local ethical principles were explored through formal and informal conversations to be able to gain trust as well as follow the customs and norms in the best of the researcher's capacity.

This research aimed to build trust and gain in-depth knowledge about different households within the community, and therefore care was taken in the many and diverse encounters with the participants. It was made sure that interviews were always a conversation between the researcher and the interviewee, and not a monologue by the interviewer. Also, my interpreter was always used as a resource in moments of creating a possible misunderstanding.



4. Research Area and Context

4.1 The Research Site: Locality of Inhazonia

This section provides empirical information about the locality of Inhazonia and the District of Bárue, combining relevant literature, observations, formal conversations and personal communications done throughout the research period in central Mozambique. Also, information gathered throughout the interviews and plot visits are included here to provide a more concrete research and area context. General remarks about Mozambique are made when relevant to the local context of the research area.

4.1.1 Demographics and Geography

The research was conducted in central Mozambique, in Southern Africa. The District of Bárue is in the Northeast of the Province of Manica and bordering with Zimbabwe in the West. It has a total area of 5,750 km², 9% of the area of the Province of Manica and it has 6 localities. The preliminary results of the District census in 2017 showed a total population of 185,179 people and the projection for 2019 is of 281,828 habitants (Goberno do Distrito de Bárue, 2019). The capital of the district is Catandica, the only urbanized center in the district. The locality of Inhazonia is within the District of Bárue, 12 kilometers North from Catandica. It is limited by the Cagole river in the North, Malomué river in the South, by Macossa district in the East and the Administrative post of Choa with the headquarters of the locality. Inhazonia has a total population of 24,338 people, out of which 11,646 are men and 12,692 are women. The total surface of the locality is 1,385.5 km² with an area planned for agricultural production of 37,657 ha. Inhazonia is divided into five communities: Mutangadzi, Matundo, Chindengue, Cagole and Thozwo, and there is a total of 17 villages spread throughout the locality. The focus of the research was on the community of Mutangadzi, where the villages of Nhamuzarara I and II are located and are also part of the research area¹.

The climate in the District of Bárue is predominantly rainy tropical savannah around the mountain range of Chôa. There are two main season, one rain season and a dry season. The average annual

¹ These demographic and agricultural production data were gathered by the agriculture extension worker of the locality of Inhazonia and provided to me while in Mozambique.



temperatures range from 20°C to 26°C in the Chôa region and the mean annual precipitation is of 1,591mm (Goberno do Distrito de Bárue, 2019). Average annual temperatures range from 20°C to 26°C in the Chôa region and maximum and minimum annual temperatures are between 28.8°C and 15.7°C, respectively. Figure 2 shows the geographical position of the District of Bárue and the locality of Inhazonia in the red shaded area.



Figure 2. Regional map of Bárue District, Province of Manica, and Mozambique. Source: Goberno do Distrito de Bárue (2019).

4.1.2 Politics

Mozambique's tumultuous history is characterized by a long period of Portuguese colonization until 1975 followed by a crippling civil war lasting until 1992. This civil war was between Frelimo (*Frente*



de Liberação de Moçambique) and opposition party known as the rebellious party, Renamo (*Resistência Nacional de Moçambique*). After Frelimo won the three post-war national elections, Mozambique is now an elected one-party state with Frelimo being the ruling party since the end of the civil war (Sumich, 2010). In the 1990 Constitution shift the focus was chieftaincy, culture and society in a way to include the needs of more rural areas, given the vast nature of Mozambique (Buur & Kyed, 2006). The "*democratic decentralization*" in 1997 resulted in elected local governments being present in 33 municipalities, out of 34 nation-wide, but mostly in the urban centers, leaving the rural areas unattended (Buur & Kyed, 2006, p. 1). In order to decentralize the government to certain extent, Decree 5/2000 was implemented, becoming the first post-colonial formal recognition of traditional authority, legitimizing governance structures in communities in the rural areas. Forms of traditional authority rose in the country creating policy centers around the country as well as institutions based on previous political relations within Frelimo. Frelimo's relationship with the government led to the creation of a "national bourgeoisie" to access political power creating a social stratification nation-wide (Cohen, 1982). Consequently, this stratification meant that Frelimo represented a particular social hierarchy in which status and privileges were made available only for its members (Sumich, 2010).

Throughout the 1990s, donor organizations and agencies who aimed at carrying out post-war development demanded countries to have a less-centralized governance system to include rural areas. The political setting at that moment in Mozambique created a dynamic with donor agencies that attracted investment for the implementation of development projects, reinforcing in different ways the power Frelimo had within the country and reinforcing Frelimo's role as connector with the rural areas (Sumich, 2010). The influence of Frelimo on aid donors inevitable opened opportunities in the market and partnerships with private organizations and access to aid funds by its party members, creating an *"arena of negotiation"* for only those related to the ruling party (Sumich, 2010).

Many members of the locality of Inhazonia described the time of the civil war as a period of political instability inviting many members of the locality of Inhazonia to migrate to Zimbabwe in the 1980s and early 1990s. While they lived in Zimbabwe, they worked for tobacco farms, gum tree nursing and reforestation, and other jobs or tasks that would pay in cash. Zimbabwe was a good place to learn agricultural techniques and other trades and many of those where brought back with the farmers who returned to Inhazonia and implemented them locally². Such examples are looking after fruit trees, canal

² Information obtained from complementary research done in Inhazonia by fellow master student James Platt



and furrow irrigation techniques, and on rare occasions experience with inputs such as using manure or fertilizers. Aside from the migration, there were some instances where the government would enter the localities to monitor crops and sources of cash income of the local farmers. For example, as narrated by some participant farmers in the community of Mutangadzi, from the year 2013 until 2015, pigeon pea had a very good price, standing at 1,000MZN per 20kg, and consequently many farmers started growing it and selling it. Teachers would not go school to teach, but rather would go to their plots and produce pigeon pea. During those years, community members would talk about possibilities of war and reported that bandits would go to houses of those benefiting economically from this crop and threaten or even murder some farmers. Naturally this led to fear and many farmers stopped growing this crop. Mutangadzi, Nhamuzarara I and II were not very affected within Inhazonia, but other communities suffered the loss of several members.

4.1.3 Socioeconomic

Within the District of Bárue, the main socio-economic activities are agricultural production and agricultural commercialization of maize, horticultural crops, cattle, goats, poultry and pigs. This can also be observed at the national level, where it is estimated that 80% of the total population is involved in agricultural production (FAO, 2019a). Furthermore, as discussed with the Director of Agricultural Services at the District level, Lucas Raice, agriculture provides an important source of cash income for many rural families and it is one of the main development foci of the government in Mozambique. Other practices such as forestry, mining trade, banking, supply of fuel and construction materials, and energy supply are also common socio-economic practices (Goberno do Distrito de Bárue, 2019). Teaching is an activity highlighted by the Government of the District of Bárue as there are 106 schools teaching from 1st to 12th grade and the possibility to enroll in Distance Higher Education.

Regarding employment, most of the population is involved in agricultural activities, livestock and mineral extraction (Goberno do Distrito de Bárue, 2019). Other important percentage of the population is dedicated to employment in the tertiary sector such as construction, formal and informal trade, financial and administrative, energy, transport and communications. From continuous observations in the local markets Catandica and other nearby localities, there is another percentage dedicated to buying



and selling different items, such as clothes, housing supplies, and technology. From observations throughout field research at the community level, agriculture does provide with sources of cash income as well as opportunities to participate in non-cash flows such as exchange or gift giving. Other main cash income generation activities at the community level outside the plot are wood- and metalwork, clearing the plots, construction, weaving matts, among others for men, and buying produce from different plots and selling them at the markets, preparing alcoholic beverages, transporting produce and working in other's plots for women.

Regarding education, the colonial history of Mozambique impacted negatively the education system in the country as many native Mozambicans were not allowed to attend school³. In 1974, the Portuguese government fled the country abruptly leaving behind an illiterate population that was then required to reconstruct the education system, among other important institutions (Hanlon, 2003). Furthermore, over 40% of the education and health infrastructure was destroyed during the colonial period, adding to the burden of low access to education during the civil war (UNESCO, 2004). Currently, the government of Mozambique is focusing its attention in providing education to the large number of children county-wide by increasing the education coverage and teaching positions, as explained by Lucas Raice from SDAE. However, there is still a significant difference between genders in school enrollment, with women having less opportunities to pursue education and not being fully prepared to participate in social, political and economic development within their communities (Roby, Lambert, & Lambert, 2009). In addition to lower opportunities, early marriage patterns are of special worry for policy makers as married women tend to stop attending school when married to undertake reproductive duties and they also stop learning Portuguese, especially in rural areas.

4.1.4 Agriculture

Agriculture in the locality of Inhazonia, much like elsewhere in Mozambique, can be described as a mixture between small-scale family farming and commercial farming. In this rural area, there are two types of land use, based primarily on the presence or absence of rain. The term *machamba* is refers to a rain-fed agricultural production plot, while the term *horta*, meaning vegetable *-horta* in Portuguese,

³ Personal communication with a teacher from Armando Guebuza Secondary School in Catandica, Manica Province.



is another agricultural production plot mainly dedicated to horticulture production, and it is irrigated plot. *Hortas* are also normally situated close to a body of water, normally a river. Irrigation is often done by using a watering bucket, water canals besides the river and, in the case of litchi production specially, PVC pipes. Villages closer to the mountains, Nhamuzarara I and II, have greater access to water for irrigation than farmers down the hill, being closer to the rivers and having irrigation pipes once obtained through fruit production projects, and therefore those *hortas* remain open more months out of the year, providing horticultures to the community. Throughout the thesis, *machamba* and *horta* are terms used to refer to the corresponding plots. Likewise, crops produced in *machambas* are referred to as rain-fed crops and crops produced in the *horta* are referred to as irrigated-crops. When referred to agricultural production it includes horticulture production in the *hortas*. Below Table 3 shows the different crops planted in the *machambas* and *hortas* to give an overall picture of agricultural production in Inhazonia.

<u>Rainy season crops</u>	Irrigated crops
Maize*	Tomatoes
Sorghum*	Onions
Cassava	Collard Greens
Groundnuts (peanuts)	Lettuce
Sorghum	Cabbage
Sweet Potato	Carrots
Pigeon Beans*	Cow pea
Sesame	Sugar Cane
Soy	Banana
Taro root	Avocado
Pumpkin	Orange
Okra	Lemon
Cucumber	Litchi
	Tangerine
	Mango

Table 3. Rainy season crops and irrigated crops in the research locality of Inhazonia. Crops marked with an asterisk are staple crops.



Season and crop calendars

Different crops grow in different seasons of the year, based on the presence or absence of rainwater. In the locality of Inhazonia, the rainy season usually lasts from September or October until the end of March, and the dry season starts in late March or early April and it finishes in August. The staple crops in the area are maize, sorghum and pigeon bean, grown in the *machamba*. Other common crops growing in the *machamba* are groundnuts, pumpkin, okra, cassava, cucumber, sweet potato and taro root. Sesame seed and soy also grown in the *machambas* and are considered as cash crops, meaning that they are cultivated to be sold for cash at the market. Previously, pigeon peas were the cash crops in the area until a few years ago, and now sesame seed has become an important cash crop.

In the hortas, crops vary from household to household and area within the locality. Tomatoes, onions, lettuce and collard greens can be considered the four main horticulture crops during the dry season grown in the hortas themselves. These crops also tend to be commercialized within and outside the locality. In the village of Mutangadzi, oranges, lemons, avocados and even litchis are more common in the areas around the houses and in fewer number, whereas in Nhamuzarara I and II, litchis, tangerines and oranges are a commercialized produce and greater in number. Litchis were initially introduced to the area during the colonial times on a 30-hectare plantation managed by Marcela, a farmer who inherited land from the Portuguese. Peter Waziweyi returned to Inhazonia from Zimbabwe in 1992 and introduced *shartias*⁴ in Nhamuzarara II, where in 2012 Westfalia⁵ and Ara Centro⁶ supplied irrigation infrastructure and gave shartias to two growers associations. Since then, litchi production has spread to the wider community through social networks and as a means of payment for labour⁷. In some cases, there is a small amount of rain fall in February and some farmers in Mutangadzi and nearby areas open their hortas to plant collard greens and tomatoes, mostly, so they can sell their produce in April. During the rainy season not all *hortas* are opened, specially the family ones. Therefore, many farmers go to the hortas Nzara Yapera and other hortas to buy their vegetables and sell them, creating a source of income outside more set harvest periods.

⁴ Shartia is defined as a type of grafting which transforms a branch from a mature tree into a sapling ready to plant

⁵ Westfalia is a multinational fruit supplier of fresh fruit and related products in the international market. Locally they are involved with litchi production

⁶ Ara Centro is branch of the Mozambican government responsible for the integration for water management at the level of different basins

⁷ Information about litchi production is gathered through the research carried out by James Platt in Inhazonia



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainy Season												
Irrigation Season												
Crops	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maize*												
Sorghum*												
Pigeon Beans*												
Sesame												
Soy												
Pumpkin Leaves												
Tomatoes												
Onions												
Collard Greens												
		Harv	<mark>est p</mark>	eriod			Pres	ent or	n plot			

Table 4. Seasonal and agricultural crop calendars applicable to the community of Mutangadzi

Agricultural Production

Agricultural production in Inhazonia is carried out in *machambas* and *hortas* depending on the availability of rain and time of the year. Many agricultural-related practices are carried out by using tools such as hoes, ax, machetes, and shovels, much like elsewhere in Mozambique. Animal traction is used by some families, either because they own oxen, or they have the economical means to rent them. The area where the oxen work is a determined space that costs a given number of Mozambican Metical (MZN), and it is equal throughout the community. Being able to use animal traction to work the land allows the farmer to plow much faster and save time in the plot.

Agricultural production is a full circle that requires inputs and produces outputs. Within Inhazonia, there are a large quantity of plots managed by Nzara Yapera where inputs such as seeds, fertilizer and labor are significant and allows the commercialization of maize and fruits in larger quantities. Some farmers have contracts with Nzara Yapera to work and produce certified seeds during the rainy season



for maize and throughout the year for fruit picking. In the mountains, Nhamuzarara I and II have received PVC pipes and litchi trees with a commercial purpose from development projects. However, in the community of Mutangadzi, inputs are significantly lower. Seeds for rain-fed crops are normally used from the previous year. Seeds for irrigated crops are either bought, borrowed on a credit basis or saved from last year's produce. Labor is dynamic in a way that many people work in others' plot(s) in exchange of money or produce. Cash needed to buy inputs is not abundant for small-scale farmers and therefore economic value is put to tasks, responsibilities and gifts that allow farmers to engage in agricultural production. Agricultural outputs are mainly oriented towards the household consumption or towards commercialization, in the community, other cities or neighboring countries. Small-scale farmers' commercialization companies such as E.C.A for maize or Samora Machel for soy and sesame. Horticulture production is commercialized within the locality of Inhazonia and the neighboring cities such as Guru, Tete, Catandica, and Honde.

4.2 Gender and Household Dynamics

4.2.1 Types of Marriage

Marriage is rooted in the cultural, social and political norms of countries and can take many forms from country to country and even within the same country. In Mozambique, there are four types of marriages that have been identified from the traditional marriage, religious marriage, civil marriage and mutual consent (Arnaldo, 2004). Customary marriages are very common among members of rural communities, they evolve around the concept of the payment of bride price, or locally referred to as *lobola*, paid by the husband-to-be or his family to the family of the woman (Arnaldo, 2004). In the locality of Inhazonia, marriage was described as a process in which *lobola* is not a one-time payment, but rather a series of offerings such as food, animals, cash, and clothes from the man to the family of the woman he wants to marry⁸, which can take a few days or several months. Polygamy is allowed with no defined number of wives per husband and it is relatively common in rural settings. Following

⁸ Personal communication with the chief of the community of Mutangadzi and informal conversations with research participants


the patrilineal structure of the Province of Manica, the woman would move to the house of her new husband. Civil marriage is registered under the civil law and is seen in more urbanized centers because it is an expensive process (Arnaldo, 2004).

Mozambique places second within the sub-Saharan region in having the highest rate of child marriage (UNICEF, 2015). The legal age for men to marry is 16 while for women is 14 years old, however, there are many cases of girls marring before this age (Arnaldo, 2004; Roby et al., 2009). This poses many risks for women regarding their access to education and many remain within the circle of poverty (Roby et al., 2009).

4.2.2 Patrilineal Structure and Land Access for Women

Within Mozambique there are two main lineage systems, matrilineal and patrilineal. Matrilineal descent system implicate that men move to the women's place of residence and in case of divorce the reproductive rights of the children remain with the mother (Arnaldo, 2004). Contrary, in the patrilineal descent systems, women move into the men's house and in case of divorce the man would keep the children because the payment for the bride's family included her reproductive rights to be given to her husband (Arnaldo, 2004). In rural central Mozambique patrilineage system of descent applies and there are both monogamous and polygamous families.

For women married through patrilineal system, access to land is normally granted through the husband or his family (Gawaya, 2008). For unmarried women accessing land occurs first through her parents, mainly father, and once married they gain access to one or more plots through the husband and she can carry out agricultural production for both the household and, when applicable, commercialization. The concept of traditional marriage in patrilineal societies is important to keep in mind as it is the first step needed for women to access land, become involved in agricultural production and develop strategies for income generation, household provision of food, and overall involvement in the organization and management of agricultural production.



4.2.3 Intrahousehold dynamics

In the locality of Inhazonia, the average family has 2 hectares of land for production of diverse crops, with an emphasis on maize as the main staple crop. Each family has an average size of 6 members, with an average age of 43 years old. Approximately 60% of farmers are women⁹. Both monogamy and polygamy are prevalent in the communities. Hierarchies between women do play an important role in the intrahousehold dynamics for polygamous family affecting how cash is handled and how resources are divided.

Women are mainly responsible for childcare and food preparation within the household and men take care of the construction of houses, silos, or other infrastructures in the house. Childcare is also translated into the plot as many women carry their young children with them to work, or they have to find a family member who would take care of them.

The staple diet in the local communities is usually *ncima*, made from corn or sorghum flour, with *carril*, side dish to accompany *ncima*. Rice is available at the community shop at 50MZN/kg and it is eaten usually only on special occasions. *Carril* can include collard greens, okra, tomato, pumpkin and cassava leaves, onions, or a mix of these ingredients. It can also include small dried fish, beans, grounded peanuts, and or other type of meat. Women are the ones responsible for cooking within the households, and in the case of polygamy, each wife cooks in her kitchen and they eat all together with children and husband. Men would cook *ncima* only in the case of working the whole day in the plot. The availability of food for a given household depends mainly on the crops planted in the household's plots and their members' capacity to buy produce at the local market or exchange produce with other households.

Given the size of each household, all adult members need to ensure there are enough resources for all, including children. Men and women practice different activities to earn cash income in the community, which is then either added to the household's resources or invested outside the household. As an example, women are usually the ones selling produce at the markets, whether is from their plots or other farmers' plots, while men are more involved in construction works.

⁹ Information gathered from continual formal conversations with Feliziano Constantino Chicoche, Supervisor of Agriculture at SDAE.



5. Results I: Case studies on organization, management and division of agricultural production in the locality of Inhazonia

In this section two case studies are presented. Each represent a different aspect of organization and management of plots in central Mozambique. The first case study depicts a relatively well-off, large-landholding household of two adults involved in commercial production by means of bucket irrigation, in which each have a savings accounts as a result of independent management of plots. The second case study depicts a polygamous family that is relatively less better-off, and mainly involved in subsistence production and some commercial activities with some cash flows from off-plot work. All case studies are presented with an ethnographic approach aiming to provide the local reality through the participants eyes. Certainly, an effort was made to triangulate all information provided whenever possible. Information presented follows an overall structure by presenting the history of the household and its members, then the dynamics of rights and responsibilities with a gendered lens, and livelihoos, followed by agricultural production and finishing with a preliminary analysis. The preliminary analysis provides a first summary into how each case study help answer the research question and sub-questions.

5.1 Case Study 1: Rich, landholding-household involved in commercial production through bucket irrigation

This case provides an insight into a household of two people, Crecencia and Armando, married and living in the community of Mutangadzi. Crecencia, 44 years old, is originally from Zimbabwe, where she married Armando in 1986. Armando, 55 years old, is originally from Mozambique and migrated to Zimbabwe during the civil war in the early 1980s. While in Zimbabwe, Armando worked on various crop plantations, doing some smaller woodwork jobs, and Crecencia cultivated the agricultural land of her dad. Crecencia's father enjoyed considerable land holdings in the area, especially when contrasted against other farmers, which eventually led to fatality. *"He was poisoned by his neighbors for not giving them a portion"* according to Crecencia, because he wanted to leave his land to his three daughters. Her mother ultimately gave the land to their neighbors, however. Crecencia stated that land in Zimbabwe is scarce and there are frequently land riots. The unfortunate family circumstances, lack of land in Zimbabwe and extensive land holdings of Armando's family motivated their move to



Mutangadzi in 1989 with their two young daughters. They walked from Zimbabwe to Inhazonia with those few possessions they could carry in their hands and head. Now, their daughters live in Catandica with their respective husbands, and Crecencia and Armando live together in Mutangadzi. They live in a brick house with an open outside area with a kitchen, silo and a small covered area. Previously, they lived in a different part of Mutangadzi. There are numerous fruit trees around their house with water sourced from a well directly beside the house. Armando inherited a large amount of land in the surroundings of Mutangadzi from his father. He is one of 12 children in the family, of whom inherited a vast amount of land from their father. Armando inherited approximately eight hectares, but not all are cultivated year-round. Crecencia, as wife of Armando therefore has access to land through her husband. Both attended school until 5th class and are now attending adult school, all through Portuguese. They both speak the local language, Chibárue, in addition to Portuguese. Crecencia speaks basic English from her time spent in Zimbabwe.

An important family history note, Armando fathered two daughters with another woman who he married in 2004. With men passing their family name down through sons who go on to subsequently have their own children, he wanted male heirs. Armando did not formalize this marriage with *lobola* and therefore when the wife left abruptly, she took their daughters and moved back with her mother in another community. The relevance of this marriage in this case study is that Armando now wants to retrieve her two daughters but must pay a high price to do so and therefore has been saving for a while as he has been asked to pay with two oxen, one per daughter.

Upon returning from Zimbabwe in 1989 they began cultivating maize, sorghum and groundnuts to eat with the twin purpose of household consumption in addition to cash income with the purpose of buying two oxen for plowing. They also built and brick oven, no longer properly functioning, to bake and sell bread in the community to generate additional cash income. They bought three oxen in 2010 along with a carriage. The plots that Armando and Crecencia continue to cultivate are on the other side of river Nhamazao, which carries less water between the months of May to August than during the rainy season. The construction of a bridge has greatly aided the transportation of produce, which can now be done now with a rented car, rather than by walking and carrying it on the head. The car costs 800MZN per round trip. During the 1990s and 2000s, Armando's mother lived in a house near the plots, where they also stored part of their belongings such as tools, Crecencia's sowing machine and, two water pumps given to them by a previous development project, among other smaller things. In



2012, a fire started by a neighbor to clear their *machamba* got out of control and spread to their own, and they lost everything they had there, Armando's mother house and all of the tools and other possessions therein. Crecencia could not earn cash income with the sowing machine anymore, something that, in addition to providing her with enjoyment, provided a service to many community members. They were forced to sell two oxen and work in other people's plots. In 2016, Armando sold the last ox to help his brother who had been incarcerated. As recent as 2018 they built the house where they currently reside.

The livelihood strategies adopted by Crecencia and Armando and activities they undertake to acquire cash income and non-cash assets exhibit both similarities and differences. Their responsibilities, sources of cash income and non-cash flows vary throughout the year based on availability of cash and time and, on crop production. Agriculture is an important and indispensable source of both cash and non-cash assets for most households in Inhazonia and specifics for this household will be discussed in the paragraphs below. Outside of their plots, Armando's sources of cash income include working in other people's plot(s), woodwork creating tools such as hoes or axes, selling weaved straw mats, and preparing alcoholic drinks. Crecencia's sources of income are buying agricultural produce from other people's plot and selling them at the community market or outside the community, working in other people's plots, making alcoholic drinks, and during the course of this research working as an interpreter. She recently got offered work as an English teacher at a local primary school which must be officially organized for the coming academic year, and will therefore provide her with a steady, monthly salary. Within the household, Crecencia is the one responsible for most things; cooking for both of them and other family members who occasionally join, sweeping, washing the dishes at home and clothes in the river, going to the grinding mill, sourcing and carrying wood for the fire pit, and taking care of their two pigs and one goat are all examples of activities performed by Crecencia. There have been other instances in the locality when women have included these activities as part of their responsibilities within the household, and where their male-counterpart would also describe them as responsibilities of women. On the other hand, Armando is responsible for composting organic matter gathered from food scraps and dead branches to use in their plots, and any construction work that needs to be done around the house. He would cook *ncima* only when he works the whole day at the plot, with *carril* that Crecencia would have prepared in advance.



"One year we prepared the machamba for maize and sorghum, planted the seeds, for both Armando and me. One day I [Crecencia] didn't have carril [that day] I didn't go to the machambas and I was home selling drinks. A dried fish seller passed by the house, but I was denied cash by Armando. I tried to then use maize they harvested together to exchange with the dried fish, but I was not allowed either. We did not eat that day. I started thinking that he denied me to use maize or money, so then if I started having my own machamba I could decide when to take maize (for example). I said (to Armando) that what happened the other day I don't want. Because when I plan my own things, I can make my own decisions. From that moment, we did separate machambas. When we did together, he would spend the cash on drinking and deny money for food and clothes, so I said I didn't want to grow together anymore. I then went to Armando's mom to get permission and she said: "Yes do that."

(Crecencia, Mutangadzi)

In terms of the management and organization of agricultural production, there are both general similarities and differences to be found among the different members and the related cash and non-cash flows. Some years ago, Crecencia and Armando shared the management, organization and output of all their plots, but currently their plots are arranged in a way that allows each to manage their plots and each has an independent cash account and then a joint household account.

After several serial interviews, plot visits and plot mapping the following detailed information has been gathered about the cycle of agricultural production at plot-level for this family. Crecencia and Armando have a total amount of six and a half hectares divided in four plots; two *machambas* and two *hortas*. The *machambas*, rain-fed plots, are in use from October until May and the *hortas*, irrigated plots, are used from May until August. Figure 3 shows the simplified digital version of the plots as a result of plot mapping with both members of the family.

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Figure 3. Plot map of main household described in case study 1. Size is not to scale.



While there is some fluidity of their agricultural production structure, there are some delimitations that are important for cash and non-cash flows and gender dynamics within the community. These delimitations can be seen at plot level through the division of plots and crops cultivated by each of them. Figure 3 illustrates the plot divisions and the descriptions are described in the following paragraphs. Numbers mentioned refer to the numbers indicated in Figure 3.

Machamba 1 is two hectares in size and it is cultivated in the rainy season. It belongs to Crecencia. It is divided into a section with fruit trees and another section with maize and sorghum. The recently planted fruit trees are two avocado trees, two orange trees and four mango trees. Only the oranges are sold to their daughter to sell in Catandica; while the rest of the fruit produced is for household consumption. The maize and sorghum serve the dual purpose of both household consumption and commercialization. This household favors maize as their main staple, rather than sorghum and, as such, sell large volumes of the latter at market to other families who require it for consumption or the preparation of alcoholic drinks. Last year 16 sacks of sorghum were sold compared to four stored in the silo for household consumption. While this *machamba* mainly belongs to Crecencia, Armando assists if needed in the sale of oranges to their daughter, which she then sells in Catandica, or with finding a car to transport the produce home.

Machamba 2 is two hectares in size and it is also cultivated in the rainy season. It is divided equally between Crecencia and Armando. It is primarily used to produce maize and sesame seed, with okra, cucumber, cowpeas, pigeon peas, and groundnuts are also cultivated. Here the important cash crops are maize, sesame seed and pigeon beans. Maize is normally sold in the community market at 8MZN/kg or in the Inhazonia market at 10MZN/kg. Last year 20 sacks of maize were sold, compared to 8 sacks for household consumption. Sesame seed is sold to Samora Machel, a sesame seed and soybean buyer association in the District of Bárue. Pigeon beans are sold within the community and some saved as seeds for next year. These three crops are present on both spaces within the *machamba*. Armando often exchanges groundnuts for maize as he is worried that through consumption, they will deplete their seed reserve for the coming year. Maize seeds are used for next rainy season, and there are not enough from last year due to the late arrival of rain in December (versus October). The other crops are not purposely planted, the seeds from previous years provide scattered produce throughout the *machamba* and are mainly for household consumption with some produce going for exchange or gifts to their neighbors. They provide a source of vegetables throughout the rainy-season months



(October to March). For example, cucumber was available throughout my field work and when we would do plot visits Crecencia and I would go harvest some to eat that same day and to gift the neighbors.



Photograph 2. Machamba 2 section with sesame (light green thin plants) and maize. Author's own.



Photograph 3. Harvest of African Horned Cucumber and yellow cucumber in machamba 2. Author's own.



Horta 1 is one hectare in size and cultivated during the irrigated season between April and August. It is divided between Crecencia and Armando. This division is determined by who plants the crops. In that way, each of them has their own responsibility and the cash income earned falls under each individual cash account. Onions, tomatoes, collard greens, cowpea, lettuce, cabbage, pumpkin leaves, maize are the crops normally planted in this *horta*. Banana trees have been in this plot for some years now. Collard greens, cabbage and tomatoes are commercialized within the locality. Cowpeas are for household consumption. Crecencia has plans to expand the area for onions to sell in the community. Cabbage is not very common in the area so Crecencia tries to get seeds to plant and sell it. She tends to sell cabbage to then buy the ingredients to make alcohol and save the earnings in her personal account. The rest of the horticultures are sold in smaller quantities and the remaining quantities are they have built a small water pond acting as a water reserve. The plot has extensive and fast-growing weeds, in addition of the time-consuming practice of bucket irrigation and therefore they usually do not manage to clean it all in time to cultivate the whole hectare.



Photograph 4. Horta 1 with collard greens and cowpeas at the end of May, before weeding. Author's own



Horta 2 is half a hectare in size, and it is cultivated in the irrigated season between April and August. It is divided between Crecencia and Armando, also based on who planted which crops. Here there are tomatoes, collard greens, cabbage, sugar cane, bananas and sugar cane. Sugar cane, a common crop in the area, is Crecencia's responsibility because she planted it. Crecencia prepares the sugar cane to be transported to Guro, a city 60km North of Inhazonia, where sugar cane is scarce resulting in a profitable sale. Bananas belong to both and are sold in the community by Crecencia or used to make alcoholic drink by both and sell from home. While I was there Armando prepared alcoholic banana drink to sell in the mountains and the cash earned would go to his savings. Except a portion of the tomatoes which is sold within the community, the rest of the produce is for household consumption. Twelve avocado trees were recently planted and should produce fruits in two years. The river close to this *horta* can dry if there is not enough rain, and while this is not suitable for horticulture production, during the rainy season maize is cultivated here to consume in January and February, the hardest months to find maize. Nevertheless, this plot is perceived as an *horta* by both Crecencia and Armando that allows the extra maize to grow, which becomes very important in the years when rain is delayed.

While sowing and weeding in the plots is done individually, seeds needed for all plots are usually purchased with cash put together by both Crecencia and Armando. In this way, seeds are bought from Nzara Yapera most times or from seed vendors in Catandica. The *machambas* rarely need new seeds are these are saved from last year's production, but for the vegetables in the *horta*, new seeds are bought each year.

Regarding responsibilities in the *horta* or *machamba* that translate into the household resources it is sometimes difficult to understand the real division. The division of the *horta* in the plot visits could not be seen very clearly but both expressed that Crecencia is the one who knows the divisions better and much more household consumption produce comes from her side. The consequences of the unclarity of this division is translated into Crecencia being more responsible for the activities and earnings derived from the horticulture production. To exemplify, during my interview Armando, the following was stated:

"The horta is Crecencia's responsibility. I help with clearing the land and I do that alone. Then we plan together and harvest at the same time our separate produce. But Crecencia is the one who sells the most and determines the price of the produce. She knows what is needed in the house to eat and what the community members also eat at their houses."

(Armando, Mutangadzi)



Around their house, there are several fruit trees: avocado, lemon, orange and mango. As explained, the high risk of fires in the *machambas* for clearing the land puts trees at risk when in the plots, so they prefer them around the house, which also provide shade around the yard. Many years ago, the Fathers of the church in Inhazonia planted numerous mango trees around the locality making them freely available for all community members to eat. This means there is no market for selling mangoes and all are consumed within the households. Avocados are sold to their neighbors who travel to Guro to sell them. There, avocados are less common and can be sold at a profitable price, considering the traveling costs. Crecencia usually selects the avocados but on the day the neighbors were buying them Crecencia told Armando it was his responsibility to sell them since she was busy working as my interpreter. The woman of the couple categorized them with the help of Armando to count and price them. A total of approximately 600MZN is earned from this sale. Photograph 5 illustrates the setting. There were still avocados on the tree which continue to be sold as well as exchanged or gifted to friends in the community. Children often come and take avocados for their families to eat, and in exchange Crecencia receives tangerines, her favorite fruit. She is currently drying tangerine seeds to plant in a near future.



Photograph 5. Armando and neighbor separating, and pricing avocados based on size. Author's own.



Neither member of the family has a bank account or M-pesa, a mobile financial service that allows transfer and withdrawal of money without the need to have a banck account. They each save their money independently and Crecencia keeps the cash for the household expenditures. Armando is saving 10,000MZN to pay his ex-wife for their two daughters and Crecencia is saving 15,000MZN to travel to Zimbabwe and visit her family (and do some shopping). Each have their sources of cash income that they put aside for their savings, such as agricultural production for both, off-plot income doing woodwork for Armando, and commercialization of other plots produce for Crecencia, for example. For the household account, each put a portion of their cash income from commercializing their plot products (maize and vegetables mainly), and the money from selling fruits such avocados and oranges goes into this account. The household account is for buying household necessities such as cooking oil, salt, soap and this year they have plans on investing in finishing their house, which needs cement to finish covering the bricks and a zinc roof. Construction is normally the responsibility of men in the community, hence the money needed to finish their house with more cement and zinc roof is Armando's responsibility so he needs to save cash to put into the household account, otherwise as stated by Crecencia, the house will not be finished.

"To eat, I decide like this. Maize is at home. Armando needs to know that he needs to eat also so let's put it together for us to eat. The rest can be for him and me respectively. When he wants to drink, he can use that rest to sell and get money. I can then use my part as I wish."

(Crecencia, Mutangadzi)

I encountered many women in the community who would express their desires to have their own sources of cash income and actions taken in order to make their own decisions and have enough cash to invest in their children and household. There are many reasons encountered throughout the community but a very common one is illustrated by the following quote.

"Men don't give a lot of money to women and their children so that's why women go sell, go to the machambas of others and buy and sell produce. When they [men] get money, they will leave the house, even stay with another woman and when money is finished, they come back"

(Bernadette, Mutangadzi)



For the non-cash flows, Armando and Crecencia have different ways of adding economic value to agricultural produce or activities. Beans are not very abundant within the community, and even though they plant some beans, they still perform exchange of sorghum for beans in the mountains. This is usually done by Armando as he travels there for family or selling alcoholic drinks. Crecencia performs exchanges of produce with their neighbors and other family members based on the needs at that moment, and these exchanges are not always immediately "paid" back. For example, Crecencia helped a friend of hers with planting the seeds in her *horta* because her friend had to be taken to the hospital for a week, right when the horta was ready to sow. Crecencia's friend cold not "repay" right away but a month later she killed one of her goats, offering Crecencia a big piece. A more commonly non-cash flow in this household can be depicted by the relationship of Crecencia and her neighbor, Bábula. They live right next to each other and usually eat together almost every day. Bábula is a kindergarten teacher with a monthly salary and the husband works in one hectare of land given to him by Nzara Yapera. Bábula has less time to go to the machamba and harvest maize, also due to her reproductive duty with their four young children. Crecencia prepares *ncima* many times including Bábulas children and even Bábula herself. As an exchange for Crecencia's generosity, Bábula many times when travelling to buy collard greens or cabbage outside the community, buys for her and Crecencia and then both go and sell in the market. Crecencia does give her the cash required to buy the collard greens, and therefore considered cash flow, however, Crecencia saves the travel time required to go to places like Chindengue by minibus and can spend it in other activities. It is a challenge to understand all the noncash flows due to the complex nature of community interactions, the availability of agriculture produces, or time of the year. However, from the dynamics of the community, it was perceived that a big majority of the community members in Mutangadzi and Nhamuzarara II were involved in attributing economic value to exchange and gifts given or received.

"Since cash is not readily available in the community, exchange occurs at the price in that moment. It is also something you do on an ongoing basis, not in specific times"

(Crecencia, Mutangadzi)

There is another example of non-cash flows illustrated in Herisa's case, a widow and former soldier during the Independence from the portuguese between 1972-75. She is Crecencia's neighbor and we



spent a lot of time together, specially at meal time. She receives a monthly salary of 6,000MZN as former soldier. She is well known for her generosity because she feeds 20 family members, children and some of her 15 siblings living in the community. She helps mainly those without husbands and her brother who takes care of their mother. All agricultural produce she has, maize, sorghum, groundnuts and some vegetables, are all used to feed whoever is at the house on a given day. Also, whenever she buys soap, salt, or cooking oil she divides to give to her siblings. In exchange, when her siblings visit, they bring gifts for her. Some of those are one or two chicken to breed, avocados, and groundnuts. This quote by Herisa illustrates the gender dynamics behind non-cash flows at community level, also encountered in other familes.

"It is between sisters that we help each other the most, as our brothers spend their money outside the household and do not spend it on food or things children need"

(Herisa, Mutangadzi)

As a preliminary analysis of this case study, I touch upon how economic value is put on produce and how much can be categorized as cash and non-cash flows. Agricultural production, whether individually or jointly managed, provides with a crucial source of food as well as a means to earn cash income for many families in the communities, accompanied by its inclusion in non-cash flows. Because agriculture depends on seasonality, economic value also shifts to meet the demands accordingly. In this household, the economic value of maize falls under cash and non-cash flows. Maize is their most sold crop in the nearby markets for cash and it can be done in bigger quantities and also think of the maize in the plots as a source of fast cash, in a way that one can harvest a smaller amount of it and sell it at the community market. As this also occurs with the produce from the horta, a continuum of resources are available to generate cash. As part of the non-cash flow, economic value is added to this crop by means of evaluating the crop's productivity around the community and in one's own plots. Hence, by putting economic value on maize by including other community members, specially children, for lunch or dinner, Crecencia in return is included in the gifts or exchanges happening. The independent organization and management of this housholed's plots gives each individual the power to make decisions, and it increases the barganing power of the woman. Within certain guidelines/agreements of what is needed for the household, each household member can decide



how resources are allocated and invested creating a dynamic, welloff household given the local context and circumstances.



5.2 Case Study 2: Poor, large landholding-household focusing on subsistence and commercial agriculture

This household has 11 members and it is a polygamous family. There are three adults: Elias, Bendita and Rosemary. Elias, 32 years old, is the male adult, married to two wives. Bendita, 42 years old, is the first wife and Rosemary, 28 years old, is the third wife. The second wife and Elias divorced some years ago and she lives in Catandica. Within the household there is a hierarchical structure in which Elias would usually delegate decision-making processes to Bendita when he is away or give her the cash needed for the day's expenditures if it falls under his responsibility. The reason given for this organization is based on who Elias married first. Both Rosemary and Bendita attended school until 2nd class, equivalent to the age of eight years old. Elias attended school until 8th class. In total there are nine children, seven of them living within the household. The children from the second wife stayed with the Elias in Mutangadzi as patriarchy applies when parents get divorced. Two of the older male children live in Catandica, one works for Nzara Yapera getting his school and accommodation covered in return and the other lives with a family relative. Each wife has her own house and her own kitchen; their husband rotates houses to sleep. Within their yard they have a storage house and the Nzara Yapera mill used by many community members to make flour out of maize or sorghum. Some years ago, they bought solar panels to power the few lights for the houses and loudspeakers for when they play the radio when selling drinks at the house. They live next to the community market by the main community road.

Due to the nature of their large household, the livelihood strategies of the adult members need to generate enough resources for the entire household. Each adult member participates in various cash income-generating activities. Children also generate smaller amounts of cash. Bendita and Rosemary have similar responsibilities and cash income activities. They both described their activities to generate cash as limited, yet they perform them *"as many times as we need to have enough money"*. Both work in plots of other community members preparing the plot or weeding for five or six days a year, receiving 100MZN per day usually. They rotate in making alcoholic drinks, both *cachaso* and *nipa*, which are sold at their house to all members of the community. *Cachaso* is made from *farrero*, the skin of corn kernels, and can be made year-round and lasts for many days. Nipa, on the other hand, can only be prepared during the time of the year when sorghum is available, and it lasts for two or



three days only. The community members have a rotation system for the preparation and selling of nipa. While I was in the community each wife in the household prepared cachaso and nipa two times, generating a profit of approximately 500MZN each time, not accounting for the food prepared and served for those members of the community drinking at their house. The one person who makes the alcohol is responsible for preparing the food, but since there are two women in this household, a partnership was observed. In this case, when Bendita prepares drinks, Rosemary and some of their children assist with food preparation: "because we [Bendita and Rosemary] help each other we can make drinks more often, and Elias talks to the clients and when food is finished we join the party". Here, it is meant that women normally prepare the food while the husband entertains the clients and plays the music, and when breakfast and/or lunch is finished being prepared the women join the gathering. Making alcoholic drink is an activity very common among women in the communities, and in many occasions the only way to make and cash outside their plots and ensure decisions upon that cash. For instance, Maria, a single mother and her only daughter, both divorced, only have maize in their plots and do not have an *horta*, so outside the maize harvest period, preparing drinks is their source of income. The quote below relates to her answer when asked who is responsible for preparing alcoholic drinks in the community. I encountered other households where women able to prepare drinks complained less about the dependency on their husband's cash income to provide for the household and stated "they have the power to make the decisions they want with the money, which are buying clothes for the children, or a new capulana¹⁰ for herself". These are off-plot activities that generate cash income, which is for them to keep and spend it on supplies for the kitchen, clothes among other items. At plot-level both wives have a designated area within their plots to sell and exchange produce as they deem necessary and they can keep the money, further presented below.

¹⁰ Capulana refers to a traditional piece of clothing worn by many women in Mozambique



"A man who does not have a wife is hard for him to prepare alcoholic drinks because how is he going to take care of the clients? It is much more women who prepare alcoholic drinks as a way of making cash. Husbands are working and women cannot stay seated and wait until the end of the month for the cash to get to the house with the husband".

(Maria, Mutangadzi)



Photograph 6. Bendita preparing nipa at her house

On the other hand, Elias has a relatively more diversified range of cash income generation, also spread out throughout the year. He has three main sources of income: i) plot guard for Nzara Yapera, ii) woodwork, and iii) storage house in the house yard. During the months of July and October, he is hired by Nzara Yapera to guard the fruit trees from thieves as they are ready to harvest. Through his connections with Nzara Yapera, he sells wood planks in Catandica. He has free access to wood in the plots of Nzara Yapera and the transport to the city does not cost him anything. He does this work with two other community members, among whom they divide the profits. Lastly, the storage house in the yard, once a convenient shop, is rented by two community members to store their harvests. These activities accompany the cash earned through the agricultural production in his fields, explained in the following paragraphs. Elias described the closing of the convenient shop as *"the shop was not making enough money to pay for the education of our children, and since Bendita and Rosemary were making*



money by selling drinks I thought I was told to also help since we have many children, so I closed the shop and started working with wood. It was a good decision and now the place is used for renting space to other farmers". Elias was not able to calculate how much he makes overall with all the cash income activities he is involved with, however, he stated that it is enough for the household for now but not enough to invest in irrigation for his *horta*.

The household has a total of six *machambas* and one *horta*. The *machambas* add to a total of five hectares and the *horta* is short of one hectare. Each adult member of the family manages two *machambas* and the *horta* is shared among all members of the family. Geographically the two *machambas* from Bendita and one of the *machambas* from Elias are adjacent to each other, creating a space of three hectares. Rosemary has her two *machambas* separate and add to a total of one and a half hectares. Elias' second *machamba* is in a different location, close to the *horta* and river Mucurupita. They have larger landholding than the average household, however, the plots are not always occupied with crops in their entirety.

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Figure 4. Plot mapping of household depicted in case study 2. Size of plots is not to scale



Above, Figure 4 represents the division of plots for agricultural production as well as their housing arrangements in the community of Mutangadzi. The plot numbers in the figure as used in the descriptions below.

Common to all *machambas* are maize, sorghum and pigeon pea, which are both consumed within the household and commercialized. Likewise, spread through all *machambas* are cowpeas, pumpkin leaves, and cassava which are mainly consumed within the household and they were no quantities specified or how much is in which *machamba*. In the *horta*, not opened yet when I was there, they usually plant beans, collard greens, onion, tomato, taro root, potato, lettuce, and sugar cane. Last year due to lack of seeds and time, they used a smaller part to only plant collard greens and tomatoes so they could consume at home during the irrigation season. Compared to the previous case study, here it is entire plots that are given to each household member, and not divided by portions of plots. Further details of each plot are therefore described based on how each person organizes agricultural production, including as much as possible details about their commercialization and/or household consumption. *Machambas* are plots for the rainy season and the *horta* is for the irrigated season.

Elias manages two *machambas* of a total of two hectares in size. *Machamba* 1 has maize and pigeon peas and they are all commercialized. Last year, he sold 10 sacks of maize and 15 sacks of pigeon pea, claimed by Elias to be the whole produce from the plot. *Machamba* 2 is dedicated to maize and sorghum, all for household consumption. While performing the plot mapping exercise, Elias stated at the beginning this is his *machamba*, however further in the discussion I discovered that Bendita and Rosemary are the ones who harvest the produce since it is destined for household consumption. When later clarified what he meant by *"I am the manager of this machamba"*, he said that he decides how much of it is planted and when but then his two wives and children perform the harvest. From this *machamba*, approximately 10 sacks of each staple crop are harvested each year. The quantity for household consumption gets equally divided between the two wives, which Bendita is responsible for dividing since she is the first wife.

Bendita's two plots, adjacent to *machamba* 1, add up to a total of two hectares in size. They are referred as *machamba* 3 and 4 to match with the map shown above. In *machamba* 3 there is maize and pigeon pea. Here, maize is all for household consumption and the pigeon pea serves three different purposes: i) one sack for household consumption, ii) one sack for seeds for next year, and iii) in case there is some extra, it is dedicated to exchange with other households, based on her needs. In *machamba* 4,



maize, sorghum and pigeon pea are planted. Bendita defined this *machambas* as "*my space to make some decisions about how much to sell and how much to eat*". She exchanges 3 buckets of sorghum for 3 buckets of maize with a close friend to ensure her kitchen always has maize to make *ncima*. Last year, about 50 sacks pigeon pea were commercialized outside the locality for the price of 160MZN per 20kgs. Elias arranged for the rental of a car for 1,500MZN to carry the sacks to Catandica, from where they are sold to buyers who take the produce to Tete (250km N of Inhazonia), Chimoio (150km S of Inhazonia), or Beira (350km SE from Inhazonia) by the coast.

Rosemary, third and last wife in the household, has two adjacent *machambas* totaling to an area of one and a half hectares. There was no evidence or information given to why she has less land than Bendita. In *machamba* 5, maize, pigeon pea and sorghum are cultivated. Maize is divided between household consumption and commercialization, *"based on the needs of the kitchen"*. The sorghum from this *machamba* is dedicated to household consumption, with the exception of a small amount for exchange. In *machamba* 6, maize and pigeon pea are the only crops. Like in Bendita's *machamba* 3, one sack of maize is saved for next year's production and the rest of the production is destined to Rosemary's kitchen. The pigeon peas from *machamba* 6 is put together with the rest of the pigeon peas from four other *machambas* and then it is commercialized, hence the reason why renting a car is necessary. Elias stated that the profit made is equally divided among them three.

The *horta*, a common plot to all three adult household members, is one hectare in size. Bendita explained how last year they did not have enough time and cash to buy the seeds necessary to plant cultivate the whole plot. Instead, they planted collard greens and tomatoes to be able to have a small amount for household consumption. Having little horticulture production implies buying vegetables daily in the community market. Previously, they have planted collard greens, tomatoes, onions, tomato coração de boi, all in separate spaces, and beans all along the long side of the horta. Until now bucket irrigation is the irrigation practice in this *horta*. In an interview with Elias, he described that "*his*" horta adjacent to his is irrigated by a canal opened every year by the farmer. Elias, downhill from his neighbor, would have to pay in order to elongate the canal and use it for irrigating. Elias refuses to pay for water and canal use so he has plans to build a pipe system from river Mucurupita that would allow him to irrigate the *horta*. He plans to travel to Zimbabwe by foot, buy the tubes and carry them back with a friend of his. Each meter is 50MZN and he estimates he needs approximately 100 meters of pipes. He estimates that next year he will be able to do it, for now he stated that he has to save money.



Elias got inspiration and knowledge from a well-known farmer in Mutangadzi as he opens a canal every year and he can irrigate his horta resulting in high yields and cash income from commercialization. His name is Pedro and his model horta is presented briefly as an example of how access to irrigation can lead to commercialization and how it has benefited the cash income of his household as well as his brothers.

Pedro has one hectare in size irrigated with an 80-meter canal he opens in the month of April. Half the hectare is used for maize during the dry season so the family can eat corn throughout the year outside the rainy season and commercialize it at a higher price three times a year. The rest of the horta is dedicated to horticulture production. The most profitable crops for this household are carrots. Pedro sells carrots to the Fathers and Mothers of the church in Inhazonia and vendors he knows in Catandica. The cash income generated from carrot commercialization is invested in education for his younger brothers who live in cities nearby. A portion of the cash generated by the commercialization of tomatoes and lettuce from the horta is given to Nelinha, Pedro's wife, for the work she does informing community members when produce is ready to buy. Also, if the product is not sold at plot-level, Nelinha or their nine-year-old daughter sells at the community market; the cash generated is destined for the household. He estimates he earns 15,000MZN with carrot production. In return, his brothers help Pedro with seeds and contacts to continue carrot production. Cash income is turned into paid labor for three people, who work in their machamba and horta year-round, alleviating the work Pedro's wife does in the machamba. Access to irrigation has led to the acquisition of 53 litchi shartias from a farmer in Nhamuzarara II in exchange of a portion of his litchi fruit production. His canal and horticulture production can be seen in photograph 7 below.





Photograph 7. *Irrigation canal in Pedro's horta (left); horticulture production at Pedro's horta (right)*

Alike Elias, Bendita and Rosemary's household, other households in Mutangadzi buy vegetables daily on the market because they do not have enough from their own horta during the irrigation season. In Nhamuzarara I and II, closer to the mountains, *hortas* remain open longer than in Mutangadzi and therefore it provides a source of vegetables for the wider community. Based on daily observations at the market, it is only women who sell produce at the market in Mutangadzi, and for example, collard greens and tomatoes are always in high demand. While I was in the community irrigated plots were starting to open, however due to the late rains last year many people were very busy with the late harvest of maize, and horticulture was mainly available in the mountains. Women, and even older children, go to Nhamuzarara I and II to buy collard greens and buy them at the market. They make a profit double of that invested and it occurs normally within one day, if not two of selling at the market.





Photograph 8. Women selecting and buying collard greens in Nhamuzarara I (left); women selling collard greens at the community market in Mutangadzi (right). Author's own.

The organization of the inputs for the *machambas* is usually done collectively. Seeds are either saved from last year's production in the case of the *machambas* or bought for the *horta*. An exception to their organization of seeds for the machamba occurred last year as they bought certified seeds from Nzara Yapera due to the poor yield of the previous year's production. They bought 60kg of seeds at 120MZN/kg, and each adult member planted 20kg in his/her plot. For labor, the three adult household members along with four children who assist, work collectively in all plots. It is common to have children above the age of nine years old to help in the agricultural production and for female household members to participate in the household tasks. While clearing the land is mainly done by the male household members, weeding, planting, and harvesting is done by all household members, including four children. There is no animal traction or fertilizer used in their plots nor complex forms of irrigation in the case of the *horta*. The management of outputs is done more individually with the assistance of the children, especially during harvest season. Even though each female adult has different children, they all assist regardless of who their mother is, which is a good dynamic that favors Rosemary for example, as her children are four and two years old.



In terms of cash flows, throughout the cash income generating activities described above it illustrates the responsibilities of each member. As an important addition in this household to the previous case study is the inclusion of children in the cash flows. Children of this household, and many others in the community, are also involved in the generation of cash income to be able to buy some clothes or school supplies. A widely available activity is making *bolos*¹¹ and selling them at the community market, making a profit of around 30MZN each time. Some younger women also prepare cakes to sell in the market to complement their produce sales. Food preparation is the mere responsibility of both adult women, who in many ways are assisted by their daughters.

Regarding non-cash flows, both Bendita and Rosemary exchange produce with other farmers while Elias exchanges wood planks or allows free storage in the storage house in exchange of maize or labor in the household *horta*. Both women participate in the frequent exchange of sorghum for maize this year, but they also stated that it varies depending on the needs and that in other occasions they are in need of sorghum to make alcoholic drinks, which are turned into cash for the household.



Photograph 9. Rosemary preparing sorghum and Bendita washing the dishes in the back. Author's own.

"We collaborate with each other with the household tasks and with each other's children. For example, today I got sorghum from my machamba and I know Bendita wants to make alcoholic drinks to make money, so I prepare the sorghum and because the kids are at home Bendita finishes the dishes I need to wash before lunch"

(Rosemary, Mutangadzi)

¹¹ Bolos refers to fried dough or cakes prepared with wheat or corn flour, sugar, and water



As a preliminary analysis of this case study, here it is illustrated how women are more involved in subsistence farming and the male counterpart is more involved in commercial with more diverse sources of cash income. Both wives are, to a certain extent dependent on the husband's income. This hinderance to decision-making processes for women lead for them to look for ways to generate their own cash income where both cash and non-cash flows are involved. Collaboration and the coordination of activities between both women allow them to provide care and ensure food security in the household. Importantly, through this case study the delineations between commercial and subsistence farming in relation to gendered division of labor or presence of cash crops is not very clear as stated in literature studies. To exemplify this, maize is presented here as a source of both cash when sold or food for the household, and both wives and husband work on the plot. The assistance of their children is of important addition into how labor at plot level is managed as well as the assistance of their daughters with household chores. It also shows how women participate in the market through buying and selling other farmer' crops as well as in non-cash flows through the exchange of staple crops such as sorghum and maize that then turn into cash income for each wife.

Overall, here it is depicted how the gendered norms are illustrated through the claimed division of the plots by Elias, however the needs of both lead them to participate in both cash and non-cash flows for the overall well-being of the household. This is important to assess when looking at potential farmers to be included in development projects, so the concept of commercialization is further investigated by gender and the presence of non-cash flows is acknowledged.



6. Discussion

Small-scale agricultural production in rural, central Mozambique is embedded in the livelihoods of numerous households. While agriculture is characterized by different practices and modes of production in every country, here agricultural production is characterized locally by the division of plots based on the seasonal presence of rain or the need for irrigation, resulting in the specific terms of *machamba* and *horta*, respectively. Gender relations are similarly embedded in rural norms, behaviors and customs which are dictated by society. These feed into how agricultural production is carried out considering the importance of household dynamics, also characterized by gender norm. By looking into both production and gender under analysis, it suggests that they are more interlinked than may have been previously believed. Throughout this section, the different ways in which gender norms affect how economic value is attributed to agricultural produce is explored by analyzing the two case studies presented above in-depth while comparing and contrasting key findings with existing literature.

Subsistent and female-led are often attributes of small-scale agriculture, suggesting a separation of plots dedicated to commercial and subsistence purposes (Marenya et al., 2015). However, throughout both case studies, examples of commercialization and food crops have been shown to coexist in the same plot and even under the same farmer's responsibilities. In the case of Crecencia and Armando, each use their space in the *machamba* in conjunction with maize as they deem to best suits their needs of the moment. In this way, maize is perceived by them as a source of both food, cash and exchange potential. Furthermore, in case study 2 it is also seen how pigeon pea, a commercialized produce, is in the *machambas* of all three household members along with sorghum, which is dedicated to household consumption mainly. All household members interviewed perceived their plots as both subsistence and commercial, and they themselves could not always mark the line between how much is sold, consumed or exchanged as it is a very fluid dynamic within the plots themselves. Hence, through these examples commercial agriculture goes beyond cash crop production or the separation of plots for the different commercial versus subsistence purpose, adding relevance to the approach to study economic value by both men and women. This blurred division of commercial and subsistence was discovered only through the different methodological approaches to understand cash and non-cash flows.

In a similar way, there is similar assumption that a gender divide corresponds to the subsistence/commercial divide, with men working commercial plots, and women the former. Van den



Bergh-Collier (2007) suggests a clear demarcation of labor between sexes in commercial and subsistence agricultural production. Agricultural production for food production has been described as the responsibility of women, but in the case of Crecencia and Armando for example, they both manage and work on the *machamba* that produces food. Similarly, they described that as they both have food requirements, they both designate a portion of their produce for the household and the rest is for each of them to use as they deem fit. On the other hand, the polygamous family in case study 2 illustrates the setting where Elias, the husband, is not involved in subsistence farming at plot level, and women are involved in both subsistence and commercial. The division of labor is therefore argued to not be based on the type of crops grown, but more so on the gender roles entrenched in society itself. Therefore, given how labor is assigned and the blurred division of plots based on commercialization and subsistence, this line of research presented here aimed to show that there is not such a concept as only subsistence farmers, also shown in research done by Smart & Hanlon (2014).

Deconstructing the household by ensuring all members are understood as individual agents allows for insights into how both plot and household dynamics affect their participation in cash and non-cash flows and how those are turned into resources. Cash flows were more easily identifiable due to the concept of cash to buy produce or household supplies needed, and non-cash flows were conceptualized as the exchange of produce, inputs, or labor. The community market was described as a place of dynamic cash interactions where women mainly sell, and more importantly the women understood the non-cash flows as an important livelihood strategy described as the "hidden market", concurring with the notion of market described by Vijfhuizen (2003). Women access the market by the means of buying and selling produce, whether is from their plots or other farmers plots. Cost-benefit economic analyses assume the presence of cash as the only form of market participation, where, in the reality of the community studied, this was not observed to be the case. In Inhazonia, women who do not have cash or, more importantly, value other assets more than cash, can still participate in their local market through other means. As depicted in both case studies, women participate in non-cash flows where economic value is attributed based on the different needs. Men also participate in non-cash flows; however, and this has been observed at plot-level through the exchange of seeds for labor or shartias for produce. This dynamic illustrates the local representation of market, where cash is an option, but other exchanges developed through social networks and likability dictate the attribution of value to produce. The involvement of women in the community in cash flows mainly stems from livelihood strategies to generate sources of income in addition to the husband's cash income and be able to



provide the household with the resources needed such as oil, soap, and salt. This is illustrated by the preparation of alcoholic drinks or buying and selling produce from other farmers' plots. Participation in non-cash flows by women has been described to complement their livelihood strategies by accessing resources hard to find in the markets as well as ensuring all needs are covered in the absence of cash, which is a scarce resource in Mutangadzi. The example of Herisa's generosity with her family members is a good example of the reciprocity of the exchange, when her sister visits she brings chicken and avocados in exchange for Herisa's effort to provide food for her sister's children. The scale of non-cash flows is best illustrated throughout the case studies and the many dynamics observed within the community through research corroborate that the non-cash flows, not only provide an improved livelihood to many farmers, especially women, but also remain invisible to outsiders such as development projects or government programs. Leaving such considerations outside impact assessments or projects hinders their capacity to truly understand reality in these communities. This naturally limits the ability of development actors to design projects which will be of real social relevance and will include both women and men based on the gender relations within small-scale agriculture.

The difference in participation in cash and non-cash in the community has been suggested to be related to how men and women access, make decisions, and have control over resources in and outside the household. Both case studies showcase that women are generally perceived as responsible for household tasks and the access to cash varies greatly depending on the household dynamics and family needs. In the case of Crecencia, the denial of cash or produce by Armando to use to buy what she wanted led to the turning point of dividing the plots so she could then make her own decisions. In the case of the two women in case study 2, the women still cannot make all decisions in the household because the plots are mainly managed by the husband, or at least perceived as such. Even though cash is said to be given to both wives, they still must look for alternative ways of making cash income so that can make their own decisions and have control over the resources. The common understanding in the community of women as family caregivers and men as providers, motivated women to find alternative ways to ensure they can also provide cash income to the household to provide household supplies ad deem fit. For example, in the case of the polygamous family in case study 2, the care and providing for the four children Elias has with his ex-wife (second wife, divorced and not living in the household) is tasked to the other two wives, increasing the demands of the household. Companionship and collaboration have been observed continuously between women in the community and intra-



household for those polygamous families, showcasing their strife for better opportunities as women given the existing gender norms. Collaboration is illustrated by the non-cash flows, which on many occasions derives from their inability to access cash earned by the husband. Also, the needs of the household are more time constricted as food to accompany *ncima*, for example, are bought daily. If they wait to receive cash from the larger sums earned by the husband, the household's food security will be jeopardized. Access and control over resources has therefore included both plot-level and household dynamics and as presented in the case studies the inevitable overlap of gender norms established in the household spill to the agricultural production dynamics.

The research's ethnographical approach to understanding how economic value is attributed to commercial agriculture can be answered through the main examples described in both case studies. It helps to understand that gender norms and agriculture production cannot be studied independently. There are flows that are not necessarily present at plot-level and are seen as a byproduct of agriculture. Agricultural tasks, and responsibilities feed into the power dynamics and bargaining power dictated by household dynamics and gendered norms.

6.1 Future research

Small-scale agriculture is the main source of livelihood for a large percentage of Mozambicans. Gender dynamics within agricultural production have been thoroughly studied, but not always through deconstructing the household into individual members. Household and agricultural production dynamics are highly intertwined and while, the in-depth approach used allowed for better understanding of these dynamics, further research should aim to carry out longer studies to gain a more in-depth understanding of how these dynamics play out over a longer timescale. Limitations in this research resonate with those of ethnographic research, such as being perceived as an outsider, hence when development projects want to act in a community, reaching beyond those members exposed to the outside can help gain more representative knowledge on the context and settings. Further research should be done into the market participation of women and continue to challenge the perception of "economic value" as purely cash based. In this way, development aid can be targeted at the needs of both women and men.



6.2 Recommendations

Development projects, such as APSAN-Vale should consider taking a more encompassing understanding of agricultural production and the household dynamics, including a gendered lens. Agricultural production and gender norms cannot be seen as separate as they dictate the patterns of commercial production along staple crop production for the household. In this way, the selection of project participants can be done not purely based on total resources owned, but rather how the household members participate in cash as well as non-cash flows throughout the whole agricultural calendar. This approach can lend itself to understanding why the implementation or the expectations of community members is successful or not and how to build upon this.



7. Conclusion

This research aims to stimulate discussion about the understanding of agriculture production and how gender relations play an important and indispensable role in both the cash and non-cash flows involved. Commercial agriculture occurs in both *machambas* and *hortas* in the community of Mutangadzi as demonstrated by the economic value added to maize as both consumption and cash generator. Horticulture production cannot be only defined as commercial as it provides with food to most households in rural areas and a source of cash income. Commercial and subsistence therefore go hand in hand in understanding the reality in rural areas whose main activity is agricultural production.

Departing from the concept that commercial and subsistence cannot be so clearly delineated, rights, responsibilities and activities are therefore not always associated with who manages plots but rather with how these are used once they have become part of the household resources. Decisions and control over these resources are heavily dependent on how both men and women understand their role within the household and the wider community derived from rooted gender norms, believes and customs. These gender norms spill over to the organization and management of agricultural production as well as guiding access and control to the outputs.

Moreover, the participation of men and women in cash flows is influenced on how access and control are perceived by each household member as well as what their household dynamics are. While, there is heterogeneity between households, both men and women can be described as participating in both flows differently. Women tend to participate in cash flows to both seek an independent source of cash income from their male counterpart and as a way to ensure the household has what is needed for the well-being of all members, including children. Men tend to have more diversified sources of income such as construction or woodwork and tend to receive money in larger amounts. Because this income is not always guaranteed to become part of the household resources, women seek to find ways to meet the households demands. Here is where non-cash flows become crucial for women as they participate in non-cash flows by exchanging produce, labor or time with other members of the community. Men also participate in non-cash flows however is less influenced by the needs of the household.

Consequently, agricultural production and gender relations may not be separated when aiming to understand small-scale agriculture in rural Mozambique, or any other country with similar settings. As



development agents design projects, these considerations need to be taken into account for the successful implementation and uptake of the project by both men and women.



Bibliography

- Aalerud, E. H. (2010). Gender and Power Relations: A Case Study of Mozambique (Norwegian University of Life Sciences). Retrieved from https://brage.bibsys.no/xmlui/bitstream/handle/11250/187143/ELLEN_THESIS_FINAL.pdf?se quence=1&isAllowed=y
- Alderman, H., Chiappori, P.-A., Haddad, L., Hoddinott, J., & Kanbur, R. (1995). Models of the household: Is it time to shift the burden of proof? *The World Bank Research Observer*, 10(I), 1– 19. https://doi.org/https://doi.org/10.1093/wbro/10.1.1
- Arnaldo, C. (2004). Ethnicity and marriage patterns in Mozambique. *African Population Studies*, *19*(1), 143–164.
- Arndt, C., Benfica, R., & Thurlow, J. (2011). Gender Implications of Biofuels Expansion in Africa: The Case of Mozambique. *World Development*, 39(9), 1649–1662. https://doi.org/10.1016/j.worlddev.2011.02.012
- Bieri, S. (2014). New ruralities -Old gender dynamics? A reflection high-Value crop agriculture in the light of the feminisation debates. *Geographica Helvetica*, 69(4), 281–290. https://doi.org/10.5194/gh-69-281-2014
- Bryman, A. (2016). Social Research Methods (5th Editio). Oxford University Press.
- Buur, L., & Kyed, H. M. (2006). Contested sources of authority: Re-claiming state sovereignty by formalizing traditional authority in Mozambique. *Development and Change*, 37(4), 847–869. https://doi.org/10.1111/j.1467-7660.2006.00504.x
- Carney, J. A. (1988). Struggles over crop rights and labour within contract farming households in a gambian irrigated rice project. *The Journal of Peasant Studies*, 15(3), 334–349. https://doi.org/10.1080/03066158808438366
- Cohen, M. (1982). Public Policy and Class Formation. In C. Allen & G. Williams (Eds.), Sociology of "Developing Societies": Sub-Saharan Africa (pp. 179–183). New York and London: Monthly Review Press.

De Brauw, A. (2014). Gender, Opportunity, and Crop Choice in northern Mozambique.


- FAO. (2019a). FAO in Mozambqiue. Mozambique at a glance. Retrieved February 15, 2019, from http://www.fao.org/mozambique/fao-in-mozambique/mozambique-at-a-glance/en/
- FAO. (2019b). Mozambique at a glance. Retrieved February 15, 2019, from http://www.fao.org/mozambique/fao-in-mozambique/mozambique-at-a-glance/en/
- Garcia, A. S., & Wanner, T. (2017). Gender inequality and food security: lessons from the genderresponsive work of the International Food Policy Research Institute and the Bill and Melinda Gates Foundation. *Food Security*, 9(5), 1091–1103. https://doi.org/10.1007/s12571-017-0718-7
- Gawaya, R. (2008). Investing in women farmers to eliminate food insecurity in southern Africa: Policy-related research from Mozambique. *Gender and Development*, 16(1), 147–159. https://doi.org/10.1080/13552070701876367
- Goberno do Distrito de Bárue. (2019). Projecto de eleboraçao e produçao de uma revista sobre desenvolvimento económico do distrito de Bárue Potencialidades e oportunidades de investimento. Catandica.
- Hanlon, J. (2003). *Peace without profit: How the IMF blocks rebuilding in Mozambique*. Oxford, UK: James Currey.
- HUB, Resilience BV, & FutureWater. (2018). Project Overview: APSAN-VALE.
- Lund, C. (2014). Of what is this a case?: Analytical Movements in qualitative social science research. *Human Organization*, *73*(3), 224–234.
- Marenya, P., Kassie, M., & Tostao, E. (2015). Fertilizer use on individually and jointly managed crop plots in Mozambique. *Journal of Gender, Agriculture and Food Security*, *1*(2), 62–83.
- Morgado, J., & Salvucci, V. (2016). Gender divide in agricultural productivity in Mozambique. In The United Nations University World Institute for Development Economics Research (UNUWIDER), (Vol. 14). Retrieved from Available at www.wider.unu.edu/sites/default/files/wp2016-176.pdf
- Njuki, J., Kaaria, S., Chamunorwa, A., & Chiuri, W. (2011). Linking smallholder farmers to markets, gender and intra-household dynamics: Does the choice of commodity matter? *European Journal of Development Research*, *23*(3), 426–443. https://doi.org/10.1057/ejdr.2011.8



- Pellizzoli, R. (2009). Gender, agriculture, and the "efficient producer" discourse: a case study from Mozambique, and lessons from South Africa.
- Quisumbing, A. R., Brown, L. R., Sims Feldstein, H., Haddad, L., & Peña, C. (1995). *Women: the key to food security*. Washignton D.C.
- Quisumbing, A. R., Rubin, D., Manfre, C., Waithanji, E., van den Bold, M., Olney, D., ... Meinzen-Dick, R. (2015). Gender, assets, and market-oriented agriculture: learning from high-value crop and livestock projects in Africa and Asia. *Agricultural Human Values*, *32*, 705–725. https://doi.org/10.1007/s10460-015-9587-x
- Resilience B.V. (n.d.). Retrieved March 2, 2019, from http://www.resiliencebv.com/
- Reyes Tejada, N. (2018). Women in farmer-led irrigation development : the case of Infulene Valley , Maputo – Mozambique. *Crítica y Residencias*, 8, 31–43.
- Roby, J. L., Lambert, M. J., & Lambert, J. (2009). Barriers to girls' education in Mozambique at household and community levels: An exploratory study. *International Journal of Social Welfare*, 18(4), 342–353. https://doi.org/10.1111/j.1468-2397.2008.00616.x
- Smart, T., & Hanlon, J. (2014). Agricultural land is a Mozambican resource. The case for small commercial farmers. *IV Conferência International Do IESE*, 27-28 August, 1–8.
- Sumich, J. (2010). The party and the state: Frelimo and social stratification in post-socialist mozambique. *Development and Change*, 41(4), 679–698. https://doi.org/10.1111/j.1467-7660.2010.01653.x
- Twyman, J., Muriel, J., & García, M. A. (2015). Identifying women farmers: Informal gender norms as institutional barriers to recognizing women's contributions to agriculture. *Journal of Gender, Agriculture and Food Security*, 1(2), 1–17. Retrieved from http://www.agrigender.net/views/recognizing-women-contributions-to-agriculture-JGAFS-122015-1.php
- Udry, C., Hoddinott, J., Alderman, H., & Haddad, L. (1995). Gender differentials in farm productivity: implications for household efficiency and agricultural policy. *Food Policy*, 20(5), 407–423. https://doi.org/10.1016/0306-9192(95)00035-D



- UNICEF. (2015). Child marriage in Mozambique. Retrieved July 15, 2019, from https://www.unicef.org/mozambique/en/child-marriage-mozambique
- United Nations Education, S. and C. O. (UNESCO). (2004). *EFA Global Monitoring Report* 2003/04: Gender and education for all–The leap to equality. Paris.
- Valdivia, C., & Gilles, J. (2001). Gender and resource management: Households and groups, strategies and transitions. *Agriculture and Human Values*, 18(1), 5–9. https://doi.org/10.1023/A:1007608717996
- Van den Bergh-Collier, E. (2007). Towards Gender Equality in Mozambique. *Department for Democracy and Social Development (SIDA)*, 1–74.
- Veldwisch, G. J., Beekman, W., & Bolding, A. (2013). Smallholder irrigators, water rights and investments in agriculture: Three cases from rural Mozambique. *Water Alternatives*, 6(1), 125– 141.
- Vijfhuizen, C. (2003). Women farmers make the markets. Gender, value and performance of a smallholder irrigation scheme.
- World Health Organization. (2012). Gender mainstreaming for health managers: a practical approach. Participant's notes.
- Zakaria, H. (2017). The drivers of women farmers' participation in cash crop production: the case of women smallholder farmers in Northern Ghana. *Journal of Agricultural Education and Extension*, 23(2), 141–158. https://doi.org/10.1080/1389224X.2016.1259115



Annex 1. Complete list of research participants

Date	<u>Type</u>	<u>N°</u>	<u>With</u>	<u>Present</u>	<u>Location</u>	Purpose
26/03/19	First meeting	1	Chief of	Bella, James, Gomes,	His yard by his house in	Gained approval to conduct research in the area
			Mutangadzi	Cris, Sebastiao	Mutangadzi	
01/04/19	Focus Group	1	Community	Bella, James, Cris,	By the mango trees in	Explained our purpose and initial participant recruitment
			Members	Sebastiao, Naume,	Mutangadzi, in front of	
			Sebastiao	Crecencia, Community	Manuel and Matesta's	
			organized	Chief	house	
02/04/19	First official	1	Crecencia	Cris	Crecencia's house	Talked about my research and explained my objectives
	meeting		Irma			and sampling. Discovered she can speak Portuguese!
02/04/19	Informal	1	Pedro Eusebio	Cris	Crecencia's House	He stopped by and we met and talked in Portuguese
	conversation		Dickson			
03/04/19	APSAN-	1	Reference	Bella, James, Cris,	Naume's plot	Farmer training carried out by APSAN-Vale project about
	Vale		farmers	Claudio Gundana,		the appropriate measurements to plant corn, apply
	Training			Lorenço, Marino		fertilizer, how many seeds to plant, and inclination to have
				(Resilience BV), Gomes		the most water conservation. Training carried out mainly
				(HUB), Reference		in Portuguese, but Gomes translated everything.
				Farmers and other		
				farmers		
04/04/19	Interview	1	Armando	Cris, Crecencia, Herisa	Crecencia's house	First interview with Armando, husband of Crecencia.
			Razão	Caudane		Mostly in Portuguese but Crecencia helped at points.
04/04/19	Interview	1	Herisa	Cris and Crecencia	Herisa´s machamba	First interview. We walked around her machamba and
			Caudane			then sat under a tree to conduct interview. Interview
						carried in local dialect.
09/04/19	Interview	2	Crecencia	Cris and Crecencia	Crecencia's house	More formal interview about her life, plots and decision-
			Irma			making processes in the house. In Portuguese.
11/04/19	Interview	1	Matesta	Cris, Crecencia, a couple	Matesta´s house	First interview with her. She is married to Manuel Razão,
			Tsicuçao	of her sons/daughters		a reference farmer. She gave me her name at the focus
						group with community members. Interview carried in
						local dialect.



11/04/19	Interview	1	Bendita Langitoni	Cris, Crecencia, some children and at points Rosemary will pop in to ask questions	Bendita's house	First interview. She gave me her name at the focus group with community members. She is the first wife in the family of Elias, Rosemary and her. I ate with them afterwards. Bendita cooked. Interview carried in local dialect.
12/04/19	Interview	1	Rosemary Compreguesa	Cris, Crecencia, and her 4 and 2 yr old kids	Rosemary's house	First interview. She gave me her name at the focus group with community members. She is the second wife in the family of Elias, Rosemary and her. Interview carried in local dialect.
12/04/19	Follow-Up interview	2	Herisa Caudane	Cris and Crecencia	Herisa´s house	Follow-up interview at her house. She gave me peanuts at the end. Interview carried in local dialect.
12/04/19	Informal conversation	1	Elias Zeca	Cris and Crecencia	Elias' house	I went back to Rosemary's house because she had invited me to eat. While waiting Elias and I talked in Portuguese about his plans for the <i>horta</i> .
15/04/19	Interview	2	Elias Zeca	Cris, Crecencia and Paciencia (13 yr old)	Veranda of Bendita's house	First formal interview with him. Interview carried in Portuguese with some local dialect help from Crecencia.
15/04/19	Interview	1	Eusebio Eugenio Temezira	Cris and Crecencia	Crecencia´s house	Eusebio is Crecencia's neighbor and he spends a lot of time there with Armando Razão. We had met before once and hence why we arranged to talk. We had an informal conversation beforehand about education and marriage in Mozambique. Interview carried out in Portuguese.
16/04/19	Interview	1	Teresa Lapsone	Cris, Crecencia and her three grandchildren	Teresa´s house	First interview with her. Interview carried in local dialect. Decided not to continue with follow-up interviews.
16/04/19	Interview	2	Pedro Eusebio Dickson	Cris, Crecencia and his wife Nelinha in the background	Pedro´s house	First formal interview. I had talked to him beforehand informally and had some background info. Interview carried out in Portuguese
19/04/19	Interview	1	Nelinha Zimveca	Cris, Crecencia, Felix and wife (workers in her land), 4-5 kids	Nelinha's house (in the hut with heavy smoke going on)	First interview with her. Her sons were present. Felix and his wife were also there as it was raining, and they were not working. Interview carried out in local dialect.
19/04/19	Interview	1	Felix Chengetan	Cris, Crecencia, Nelinha, Felix´s wife, 4- 5 kids	Nelinha's house (in the hut with heavy smoke going on)	He was not working this day b/c it was raining and was scared of malaria. His wife was with him but left before we finished.



20/04/19	Shadowing	3	Crecencia	Cris, Crencencia and Armando in <i>machamba</i>	Crecencia´s <i>horta</i> , passing by her <i>machamba</i>	Day of shadowing Crecencia in her routine in the <i>horta</i> . We weeded in her <i>horta</i> . The we came back and ate the rice and beans I had brought that Babula and Herisa cooked. Met her eldest daughter Acwni.
22/04/19	Mapping	2	Elias and Bendita (RM left)	Cris an Crecencia	Banca at their house	 Mapping with big paper and colors. RM had to leave half way because she had prepared drinks and was selling it for the community members. She did not participate in the mapping. After the mapping I stayed at their house observing the dynamics, ate there and then hanged around for an hour or so talking to some women in Portuguese. That day I met Rosa who lives in Macosa and her sister, then Maria, Bendita's sister and Yoda, the niece of Bendita.
22/04/19	Follow-up interview	2	Matesta Tsicuçao	Cris, Crecencia and her sons and daughters	Matesta´s house	Follow-up interview. She went to her <i>machamba</i> to harvest maize with Sara and it took almost an hour and a half waiting there to be interviews. She was taking the kernels off the maize she had carried. In the mean time I had a conversation with Crecencia about marriage and duties of women at home.
29/04/19	Follow-up interview	3	Elias	Cris and Crecencia	Bendita´s veranda	The follow up interview was supposed to occur with the three of them but when I arrived B & RM were "pealing" the maize on the ground. Therefore, I only spoke to Elias. Interview carried out in Portuguese.
30/04/19	Plot Mapping	3	Pedro Eusebio	Cris and Crecencia	Pedro´s house	The mapping was supposed to be with Nelinha also, but she had gone to Nhampasa to visit her mom and took the children with her. Mapping carried out in Portuguese.
30/04/19	Informal conversation	1	Babula Melo	Cris, Babula and many children	Crecencia's yard	It was supposed to be an interview but she was busy as she collected emergency maize to have for that night so she had to dekernel and then go to the mill. Conversation in Portuguese.
02/05/19	Interview	1	Bernadette Santo	Cris and Crecencia	Bernardette's house	First interview. She is the first wife of two, married to Bento. The last question she did answer in Portuguese as



						she gained confidence, but the interview was carried out in local dialect. She goes to adult school.
02/05/19	Interview	1	Rosa Sainette	Cris, Crecencia and Bernardette´s daughter Sarafina	Rosa's house (same place as with Bernadette)	First interview. Was very hard to make her seem interested in what I was talking. Sarafina was replying a lot for her. Interview was carried out in local dialect, she did not understand Portuguese (she is not going to adult school like Bernadette is)
02/05/19	Plot Mapping	4	Crecencia	Cris, Crecencia and Armando	Crecencia´s house	I tried asking Armando to draw the map on Tuesday, but he seemed unwilling to do it. Crecencia was waiting for him to tell her to do it as "he's the man of the house". Crecencia drew the map and we talked about it.
03/05/19	Interview	2	Babula Melo	Cris and Babula	Babula´s house	First interview and a follow-up about some info she had provided in the informal convo. There had been a death so she was going to see what was happening.
03/05/19	Informal Conversation	2	Armando Razão	Armando, Crecencia and Cris	Crecencia´s house	Armando had drunk 5 glasses of cachaso (local alcohol) and started talking a lot. He wanted to see the map Crecencia had drawn. He added some things which were helpful.
06/05/19	Interview	3	Rosemary and Bendita	Cris, Crecencia, and Yota (Bendita´s niece)	B & RM house	Brought map with me and talked about their individual <i>machambas</i> and how they are managed. First talked to Bendita and then Rosemary but they were both together until I started to talk to RM, Bendita left because she said she was hungry as she hadn't eaten. Interview carried out in Portuguese and they understood most of it but Crecencia helped at times to clarify.
06/05/19	Interview	1	Bento Campanto	Cris, Crecencia and Eusebio (brother of Bento)	Bento's house	First interview after having interviewed his two wives. He was working on constructing a latrine for the house. Conversation was very difficult and not very in depth. He has a parasite in his right foot, and it was painful, probably affecting the dynamics. I talked about ginger and its benefits and sked about what pills he is taking.



06/05/19	Participant Observation		Bendita, RM, Felipe's wife, Bendita's sister, and all the girls		Bendita and RM's house	Paciencia cooked for me because they had already eaten. She cooked chima, soy mince, and cassava leaves, so yummy. Then we all hanged out talking and taking the kernels of the corn cobs. Felipe came at some point and we exchanged a couple words.
09/05/19	Formal Conversation		Crecencia	Cris and Crecencia	Crecencia´s house	I got the chanve to speak in detail about household finances with Crecencia and ask more sensitive questions about the dynamic between her and Armando at the <i>machamba/horta</i> . Used the map she had previously done and added the fact that they have division within the <i>horta</i> and the <i>machamba</i> , important to understand the decision- making processes.
09/05/19	Mapping	2	Bernadette and Rose	Cris, Crecencia, Bernadette, Rose (a neighbor came but decided to leave shortly after)	Rose and Bernadette's house	This was after lunch (I could see that at the end everybody was a bit tired). I explained the mapping to both Bernadette and Rose. At first, they didn't really feel confident. Bernadette ended up doing it and did a very good job. Rose gave some information, but B was mainly doing everything
15/05/19	Mutangadzi Market Visit	1	Multiple vendors	People at the market	Main market in Mutangadzi	There was a older girl selling cake, a girl selling cherry tomatoes and couve, a woman selling couve, and then I talked to the men by the weigh station for maize.
16/05/19	Plot Visit- <i>Horta</i>	4	Pedro Eusebio Dickson	Crecencia, Cris, James and Pedro (Nelinha was harvesting maize in the further side of the <i>horta</i>)	Pedro´s <i>horta</i> , by the Nhaopunga river	Crecencia and I went to his house but he wasn't there so we walked to his <i>horta</i> for about 30 minutes. Pedro showed us around the canal, the <i>horta</i> . Then James was trying to reach the <i>horta</i> but he got lost, Pedro went to look for him with his bicycle. During this time Crecencia and I had an interesting conversation (notes taken). Then we took a tour of his <i>horta</i> , his canal, and carried out the interviews as we went. I acted as the interpreter between James and Pedro. James asked his questions first as we



						went and then I asked more specific questions. Then James asked a couple follow up questions.
17/05/19	Participant Observation- Full day		The whole family	Bendita, Rosemary, Elias, and the kids	Their house	Full day in the lives of this household, from breakfast to dinner.
20/05/19	Follow-up interview	3	Herisa Caudane	Herisa, Crecencia, Cris and some kids.	Herisa´s house	At first, she was not home, a kid went to look for her. She came, we sat and started to take the kernels off the cobb with another two ladies. Her sister was visiting and gave her a chicken, and some other things I don't remember. Her brother also came into the conversation to ask for money (look at notes).
21/05/19	Interview	1	Mario Microsi	Mario, his brother, Crecencia and Cris	Mario´s house in Nhamuzarara II	Crecencia and I got there and Mario wasn't there. Mario and his brother came together from working in the <i>horta/machamba</i> . He didn't seem very interested in the interview but we had walked all the way there, so we decided to continue. At the end he asked what is the point of this interview if I don't provide any inputs, and I restated the research aim.
21/05/19	Informal Conversation		Armando and Crecencia	Armando, Crecencia and Cris	Their house	We just had an informal conversation about future plans for commercial crops and associations they have sold produce to in the past.



22/05/19	Interview	1	Belinha Centrao	Belinha, Crecencia and Cris	Her house in Mutangadzi. (wife of Mario Microsi)	We had the interview at her house in Mutangadzi before she headed to Nhamuzarara II to work in the <i>machamba</i> . Mario that night he spent in Nhamuzarara II, but she was in Mutangadzi because they have kids still in the house (3).
22/05/19	Interview	1	Gelardo Erick	Gelardo, Crecencia and Cris (Other men were around playing cards)	His house in Nhamuzarara II	We got there and he handed us some stools to sit on. He was playing cards with his friends/neighbors. The we had to indicate that we would do the interview with him first. The kid had gone to call Melica (wife) from neighbor's house. He understood some Portuguese but Crecencia had to step in to help a bit.
22/05/19	Interview	1	Melica Culembuca	Melica, Crecencia and Cris. Some kids were around	Their house in Nhamuzarara II	We spoke to Melica, after she had served us lunch. She understood a lot of Portuguese.
23/05/19	Follow-up Interview	2	Eusebio	Crecencia, Eusebio and Cris	Outside Crecencia´s kitchen	I went earlier to talk to Eusebio before he had to go to the Nzara Yapera <i>machamba</i> to harvest maize, it was intensive work since NP wants to bring the machines to the <i>machambas</i> to start processing them. Got a picture of the contract he has with NP.



	1					
23/05/19	Informal	1	Maria	Crecencia, Maria, Cris,	Maria´s house	I had spoken to Maria a few times before, met her in
	conversation			Maria's daughter		Elia's house once when they were drinking. It had been
						hard to schedule a time to meet because she has been busy
						harvesting maize from her machamba along with her
						daughter. We finally met but she was not feeling very well
						so I felt weird to make it a formal interview. However, I
						got to understand the dynamics with the drinking schemes
						and income making strategies for her and other women in
						the cmmunity.



Annex 2. Sample interview guide

Introduction

Hello, my name is Cristina Arribas, I am originally from Spain. I am studying a Master in Sustainable Development in The Netherlands. This research is part of my master thesis. I am interested in understanding the management and gender dynamics of *machambas* and *hortas* in Mutangazdi. Specifically, I am focusing on the cash and non-cash flows of both plots. Cash flows are the flows related to money, for example, buying materials needed for the plots, selling agricultural produce in the market, and investing the money in the house. Non-cash flows are related to the exchange of materials or agricultural produce that occurs between people or plots, for example the exchange of seeds, produce for work, produce for other type of produce. In these flows, I am interested to see how gender is important, for example, what do men and women do in and outside the plots. My objective is to obtain detailed information about your plots and the management of all the activities that are needed to have agricultural produce.

My main research question is: *How do men and women attribute economic value in small-scale commercial agricultural production in Bárue District, Mozambique; and to what extent are these economic values represented in cash and non-cash flows?*

Demographic Questions

Full Name	
Age	
Family members (household members)	
Location of machamba/horta	
Bank account	

Information about machambas and hortas and agricultural calendar

How much land do you have?



Machamba:

What is the size of your *machamba*?

What crops do you grow in your machamba?

How much is dedicated to commercial farming or subsistence farming?

Horta:

What is the size of your *horta*?

What crops do you grow in your horta?

How much is dedicated to commercial farming or subsistence farming?

How do you irrigate your horta?

Agricultural calendar and seasonal labor

Could you tell me what the agricultural calendar is for your *machamba* and *horta*? (Elaborate on the rainy and dry seasons)

Could you describe what activities do you do during the different months of the year?

<u>Information about inputs for the *machamba* and *horta*? (Example: workers, animals, seeds, fertilizer, compost, etcetera...)</u>

What inputs do you use in your machamba?

Do you work in someone else's machamba or horta?

Do you exchange materials or agricultural produce with other farmers or machambas?

Could you list the activities that you perform on your machamba?

Information about decision making and difference between genders

Machamba:	Horta:
Are you the main worker in the machamba?	Are you the main worker of your <i>horta</i> ?
Who makes the decisions in your machamba?	Who makes the decisions in your <i>horta</i> ?

Do you have any information you would like to share with me? Do you have any questions for me?

If participant criteria are met, he or she is asked for a follow-up interview as well as the possibility of going on a plot visit.

