

AgWater Solutions Project Case Study

Qualitative Study on Gender in Agricultural Water Technologies Adoption and Management in Zambia

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The AWM Project

The AgWater Solutions project was implemented in five countries in Africa and two states in India between 2008 and 2012. The objective of the project was to identify investment options and opportunities in agricultural water management with the greatest potential to improve incomes and food security for poor farmers, and to develop tools and recommendations for stakeholders in the sector including policymakers, investors, NGOs and small-scale farmers.

The leading implementing institutions were the International Water Management Institute (IWMI), the Stockholm Environment Institute (SEI), the Food and Agriculture Organization of the United Nations (FAO), the International Food Policy Research Institute (IFPRI), International Development Enterprises (iDE) and CH2MHill.

For more information on the project or detailed reports please visit the project website <http://awm-solutions.iwmi.org/home-page.aspx>.

Disclaimers

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Acronyms and Abbreviations

ASP	Agriculture Support Programme
AWM	Agricultural Water Management
CA	Conservation Agriculture
CF	Conservation Farming
CLUASA	Cooperative League of the United States of America
DACO	District Agricultural Coordinator
DAPP	Development Aid From People To People
EEOA	Economic Expansion in Outlying Areas
EU	European Union
FAO	Food and Agriculture Organization
FASAZ	Farming System Association of Zambia
FHH	Female Headed Household
GAD	Gender and Development
GTZ	Germany Technical Assistance to Zambia
IWMI	International Water Management Institute
JUDAI	Jule Development Associates International
MACO	Ministry of agriculture and cooperatives
MHH	Male Headed Households
NGO	Non-Governmental Organization
SAO	Senior Agricultural Officer
ZNFU	Zambia National Farmers' Union

INTRODUCTION

This is a qualitative primary data report of a study on gender in agricultural water technologies adoption and management commissioned by the Agricultural Water Management Institute (IWMI) and implemented through Farming System Association of Zambia (FASAZ). The main objective of the study is *to contribute to the overall goal of identifying business models for investment in agricultural water management technologies that benefit both women and men*. The benefits are in terms of higher productivity, improved livelihoods, higher income and more food security through investment in water.

The research was carried out in Mpika, Sinazongwe, Monze and Chibombo (Katuba) districts focusing on gender relations on adoption and management of water technologies such as buckets, canals, dambos, motorized pumps, furrow irrigation schemes, treadle pumps and conservation farming. Aspects of how men and women are taking up the existing opportunities, asset control, use and benefit utilization between women and men were studied using a variety of primary data gathering methods and tools such as focus group discussions with key informants, semi structured interviews with key informants, and case studies. The field work was conducted in the four study sites from end of August to mid September 2010 by three researchers and six enumerators.

Overview of social, cultural and legal systems in Zambia

Zambia is multi ethnic (73 ethnic groups) and the constitution allows a dual legal (traditional and statutory law) system. This has a major influence on the way women and men access, control and own assets and benefits derived from their development work and that of others. The traditional law is not documented and therefore highly varied. Its interpretation and application varies from region to region and may even differ within the same community. The statutory law is documented and therefore universal within the country and citizens are bound by it irrespective of their ethnic group or origin.

There are broadly three forms of marriage and three rules of residence during marriage followed by Zambian citizens today. Couples can contract marriage under customary (traditional) law, statutory law or Christian law/practice. One of the major differences between traditional marriage and the other two is that traditional marriages are often polygamous, while the other two are monogamous. Zambians practice four forms of inheritance, matrilineal (inheritance traced through the female line), patrilineal (inheritance traced through the male line), bilineal (inheritance traced through both female and male line) and inheritance through a will of the deceased person (Wills & Administration of Testate Estates Act).

The rules of residence during marriage are matrilineal, patrilineal and neo local. This study found that the traditional practices and customs have great influence on the women and men's opportunities to access, control and own agricultural water technology resources and benefits derived from their use. The ability to take up the available water resources for investment in water technologies is influenced by land tenure. Women and men are able to take up new water technologies if they have secure land tenure as they are sure of not losing the benefits. The sites in Mpika have abundant land under the traditional customary tenure system, while Sinazongwe had a land shortage due to high population density.

The gender categories and households are not homogeneous. There are both monogamous and polygamous male headed households. There are de facto, de jure and autonomous polygamous female headed households. All these have unique and specific patterns and levels of control and ownership of agricultural water resources and benefits by women and men. They face varying degrees of social economic opportunities and constraints in regard to the development of agricultural water technology solutions. This means that there is no universal business model that can be used for all targeted sites of the study. It is important, therefore, to carry out a comprehensive gender study for each targeted project site so that the appropriate gender relations are taken into consideration for effective implementation and good impact on the beneficiaries. This will ensure that evidence based social, economic and cultural practices are taken into consideration in all stages of the project cycle. This study brought to light evidence that sources of power and how it is used in households differs between women and men. Women will tend to use their power for the benefit of the household while men tend to use power for their own benefit and as an expression of control.

“Our women control all the proceeds and do not give us money in the amounts we request. Sometimes you ask for K50,000 we will only be given K10,000; and even when I ask for a little money she will never give me more than what I asked for.” *Men’s group in Mpika*

“Why should I give him a lot of money to go and spend alone even when he comes back he demands to eat food that costs money and there are children who should be cared for.” *Women’s group in Mpika*

“We have observed that in homes where money is kept by women there is peace and household assets are bought.” *Headman Chilombe of Mpika*

“Women keep the money the way I keep it in a hand bag. A hand bag cannot spend money. When it comes to spending I make the decisions because I am the owner.” *Headman in Katuba*

“These men what they do is; we keep the money but we are not allowed to use it for any reason; not to buy relish, clothes, take sick child to hospital without their permission. We give them any amount the demand and even while they are away they will be sending or make phone calls asking for more money to spend on beer.” *Male respondent in Katuba*

The gender division of labor and levels of access, control and ownership of agricultural water resources and benefits between women and men play a significant role. This study found that women in patrilineal/matrilineal inheritance and patrilocal residence have lower control over benefits from water technologies while those in matrilineal, matrilineal residences and female headed houses generally have high control over the benefits from water technologies. When this is understood and appropriately used it can ensure increased benefits of the targeted beneficiaries of water technologies. Therefore it is justifiable that the business models to be developed should have a component of gender mainstreaming at all levels of the project. This is important to develop key sensitization and education messages to contribute to gender equity.

Urbanization, education, religion and the Intestate Succession Act (No. 5) of 1989 have played a role in reducing some negative cultural practices in gender relations in Zambia. A number of church bodies and individual denominations have registered Faith Based Organizations (FBO) that are involved in sensitizing people on a number of social, cultural and economic issues and implement projects in communities that contribute to improved socio-cultural and economic status of the targeted individuals and communities.

MPIKA DISTRICT

The sites in Mpika were chosen because of the communal canals and dambo water technologies. To fully understand gender issues in agricultural water technologies in each district, the research team interviewed traditional leaders for insights into the local traditions, customs and belief system (socio-cultural and economic relations between men and women). The team interviewed Ministry of Agriculture district officials to learn about the availability of fruits and vegetables, existing water technologies and the main players in the market. The chiefs and traditional leaders provided information on the local social organization and rules of residence. This helped us understand the socio-cultural and economic power relations over access, control, ownership and management of the agricultural water technology resources and benefits.

Interview with Mpika District agricultural officials

The research team paid a courtesy call on the acting District Commissioner, Mr. Muyangana Walubita, who in his welcome remarks encouraged the team to interact with the staff and community members. He said Mpika has a lot of water bodies that can be tapped to increase food security and income for many poor families. He then handed us back to the district agricultural coordinator who called seven staff members (four men and three women) for an interview in his office. The acting senior agricultural officer (SAO) said that Mpika has great potential for water technologies as the district has a lot of water bodies. The main type of water technologies in the district are furrows, weirs and buckets. The major challenge for furrows is insufficient water for people who can benefit from them. There are also no resources to line the canals to reduce loss of water through seepage. He further told us that some community members request help to put in linings but it is not adequate. JICA is providing funds to the district to assist in construction of traditional weirs. He said a total of 35 temporal weirs and one permanent weir had been constructed by the communities with funds from JICA and facilitated by Ministry of Agriculture staff.

In his view, water is mostly used by women for domestic uses and production of crops like vegetables (onions and tomatoes) which are mainly consumed by the household. The SAO said that they have seen changes in the quality of life for farmers facilitated by institutions like MACO, Economic Expansion in Outlining Areas, Agricultural Support Program. The women and men who participated in these programs have seen there is value in growing high value crops like tomatoes and onions they can sell in places like Kasumbalesa (DRC Border), Luapula and Copperbelt towns. We learnt that there are schemes for farmers (women and men) who are using furrow irrigation, but seepage is their major challenge as most of these farmers use traditional furrows. MACO provides extension services to farmers and it has been observed that women are the majority of the active members of the schemes and they do most of the management operations and control the proceeds from water technology use.

Mr Kalolo said that in Mpika, if we went to the shed where FRA is buying maize we would find that the majority of the people are women. Women take their produce to the market. We visited the FRA shed and found a number of women waiting to sell their maize. The staff said they use a household approach for delivering extension services. They encourage farmers to come for meetings as husband and wife or with their adult children. Annie, one of the staff members, said that education and personal experiences of some women helped them to be more assertive.

Some women also own plots as a result of civic education conducted by various institutions. Women are always at home and their caregiver roles (reproductive roles) demand that they are active. The SAO further said that in most areas of Mpika District, men own plots but women manage them. He confirmed that dambos are available in Mpika District and the ones found in Malashi and Wilikiti communities are very fertile and big. He confirmed that women own most of the plots in dambos. The plots for dambo fields are small because it requires a lot of labor, especially in the first year. Many crops are grown in the dambos that compliment family household food security, especially if they do not harvest well in the rainfed crops.

Dambos have great potential to increase food security. We were told by the DACO that DAPP and JICA fund weir construction. MACO has constructed 35 temporal weirs with JICA funds and they are working on one permanent weir. These are mainly used for irrigation. The communal weirs that MACO staff facilitated have management committees where women also serve as chairpersons, secretaries and treasurers. We were told that Mufubushi and Danger Hill weirs are the best in terms of productivity. Plots for furrow irrigation are bigger and can give more produce to farmers. We heard that there are no organizations that supply inputs to farmers except for Malashi Cooperative. Program Against Malnutrition (PAM). They had distributed treadle pumps in the districts but farmers are not using them due to their high labor demand.

Interview with Chief Chikwanda

We had an opportunity to interview Chief Chikwanda who said, "People in Katongo Kapala are very active in gardens and a lot of them take their vegetables to the market. Women do most activities in the gardens, men are just helpers. The Bembas are matrilineal, so the women have a lot of power. You will find that where you are staying (matrilocal) your wife will have a lot of relatives and therefore she is able to impose her ideas at the household level." The chief supported the view of the district agricultural officials that Mpika District has a lot of potential for irrigation which is not fully utilized due to lack of support for inputs and markets for the products.

History of the furrows in Mpika

Some of the respondents told us that the technology of water furrows started in early 1960s just as a 'hobby' and women were the main users for domestic purposes. In the early 1980s, Mr. Munsanje, who originally came from a Southern Province, constructed a canal at the western part of Katongo Kapala that he used for irrigating crops. As he began harvesting some local men and women got interested and began to dig their own canals with his technical support. Accordingly to Mr. Maipambe, the DACO, a major scaling up of canal construction was done by a government project called the Rural Investment Fund (RIF). The

total number of temporary weir canals improved through JICA assistance is 35 plus one permanent. It was the requirement of this project that 30% of the management structure was to be filled by women and that 25% of the materials were to be provided by the community members. The DACO explained that now all players in agriculture insist on inclusion of 30% women in project management structures. But this is far less as Mpika is a female farming system and since it is matrilineal and matrilocal residence, women have high control over assets. The insistence to have women positions at 30 % is actually reducing the number of women in decision making in communities that practice female farming systems.

Focus group discussion interview with a mixed group of men and women in Chilombe village

On Tuesday 24 August we held a focus group discussion with three women and three men in Chilombe village. The purpose was to find out the norms and values concerning marriage, existing gender relations in agricultural water technologies adoption and management. To start the meeting introductions were carried out and then the purpose of the meeting was explained to the participants. They were further encouraged to be frank and truthful. The village headperson explained Bemba custom and culture and marriage arrangements.

When a young man wants to marry he will inform his parents who will raise money to give to him. They will appoint a man (*shibukombe*) or woman (*nabukombe*) who will be responsible for making all the negotiations and lead in all marriage arrangements. The *shibukombe* will take the money (*nsalamu*) to the family of the girl and if it is accepted the marriage relationship will begin to be recognized by both sides. The other payments that follow include *kuipusisha*, (requesting for a charge) *mpango* (charge), *kumulanga /kulomba mulilo* (permitted to start cooking) and *bwinga* (wedding). The wedding always takes place at the village of the woman and the man shifts to the wife's village where he works and eats at the in-law's house. In the old days the man might live there for two to three years. When the man wants to take his wife to his village he will normally ask through the *shibukombe*. The in-laws may allow him to take their daughter or refuse depending on his behavior and if he is hard working. If the daughter is not very well behaved they will also delay departure so that they can continue to counsel her. We were told that the period of a man staying with the in-law has been reduced these days. It can be as low as two or three days if the man works and resides away from the wife's village.

In Mpika District of Northern Province about 80% of men live in their wives' maternal villages. The research findings indicate that this kind of social arrangement gives high control and power to women over resources and decision making. Men also are prevented from marrying other women as they cannot bring another woman to live in the village of their wife.

"In our area weddings always take place at the village of the woman and about 80% of men stay at their wives' villages for life." Men's group in Mwansabamba village

"Women are the ones who do most activities in the field, men are just helpers. We Bembas are matrilineal so the women have a lot of power. You will find that where you are staying your wife will have a lot of relatives and therefore she is able to impose her ideas at the household level." *Chief Chikwanda*

"I am related to all the women in this village. Most of my female relatives are staying with their husbands in this village. This is our culture, men come to live at their wife's village. In this village there are also five women who are not married. They have their own homes and grow their own crops. We treat them equally as those who are married. Two of them have dambo fields." *Mansabamba village head person*

"When we are in the money is kept by me to prevent theft. When we are at home my wife keeps the money as she is the one who is usually at home and manages the family needs. Women always give us less money than what we request for our personal use. There is never a time that I asked for say K5,000 and I was given K10, 000 by my wife. She always gives me excuses or reasons for giving me less money than what I ask." *Male respondent*

In both study sites in Mpika the findings were that both married and single women farmers had decision making power over water technology use and how the benefits derived from it were to be used at the household for the benefit of the whole family.

Women unlike men use power for nurturing the home. Wives in Mpika would deny excessive individual use of money by the husband to save it for the common good of the household members. The husbands interviewed in Monze and Katuba study sites said the money should be given to them because it is rightfully theirs and they used traditional rules to justify their personal interests.

Water technology adoption and management

Mpika District is situated in the high rainfall part of the country and therefore has abundant natural water sources. There are various perennial rivers, streams and dambos and communities have adopted different water technologies to convey water for household and productive uses. The most common ones are canals/furrows, scoop wells, buckets and dambos. The majority of women use water for domestic uses such as washing household items, cooking and soaking cassava. The productive uses are mainly growing crops, molding bricks for sale or own home construction. On decisions of what kind of water technology to adopt, availability and past knowledge seem to influence the choice of technology. For example, the women and men in Chilombe village said they decided to start constructing the communal canal because of the presence of a private one in the same village and that some men in the community already have experience with canal construction. When it comes to the power to decide that also is influenced by ones knowledge and past experiences in furrow construction and management. Because of this, immigrant men and those facilitated by extension staff are relatively empowered compared to women who seem to take a leadership role in major technical aspects of adoption and management of canals/furrow. Women will generally be providers of labor in agricultural water

management solutions even in matrilineal and matrilocal communities like the study sites of Katongo Kapala and Mwansa Bamba. This is reinforced by the fact that the official agricultural policy considers men to be farmers and women as wives of farmers (Munachonga 2010).

The literacy and numeracy levels of men are higher than those of women and this gives men a comparative advantage to adopt new technologies and ideas. The men also are responsible for marketing the produce to distant markets outside the community and this gives them opportunities to interact with other people who may have new ideas they adopt and implement in their villages. It was explained that marketing roles that demand spending more than one day outside the home are dominated by men because of the gender division of labor at household level where society has allocated reproductive roles or care giving roles to women. This could explain why despite women having higher decision making power on farming in the study sites of Mpika, men took a lead on aspects of where the communal canal was to pass and when people were to work at the canal during construction. It was said by Jonas Sampa that the canal projects that were facilitated by North Luangwa Project, Food Security Component, used to teach women and men on how to construct the canals. Then an expert was hired by the project to assist the community to survey where the canal was to pass and then women and men in the community did the work of construction. Some women got knowledge of how to construct the canals through this but majority were men.

Women are the majority users of labor intensive, low level water technologies such as buckets. It was said that the women in Katongo Kapala would normally ask for permission to divert the canal to their homes for domestic uses and may request the men (husband) to help with the construction. In these cases the women will use and control that portion of the canal and they don't make any payments for use. The women's group also told us that they are the ones who ask for domestic uses. This has an impact on their work load and ability to adopt improved water technologies.

"At the communal canal all of us work and those men with knowledge direct us where to pass the canal. Even female headed households participate and they will also be given plots once the canal is completed." *Mrs. Phiri, a female respondent*

It was said that in regard to the major food crops such as maize, millet and cassava, women in both male and female headed households have high decision making power. The women also have their own crops where they are the sole decision makers of production, management and use. These crops in Mpika are sweet potatoes, groundnuts and vegetables.

In Mpika women were also the major decision makers on how the household money was to be used for the benefit of all household members. The respondents also confirmed the fact that women were better users than men.

Most respondents preferred a cooperative approach to the family as a production unit where each house hold member works to the common good of the family. If households/families are targeted as production units there are many advantages that include:

- Pooling of individual family members abilities, capabilities and competences for the benefit of the whole farming unit;
- Joint planning and implementation ensures transparency and accountability of resources and benefits; and
- The children are socialized to be gender sensitive and inclusive in major aspects of life and may be more inclined to continue farming.

Gender in dambos

When we conducted a discussion with a mixed group of women and men in Mwansabamba, we were told that North Luangwa Integrated Project promoted use of dambos in Mpika in the early 2000s. They started by taking a group of women to Chikakala for a study tour. After the women saw how dambos were being used and the benefits the women in Mansabamba, they started gardens in dambos. Women constitute a majority of the people who have fields in the dambos of Mwansa bamba (7 out of 10). The contributing factor is that the initial group consisted of women only and the few men joined after seeing the benefits. The community development facilitators are also predominantly women (2 women 1 man) and since this is matrilineal society women have continued to dominate water technologies in dambo use. Julius, the project Officer at North Luangwa, said women were chosen to start the dambo project because they had a great chance of succeeding. In the research sites in Mpika, men and women worked in each other's field but there were no monetary benefits expected. In some cases payments in kind were made.

Case study of Dorothy Chanda

I conducted a case study with Dorothy Chanda, an adult female of 30 years with 7 children (6 from a first marriage and 1 from a current marriage). She was divorced from her first marriage and remarried Kelvin Mumbi who lives with her in the same village. They both have gardens that were doing very well. Dorothy appeared to be confident knowledgeable about the management of gardens. She said:

I have 20 years experience in gardening and in my first marriage we used to grow a lot of tomatoes that we sold in Mpika boma. Our livelihood improved, we bought a Land Rover and built a grocery shop. My former husband and I used to grow 1,000 plants of tomatoes at different stages. Both of us used to go to the market to sell tomatoes. I used to keep the money but my husband was the one who used to buy goods for the grocery shop. I left my first husband who lived with me in Chilikisha village because he was having relationships with other women and having children outside marriage. He was misusing the money we raised together from gardening. I did not want to continue having problems and I left to come and live in my mother's village here. I didn't get any of the assets we bought together because I am not interested. At the moment, the challenges we face include poor

markets, expensive inputs (fertilizer, chemicals) and lack of financing for water technologies. When we produce a lot of crops it is possible to sell the harvest to far places like Mansa, Kashikishi, Chinsali and Kasumbalesa. People from these areas usually call us by phone to make orders. They may come to collect or we sometimes go to deliver produce at agreed prices.

Case study with Godwin Kampamba, a seed grower

I conducted a case study with Godwin Kampamba, a seed grower who lives in Chilombe village. He is one of the men whose work at the communal canal under construction. He told me:

The idea to start the communal canal was brought to the village headman by women who were having problems using the canal in the village. The village headman then called for a meeting where the issue was discussed and it was resolved to start digging a communal canal. Two men were sent to a neighboring village upstream to talk about diverting a canal from theirs. Our neighbors agreed to allow us to start construction. A committee of four men and three women was formed to spearhead the construction. When we went to work at the canal women, men, boys and girls participated. The men with knowledge of how to construct the canal usually advised us on the technical aspects.

In Godwin's view, women benefit more from gardens as they have enthusiasm and they sell some vegetables to buy items for their households. Market research is easily done by women as they are the majority sellers at most vegetable markets. On who keeps the money in the house, Godwin said:

When we are in the field the money is kept by me to prevent theft. When we are at home my wife keeps the money as she is the one who is usually at home and manages the family needs. Women always give us less money than what we request for our personal use. There is never a time that I asked for say K5,000 and I was given K10,000 by my wife. But there are several times that I asked for say K50,000 and I was given less. She always gives me excuses or reasons for giving me less money than what I ask.

Godwin also said that to increase food security and wealth people need to work hard. He told me that domestic uses of water are mainly done by women. Men will only do female household chores if the wife is sick or absent from home. On routine maintenance of the canal, both women and men take part. He said the women and men can increase the size of their fields if they are assisted with inputs (plows, oxen, seeds, chemicals, transport) and markets to sell the produce. It was also his view that gardening creates wealth as the money invested comes back over a short time with good profit.

We have seen the young men who are serious with gardens become rich in our community. Some families in the village do not grow any

maize for home consumption but when they have vegetables the exchange them for maize and end up having more maize than those who grew it. Sometimes they just buy maize using the money that they raised from selling vegetables.

Case study with Ms. Beauty Chikwanda

During pretesting of questionnaires we met Beauty cycling to Lwitikila Girls High School with a bag of vegetables that she was going to sell to the school. The team talked to her and she asked to be interviewed during the survey. She is 37 years old and married with 5 children all from a first marriage. Beauty told us she stayed with her first husband in Mazabuka District in Southern Province. The first husband died in 2003 and she came to live in Chilikishi village with her mother. Now she occupies the mother's house as the mother now lives in Kabwe with one of the children. She said:

I depend on gardening for my livelihood. I grow rape, tomatoes, onions and green maize. My main challenge is lack of adequate inputs as I mostly use recycled seed and do not have money to buy fertilizer and chemicals. When I have vegetables for sale the market is another problem as the price of most vegetables is very low. I don't have transport to take vegetables to the good markets in big towns. In our village we use a communal canal for irrigation. There are about 100 households in the village and about 70 to 80 households are involved in gardening and these include female headed households who constitute about 20% of the people who have gardens. Each household pays K5,000 per year for maintenance of the canal. In Mpika, the ultimate control of both the gardens and the maize fields is by women, even in male headed households. Men do not keep the money and are not allowed by tradition and culture to get any maize from the storage bin.

All respondents were unanimous that decisions of disposal and how proceeds are to be used are made by wives. The canal committee is responsible for enforcing the regulations and ensuring that the irrigation schedule is observed by all. Those who default are charged and if they fail to pay they are referred to the chief. There are four sections on the canal and each section has specific days to irrigate. There are women in the management committees. They seem to indicate that the user fees are paid as households but through probing we found that the women seem to have higher decision making power. Beauty continued:

The field I use belonged to my mother but I gave a portion of it to my brother last year to grow some tomatoes. The size of my field is about 3 limas and there is security of tenure as everyone knows that this portion belongs to my mother. Other villagers have their own portions. In this village there is a cooperative although some of us are not members. The cooperative is usually active during input support programs by government. Our canal is also used for domestic uses. I don't have sufficient maize for home consumption. The maize I

harvested ran out in April this year. We survive by selling some vegetables and then buy food. I could rent out part of my field if there was someone willing. I am also interested in working with anyone who has money so that we can increase productivity.

Summary of focus group discussion with women in Mpika

The researcher conducted a focus group discussion with six women of whom four were married while two were elderly and single. They all said they enjoy a high level of control over the farming activities in their homes. The four married women said that their husbands cut the trees for land preparation and then do the seedlings after which most activities are done by them. When they grow maize they will usually reserve some food for home consumption and then sell some to raise money to buy other home requirements. The women said they are in charge of all home sales while they ask husbands to be in charge of any sales that are done outside their communities. The two married women said they have gone to sell produce outside their community before and they know of many women who sell produce outside their communities. The female heads of households said they make decisions on all agricultural activities and implement them. All women said they have their own fields and four (two married & two FHH) said they have vegetable gardens as well which they exclusively control. The women said that men are more literate than them and that they interact more with the outside world, hence they are able to bring in new ideas or innovations to the community. This explained why men are the ones who seem to adopt new innovations more than women.

Summary of focus group discussions with men in Mpika

The discussions I held with a group of seven men revealed that they were happy to be at their wives' villages and that they cooperate with their in-laws. However, one man said that Bemba women are possessive and jealous that is why they don't allow polygamous marriages or give them more money. They said according to their culture they are not allowed to get maize or millet from the granary or cook food while the wife is present.

On adoption of water technologies, the village committee secretary said that most men who have travelled have skills that they bring to the village when constructing the canal and a majority of the people who were trained by government or NGOs on canal construction and management were men. That is why most water technology innovations are done by men. Four men also said that they don't expect any payment when they work in their wives' fields as the food is for the whole family's benefit. In the same manner they also said they don't expect to pay their wives when they work in their fields as what they harvest is for family use.

Rope and washer pumps in Mpika

In Mpika District, rope and washer pumps were distributed by Development Aid from People to People (DAPP). We interviewed the district facilitator who said that the pumps are requested or purchased by men but women are the ones who use them. She said the pumps are mainly used for domestic purposes. Since women are the main domestic water users, the research team confirmed that the rope and washer pumps were being used by women.

Treadle pumps in Mpika

The research team did not find any treadle pumps being used. Respondents said although one NGO had introduced treadle pumps some years back, the adoption rate was very poor as treadle pumps demand a lot of labor and need more than one person to operate. The men and women would prefer water technologies that do not need a lot of labor

Key thematic findings for Mpika

Marriage arrangements: The man takes a lead in all marriage arrangements through a traditional counselor called a *shibukombe* (male) or *nabukombe* (female) who makes all negotiations and payments such as *kobekela*, *nsalamu*, *kuipusisha*, *mpango* before the marriage ceremony that exclusively takes place at the wife's relatives. The young man will be working at the in-law's household and both will be eating there. The man is only allowed to return to his maternal relatives after up to three years but now the custom has changed and he may return after as few as two or three days. This is on condition that the in-laws are happy that he will be able to look after their daughter. In this study we found that up to 70% of Bemba men are staying at their wife's village. Traditional Bemba marriages are predominantly monogamous.

Social organization: The Bemba and Bisas, the major ethnic group in Mpika, are matrilineal and matrilocal. Women have high control over agricultural and household decisions. Our findings indicated that women had more say on the plots they accessed from their parents and therefore should have adopted water technologies to contribute to their productivity in female managed plots. The literacy levels of men and the official agricultural policy seemed to elevate men above women even in female cropping systems and may have influenced the 'invisibility' of women in water technology adoption and management.

Water availability and technologies: The district has a number private and communal canals/furrows used for multiple uses. There are also a lot of dambos and few are used for production of crops by mainly women. Canals have been used by both men and women over a number of decades. The potential to grow crops by both men and women farmers is high if only the backward and forward linkages in the value chain are enhanced or improved upon.

Crops and livestock: The common crops grown by both men and women are millet, cassava and maize for home consumption. Other crops include cotton grown mainly by men and women as a cash crop and vegetables (cabbage, tomatoes, rape, okra, onions) grown by women and men for both home consumption and sales. Other households keep chickens, goats and pigs, while cattle are mainly kept by immigrants like Tongas from Southern Province. Bembas are traditionally not cattle farmers and look down on pastoralists.

Inheritance patterns: The Bemba are exclusively matrilineal and women have high control over children. The respondents said this has not changed much. This was despite the influences of education, religion and legislation (Intestate Succession Act number 5 of 1989). The ethnic groups that came in from outside mainly follow their own traditional norm and beliefs.

Cropping patterns: Women and men have communal and separate fields but women provide most labor for crop production. There is strict gender division of labor and the field will be called by the name of the one who works during a specific period in the production cycle. The women will normally tend the crops when they have high value or are ready for use. There are some crops strictly for women such as sweet potatoes, groundnuts and bambara nuts. Sweet potatoes have contributed greatly to the economic well being of women in the area.

Spending patterns: In all households the money is kept and controlled by women. The men may sell the produce from their own fields or their wife's fields but they surrender the cash to the wife who has control over household income. The women also have high decision making power on the items bought for the home. Most respondents are of the view that women were better managers of income than men.

SINAZONGWE DISTRICT

Interview with Chief Sinazongwe

We interviewed Chief Sinazongwe. The interview mainly focused on the arrangements that young people go through when contracting marriages and the situation of irrigated farming in the district. He said that there are changes in the way marriages are arranged. The chief told us:

In the past, when a young man was ready for marriage he would play the *kalumbu* (a traditional musical instrument) very early every in the morning to communicate to his parents and elders that he wants to marry. The parents would organize money for payment of *kuuma nkoma* and ask the young man to look for a lady to marry. Marriage used to take place at the age of 24-27 years for boys and 21-25 years for girls. The people needed to mature before they could marry. The young men and women were given fields to cultivate food for consumption or sale before they got married. After engagement, the young man could be working at the village of the in-laws with his age mates and friends. Then after payment of the bride price (*lobola*) the family of the man went to pick up the lady from her village. The procession to the village of the man involved exchange of gifts, eating and drinking. Both the maternal and paternal relatives of the man were involved in the payment and arrangements of marriage. The cousins of the bridegroom played roles of presenting the bride to the groom. In the first week the woman had to prepare hot water for the father-in-law, mother-in-law, brothers and sister-in-laws. The bride was to remain indoors for a month after which there would be a ceremony that would allow her to cook at her own place. But she was expected to bring the food to a common eating place called *nkobelo*. This is a common eating and discussion place for the people in the same village.

The chief further told us that the parents of the girl bought items for use at her home using some of the money paid by the man. It was a common practice for wife to have a separate field from the man's. The women worked in the husband's field with the children while the

man did not. The chief told us that the practice to use one field for husband and wife is new but now common in most communities in his chiefdom. The man may own the land but the women are the ones who work in the fields. He further said that leadership positions are still mainly held by men in most communities. He said that women are very good at growing vegetables like okra, cabbage, rape. Okra has become the cash crop of choice for most women in Sinazongwe District because it is profitable. Men mainly grow maize for food security.

The chief said there are no organizations to help farmers in the supply of inputs and marketing of products. It was his view that hunger and poverty would have been tremendously reduced if there were loans for inputs in water technologies and good markets for products. He said there is a need to add value and for preservation methods of perishable crops produced like tomatoes. Furthermore it is important to improve the road and water transport infrastructure to improve communication in the valley. He wondered why for many years planners and policy makers have not improved water transport and provided water for multiple uses despite having major rivers in the country.

Interview with Buleya Malima irrigation scheme management committee

On Tuesday 31st August 2010, I conducted a focus group discussion with four members (all men although the committee has three women) of the management committee of the Buleya Malima irrigation scheme. The chairman, Mr. Peter Munakaceka, told me the irrigation scheme was started in 1970 through a government project. Phase one had 12 trainee farmers (*no information on number of women and men*) and covered 18 ha which included an orchard. In 1973, phase 2 and 3 areas were cleared and each farmer was allocated one hectare. Then they introduced water fees to cover some running costs, mainly diesel and maintenance. The amount paid was 25 *ngwee* per farmer per year

In 1980, the whole area was given to 71 farmers (no information on number women and men) who had one hectare each. The yields were analyzed and it was evident that farmers were harvesting crops equivalent to one lima. Management then decided to divide the 46 ha into limas and allocated those to farmers. The chairman said that the other 25 ha in phase 4 is not being used to this day due to lack of pumps, canals and adequate water storage facilities. Government stopped direct management of the scheme in 1986.

A cooperative that currently runs the scheme was registered on 11th August 1995. The current membership of the scheme is 185 farmers of which 61 are women. Both married and single women own plots in their own right although the actual numbers of how many are married and how many are single could not be got from the cooperative board members. We were informed that the common way of accessing the plots are through application or inheriting from a deceased spouse or parent. The cooperative does not provide inputs to members despite having paid for share capital. The secretary told us that majority of the people who work in the scheme are women and children and that these women are either married or single. Men and boys' main activity in the scheme is plowing the fields with oxen. We observed that more men were also involved in fishing and trading. It was evident that gardening was a women's activity.

Key informant interview with Mr. Mungazi Alfred, District Cooperative Development Officer

I interviewed Mr. Mungazi, the District Cooperative Development Officer. I started by asking how women and men were benefiting from use of water technologies in the community. He said it helps them to be food secure and have a bit of extra to sell and those in the scheme seem to have better livelihoods when compared to others without plots under irrigation. His view was that even vulnerable female heads of households were better if they had a plot under irrigation than those without. This was because they are able to harvest twice in a year unlike those who depend on rainfed crops.

Mr. Mungazi gave the following as challenges in the irrigation scheme:

- Low productivity in terms of quantity and quality as they produce only about 20% of the average production per lima;
- Poor governance issues; there are no annual action plans, no regular meetings, poor accountability and transparency;
- Farmers use recycled seed and do not have any support of inputs from the cooperative despite having paid for shares capital last year;
- The management has overstayed;
- There are no external auditors;
- There is need to take soil samples for testing;
- There have been several capacity building training exercises but the adoption rate is very poor; and

The cooperative benefits from an input support program but the members use the inputs for rainfed crops.

Mr. Alfred further said that the major rainfed crops are maize and cotton grown by both men and women. For irrigated crops, most men grow green maize while women grow okra, cabbage, rape, tomatoes and onions. He said the women and children are involved more in irrigation, weeding and general care of the crops than men. As for benefits, in his view all household members benefit as most produce is consumed. He said there is no market research that farmers carry out and the cooperative does not assist in marketing members' produce. His view was that AWM has great potential to contribute to food security and wealth creation in the community but democratic and productivity issues should be resolved for most people to benefit. The scheme is not used during the rainy season as the farmers concentrate on rainfed crops

Key informant interview with Ms. Daisy Mweetwa and Ms. Oris Mweetwa

The two women were married to Mr. Chagalala who died in November 2009 and left an irrigated one lima plot in the scheme. The two widows are continuing to use the same plot for food production and the registration was changed after the death of the husband to Daisy who is the senior wife. I started by asking them how they were working and what major challenges they are facing in the scheme. Daisy said:

We are working well and we use the yield to feed our families. Some of the maize we harvest is sold to raise money to pay annual water fees. Our main challenges are getting inputs like fertilizer, seeds, chemicals

and good markets for what we produce. The amount of water is insufficient as a result we spend more time watering our crops. Only one pump is working at the moment. We paid shares but there are no benefits seen from the share capital we paid. If we had good water supply and inputs we could get better yields.

Key informant interview with Ms Jeria Chileka and Florence Muzambalika

I interviewed the two women who are married to Boston, who is the secretary of the cooperative committee. They told me they were among the first to have plots in the scheme when it started in the early 1970s. They said the plots were allocated in their own names and their husband also has his own plot. Both said they are happy with the scheme as it gives them good food security. They grow mainly maize and okra. It was their view that households that have fields in the scheme are better off in terms of household food security as they harvest during the part of the year when food is scarce. For working in the field the two women help each other with their respective children. The husband and male children plow the fields with oxen. During interview in the plot we were joined by Boston who added that he also assists in working in the field as he paid a laborer for weeding last month.

I was also told that when they harvest they put the maize in one storage bin and then get a bucket each day for home consumption. They cook separately but bring the food to one eating place. The husband eats with the male children while the women eat together with girls.

To raise money for water fees for the three plots, they usually sell the yield from the husband's irrigated field. When any of the relatives come to ask for food they normally sit together to discuss how much to can give. They said:

Our husband makes all decisions concerning the activities in the fields. When we sell some produce our husband gives us part of the money and we are the ones who keep the money. We cannot use any of the money we are keeping without his permission (*mulawo ulakasha – the law forbids*) as it is against our culture to do that. We only look after the money for our husband. There is never a time when we have asked for money after we have got paid and he has given us. While he always asks for the money we are keeping and he spends it as he likes. He has full control over the money as our culture demands that.

I asked the women's group to make an activity profile of the activities in the irrigated (male or female) fields. Below is a consolidated activity profile. There is a difference for female managed plots that are for FHH as they will usually not use oxen to plow but use hand hoes. In rare cases they will hire men to plow with oxen for them if they can afford it. They women will do all the activities themselves as they have no men to look up to and mostly cannot afford hired labor. In some cases brothers, uncles or adult sons may help plow for the de jure women.

Activity	By
Slashing	women
Leveling	women
Plowing	men
Making lines	men
Planting	women
Irrigating	women
Buying seed	men
Buying fertilizer	men
Weeding	women
Fertilizing	women
Top dressing	women
Harvesting	women
Building buns	men
Marketing	men
Keeping money	women
Budgeting	men

The results show that women in male headed households have nine out of 16 activities while the men have seven out of 16. The women also said it depends on whether the man is monogamous or polygamous. It was their view that most men who have more than one wife tend to have less work hours in their fields and they rarely work in their wives' plots. Such men usually just allocate duties and only come back to monitor and inspect what has been done. Discussions with the men's group in both Monze and Sinazongwe also confirmed this and men referred to themselves as managers or directors. They also said women are a source of labor that is one of the main reasons why they married many of them in the first place. It was observed that men who have one wife found it easier to share gender roles or work with their wife than those with more wives. The female heads of households do all activities in their fields and may only pay for those activities they are not able to do such as plowing with oxen in their plots.

Oris Mweetwa said:

According to our culture, the village is for the husband but the house belongs to the wife. That is why when a man dies the widow can continue staying in the house but when the wife dies the widower cannot continue sleeping in the house. Because the owner of the house has died the man has to shift.

Interview with Mulenga Martin, Camp Extension Officer

Martin Mulenga told me that the farmers (women and men) in the scheme produce only once a year instead of throughout the year. During the rainy season they all concentrate on their rainfed crops. They say the scheme requires fertilizer and a lot of work during the rainy season. He said the major challenge in the scheme is the breakdown of pumps and that farmers use recycled seed which does not give them good yields since the cooperative does not provide them with inputs. Mulenga also told me that the ADB-SIP project trained men

and women farmers in the scheme on how to produce high value crops, but the adoption rate is very low. Although the potential of the scheme is very high, farmers do not get sufficient returns. He said the farmers are interested in growing maize, which is their staple food crop as it can be used for household food security in case of poor marketing.

The management committee does not carry out any market research despite having been trained. They seem to be only interested in water fees although they have many ways of raising funds. He further said that the BIM Company tried to do an outgrower scheme on paprika but they did not come to buy the produce. This resulted in farmers having to sell their assets in order to repay the loans. So in the scheme, the issue of paprika growing is not popular because of the experience the farmers went through. Mr Mulenga said that the government has no full control of the scheme as a result they cannot put any sanctions on those farmers who do not perform well.

He said that the 16 villages in the catchment area of the scheme have about 2,097 registered farmers but only 185 farmers have plots. The scheme was initially made for only four villages and targeted only 12 farmers. He felt he needed to increase the area under irrigation and increase productivity. He told us that there are plans to rehabilitate the 75 ha and add 200 ha land but he didn't know when this will take place.

Mr. Mulenga said there are no regular meetings of the farmers in the scheme and no monitoring reports done by management. This creates challenges in knowing how scheme members are performing. There are only internal auditors but if good governance is to be promoted there is a need to bring in external auditors. It was the view of Mulenga that women and men in the scheme are benefiting equally as they all have equal rights and equal size of plots (1 lima). The benefits depend on performance of individual farmers. On leadership, Mulenga said men seem to take more leadership positions than women. He also told me that there are some farmers who use buckets and residual moisture irrigation at the lake shore and along the Nang'ombe river. The women and men on the irrigation scheme have a better life in terms of food security and assets such as good houses, cattle, Kapenta rigs.

Changes after adoption of water technology

Both women and men said that there have seen changes in their livelihoods after adoption of agricultural water technologies. A plot in the irrigation scheme or a garden on the Nangombe River bank or the lake shore changes their lives. These changes include increased food security, more money to spend on other home requirements such as education for children, clothes, house repairs and medical fees. Three women said that the increased socio-economic status of men made them marry additional women. When there is more disposable income, patriarchal men who practice polygamy tend to marry more women as a source of cheap labor and cultural proof of masculinity. In some cases this brought conflicts and the men stopped working in the women's fields. But some households improved their status without major problems.

Summary of key thematic findings in Sinazongwe

Marriage arrangements: The man takes the lead in all marriage arrangements and makes payments such as *kuuma nkoma*, *lobola* before bringing the woman to live at his home. The

wedding ceremony takes place at the man's village. The young man and woman may have had crop fields before marriage. Traditionally, Tongas like most Zambian tribes, practice communal eating where food is brought to a common place called *nkobelo*. Traditional marriage could be monogamous or polygamous (up to six wives or more).

Social organization: The Gwembe Tonga (Wee) practice a matrilineal form of inheritance and patrilocal rule of residence during marriage. Most residents of this area were resettled during the construction of the Kariba Dam in 1958. After resettlement, families had to clear new fields for agriculture. When the young people got married some women could continue to use fields at their parent's homes if married nearby and if their husbands did not have sufficient land. Our findings indicated that women had more say on the plots they accessed from their parents and therefore should have adopted water technologies to contribute to their productivity in female managed plots.

Water availability and technologies: A communal irrigation scheme, rivers, dambos and the lake are used for multiple domestic and production uses. The main water technologies are canals, dambos, buckets and bore holes. In the irrigation scheme, women and children manage the crops. They are involved in siphoning the water and irrigation. Most girls and boys were found in plots siphoning and irrigating with their mothers. The young ones like siphoning because it requires more energy and it is 'fun' for them (*view of two women and a girl siphoning in Malima*). The people use the lake shore for crop production. Although there is abundant water from the lake, most households do not use the water for productive uses due to a number of reasons that include lack of financial support for inputs and markets, damage by domestic and wild animals (goats, cattle, hippos). The communal irrigation scheme is run by a management board of 10 members of which two are women. These are responsible for water distribution schedules, repair and maintenance of pumps, canals and conflict resolution.

Crops: The common crop grown by both men and women is maize mainly for home consumption. Other crops include cotton grown mainly by men as a cash crop and okra (*mudelele*) grown exclusively by women as a cash crop. The okra is inter-cropped with maize as rainfed but planted late in February so that it can use residual moisture. It has a good market in Lusaka and Copperbelt and buyers normally provide the inputs for production. Other crops are cabbage, rape, pumpkins and tomatoes.

Fish and vegetables: Fish and vegetables play a big role in the lives of the people in Buleya Malima. The main source of livelihood is fishing. Agriculture is a secondary form of livelihood and is mainly a female activity. Women (single and married) and children are the main workers in the irrigation scheme while men are mainly involved in fishing and trading.

Financing for water technologies: Over the years there has been assistance for the irrigation scheme to renovate the canals, mend fences and reservoirs and the members also get the government input support program. African Development Bank's Rural Irrigation Project also helped to train the members in management and production of high value crops. The women and men outside the scheme have not had any support for water technology financing. Farmers (women and men) use recycled seed for most of their crops.

Challenges: The major challenges in the scheme are pump break downs, insufficient pumping capacity, insufficient water storage, poor governance issues, and lack of reliable markets for products. Crop damage by domestic and wild animals also affect productivity.

Changes in inheritance patterns: The Tonga are exclusively matrilineal and husbands had very little to do with the care of their children as nephews and nieces were traditionally the ones to inherit the estate. The respondents said that this has since changed. The factors that influenced the changes were said to be a change in the legislation (Intestate Succession Act Number 5 of 1989), education, religion and influence from other tribes.

Cropping patterns: Women and men have separate fields but women provide most labor for crop production even in the male managed plots. The crops are mainly grown by women are sweet potatoes, groundnuts and maize. Sweet potatoes have contributed greatly to the economic well being of women in the area. Men have started growing sweet potatoes for bulk sales while women exclusively dominate local sales. The men grow maize for home consumption and sale. The gender division of labor in crop production shows that women and children do more activities than men but men have high control over the benefits from crop production.

Spending patterns: The households that are monogamous have communal spending while polygamous households had separate spending. In all cases women kept the money but those in polygamous households had no spending power over it. The men in monogamous marriages help their spouses in agricultural operations more than those in polygamous marriages.

MONZE DISTRICT

Monze is in a low rainfall region of Zambia (region 3 with average annual rainfall of less than 1,500 mm) and prone to drought in some years. The water table is low in most parts of the district. This is one of the main reasons why water conservation technologies such as pot holing were introduced to ensure successful crop yields through efficient and effective use of low annual rainfall. The sites selected are not near a river, big dam or wells for irrigation but are among areas that have adopted conservation agriculture successfully. Challenges of high investment costs and the laborious nature of bucket irrigation when used where water levels are very low or scarce inhibited most households to have many forms of AWM.

Focus group discussion with five farmers

The researcher carried out a focus group discussion with 5 farmers (two women and three men) who are related. Mr Winterson Malombo and Gentrude got married on 26th November 1996 and have seven children (2 girls and 5 boys). They live in Hamankala village while their three in-laws live in Hatila village which is nearby.

“My husband gave me a one lima field 3 years ago where I grow maize, ground nuts and sweet potatoes. The inputs I used in the first season were given to me by my husband. We work in the field with my husband and children. I also work in his 3 lima fields where we mainly grow maize for home consumption. When I harvest I usually sell some produce to raise money for inputs and some for use at home.” *Gentrude Milambo housewife*

The husband was asked why he decided to give a field to his wife and he said, "I decided to give my wife her own field so that she can be free and control the yield as she wants. This also helps me as I do not worry about what should be bought in the home on an everyday basis. I do all the farming activities in my wife's field and she also works in my field together with the children."

He told me that there are not many men that work in their wives' fields other than plowing with oxen and building storage bins. He said he only knew of four in their area. When it comes to selling, he said they usually sit together and decide how much should be sold after reserving food for home consumption. The man usually goes to the market as they have to go several times before they actually get payment from FRA. He said when he comes back from the market he gives the money to his wife who is the treasurer in the house. The money is kept by the wife but budgeting is done by both of them. As for ground nuts and sweet potatoes, his wife does the selling and buys whatever she wants. The wife said they sometimes put the money together to buy fertilizer and seed.

Gertrude told me that her husband mainly makes the major decisions in the family but they mostly consult each other. She said sweet potato is a woman's crop and many women have even bought animals from sells of sweet potatoes. This was confirmed by her brother Malambo

Conservation farming in Monze

The informants in the focus group discussion said that conservation agriculture (CA) was promoted by NGOs in the early 1990s. In the beginning, farmers were given incentives such as seeds, fertilizer or food during the drought and hunger years. Because the official policy was to target heads of households, most people involved in conservation agriculture were men. A few female headed households (de jure and de facto) were also targeted. The common method was pot holing that was taught to farmers by GTZ. Milambo said that they saw the benefits of CA from the people who were using it and they decided to adopt it. The benefits of CA that they listed include:

- Higher yields. We harvested 12 x 50 kg bags of maize that we sold and bought an ox.
- We plant early and the maize germinates with first rains. This means we are able to harvest early when food is insufficient in most homes.
- The fertilizer is given directly to the crop. No wastage.
- The same place (hole) is used the following year therefore can use the residue fertilizer.
- Three plants are put per station so there is higher crop density than conventional farming. It gives higher yield.

When asked to estimate how many people were practicing conservation agriculture, he said it about 70% (more men than women plots). The respondents said that the major challenges of conservation agriculture are high labor requirements, inadequate tools (shaka hoes, ripper) and herbicides, lack of adequate knowledge on use of herbicides and no demonstration plots in Hamwiimbu community where farmers can learn best practices.

Recommendations on conservation agriculture

- Provide training to farmers on use of herbicides.
- Input support to farmers (fertilizer, shaka hoes, rippers, herbicides).
- Provide demonstration plots.

Rules of residence during marriage in Monze

Men in the area mainly stay at their father's villages and weddings take place at the man's village. Inheritance of property was mainly matrilineal but these days children inherit from their fathers and mothers. The influencing factors of the changes in inheritance pattern was said to include a change in statutory laws (Intestate Succession Act No. 5 of 1989), sensitizations by NGOs, religion, education and adopting other people's good cultural practices. The participants agreed that accordingly to Tonga culture the village belongs to the man (husband) while houses belong to the women (wives).

Focus group discussion with farmers at Hamwimbu school

Monze was mainly chosen for conservation farming. The sites were Kayuni settlement and Hamwiimbu community. These are predominantly farming areas that practice mixed farming. (animals and crops). On marriage, we were told by both men and women groups that the people of Monze also follow the Tonga tradition of a man paying *lobola* and bringing the woman to live at his paternal home. The payments include:

- *Cimamuna mulomo*; usually less than K10,000. Paid to open/start the marriage discussions.
- *Mawenehya* (< K50,000). This is equivalent to *nsalamu* in Bembaland. It is the official recognition of the marriage.
- *Ng'ombe muyumohya*.
- *Ng'ombe malyansima*. *Mawenehya* and *Ng'ombe malyansima* are very important and must be paid before marriage can go ahead.
- *Ciiko*, which is usually four animals (2 males and 2 females). If this is not paid when the wife dies, burial will not take place until it is paid. When a marriage is dissolved it is not returned.
- The other small payments include *cilenzu*, *maamba*, *mansumo*, *muumpa*, *amunzila* which is usually about K100, 000.

These payments are necessary to solidify the marriage and have rights and duties in marriage. A young man or woman may have a field and a house before marrying. Both the woman and man's relatives will contribute towards the wedding costs. The wedding ceremony always takes place at the man's place who usually stays at his father's village. The young couple will usually eat and work at the parental home for up to one year before they start their own fields. Agarwal (1994, p.140) noted that virilocality and neolocality are associated with erosion of women's land rights in matrilineal societies. This is true even in the case of women in the study sites in Monze (Hamwiimbu and Kayuni settlement) even though Tongas follow matrilineal systems they had to migrate into settlements, urban areas or other rural areas when land became scarce or in search of other sources of livelihood.

The Tonga in the Gwembe valley (Wee Tonga) were also resettled when the Kariba Dam was constructed and this meant that households had to start new fields. Although Scadder

(1956) says that older women had bigger fields in the valley, the men who were heads of households were the ones who controlled household assets. The women could not control land in their own right as they were not heads of households. It has been observed that women can only continue to have control over land if they reside in their traditional matrilineal joint family estate throughout their lives, including after marriage (Agarwal, 1994). Generally this seems to affect women's adoption and management of agricultural water technologies. The socio-cultural ideology that subordinates women to men in all major decision making positions was pronounced in study sites of southern and central province.

Key thematic findings in Monze

Marriage arrangements: The man takes the lead in all marriage arrangements and makes payments such as *kuuma nkoma*, *lobola* before bringing the woman to live at his home. The wedding ceremony takes place at the man's village. The young man and woman may have had crop fields before marriage. Traditionally Wee Tongas, like most Zambian tribes, practice communal eating where food was brought at common place called *nkobelo*. Traditional marriage could be monogamous or polygamous (up to six wives or more).

Social organization. The Gwembe Tonga (Wee) practice a matrilineal form of inheritance and patrilocal rule of residence during marriage. Most residents of this area were resettled during the construction of the Kariba Dam in 1958. After resettlement, families had to clear new fields for agriculture. When the young people got married some women could continue to use fields at their parents' homes if married nearby and if their husbands did not have sufficient land. Our findings indicated that women had more say on the plots that they accessed from their parents and therefore should have adopted water technologies to contribute to their productivity in female managed plots.

Availability of water: Monze is in low rainfall region of the country where annual rainfall is usually less than 1000 mm per year. The water table is very low in the study sites. There are a few small gardens where rope and bucket pumps are the main technology. Some female and male farmers use pot holing and ripping methods of conservation agriculture.

Conservation agriculture: The respondents said close to 70% of women and men farmers use CA. The advantages include:

- Better productivity;
- Less labor;
- You finish early so you have time to do other farm activities;
- Timeliness of planting;
- You can harvest more even when you have no oxen;
- No flooding;
- Early growth with first rains;
- No soil erosion;
- Economic use of fertilizer; and
- Can be done even in gardens.

Despite these advantages, all women and men farmers do not use conservation agriculture due to high costs of herbicides and inadequate knowledge of how to use them and the myth of soil fertility loss through use of herbicides. There are organizations that help in technical aspects of conservation farming but lack of adequate input financing support is hampering increase of size of fields.

Community Structure

I interviewed a group of six men and five women separately at Kayuni settlement and they both agreed on some aspects of the history and management of the settlement. Kayuni settlement is one of three state lands found in Monze District. The people were given farms in this area by government in the early 1960s after it acquired a farm from a white settler. The farms are in the names of mainly the men but older occupants have given portions of their land to adult children and other relatives who cultivate them annually. The individual families contribute money towards ground rates. All women whose husbands have died continued to stay on the farms with their children and relatives of their deceased husbands. The settlement has various committees responsible for coordinating specific social and economic activities in the settlement.

Summary of interview with a group of five women at Kayuni settlement in Monze

We are in a polygamous marriage and we are four. Our husband cuts portions of his farm and gives it to each one of us to grow our own crops. He also has his own big field. We work all days in his field and we have to depend on hired labor or work in the afternoon in our individual fields. Our husband gives technical advice and usually demonstrates how some operations are done and then we do most of the work with children. We do not use the same portions every year and sometimes he even denies us fields to plant our own individual crops. In this case we have to rent fields from neighbors. There are actually more times we have rented fields than used his land for cultivation. We mainly grow maize, groundnuts and sweet potatoes. We have to find the inputs by ourselves.

In Sinazongwe there is land scarcity for most households. The women in Kalabo village in Katuba are using the land that was given to them by their maternal uncle and they said they have used those plots for many years. Generally, women's security of land tenure under customary systems is weak in most parts of Zambia. Studies by Zambia Land Alliance and other CSOs have highlighted this as a common challenge to women's adoption of productive innovations and productivity. There is a women's land rights project that is working on this funded by MS Actionaid Zambia and implemented in some selected districts in central and Southern Province.

When we harvest, we reserve some produce for home consumption and sell the extra to raise money for inputs (fertilizer, seed, chemicals), children's clothes and clothing. We also have our own individual bank accounts and we deposit some money in them. We have full control over the produce from our individual plots. Our husband controls what

we harvest from his field that we work with the children. He normally reserves some harvest for home consumption before he sells. He also pays some children's costs in each of the four households. As wives we have to struggle to raise other costs of raising the children.

Other than food, we have to take care of all our individual costs. We are not happy as we do not benefit from the labor that is used in our husband's field. Each wife eats breakfast with her own children but as for lunch and dinner we have a roster for cooking for the whole compound and eat together. In other homes where there is more than one wife, the individual wives do all things independently. There is usually competition for attention of the husband and conflicts are common.

We only do pot holing and irrigation using buckets in the gardens where we grow sweet potato vines which we use as seed during rainy season.

"I am a contact farmer for CA and I was given a ripper by Conservation Farming Unit (CFU) that I lend to other women and men farmers interested in using it. I use the ripper in most of my rainfed plots and I have observed an increase in yields after adoption of CA. I share my knowledge and skills with 15 other female and male farmers. Some have started using CA in their fields but not 100% as it requires more money for herbicides." *Woman contact farmer*

The whole of Monze District has 24 agricultural camps with 28 lead farmers who have 15 follower farmers each doing conservation agriculture under the project funded by FAO through funding from EU. The Norwegian Embassy is rolling out CA in Monze and a field day on land preparation in Miyoba agricultural camp was organized at the time of the filed study.

Most women in Kayuni grow sweet potatoes on their individual plots. Sweet potatoes have the following advantages: cash on the spot when selling, harvested early around March and start selling to get money for our home use, leaves are used as fodder for livestock feeding and relish for people, sweet potatoes are cheap to grow as they do not require fertilizer and chemicals hence even very poor women can grow them.

The women also said they face no competition and less interference from men in growing sweet potatoes. Two women said they were able to buy big assets like livestock (goats, pigs and chickens) from money raised from selling sweet potatoes. However, despite all the advantages the women also said that sweet potatoes have the challenge of poor markets unless harvested early and that they rot easily.

On the history of conservation farming, the women said that it started in the early 1980s in their area after problems experienced from persistent droughts and hunger. The NGOs that promoted CA were the Cooperative League of United States of America (CLUSA), DAPP and GTZ. These were facilitated by government extension services. It was a common practice to give farmers incentives such as food, assorted seeds, fertilizers and chemicals so that

adoption rate could be improved. They said both women and men mainly use pot holing and ripping but not at 100% due to high labor demand. The women praised CA as it gives higher yields.

Women's' views on advantages of CA:

- You can harvest something even during the years of drought or floods.
- We get more money from sale of extra yields.
- Saves time that can be used to do other farm operations.
- We now have demonstration plots where farmers can learn the practices.
- With a ripper one can use with even two oxen and this helps those with little draught power.

The women also noted the challenges of CA as:

- Requires more labor to make pot holes.
- Expensive herbicides and tools.

“We recommended that if any assistance for women plots is given it should be directed to them as it will not reach women if it is given through their husbands. The husbands should just be notified. We can invest in long-term water harvesting technologies as our husbands know that all our investments are for the children. As we speak some of us have received dairy cows from Land O’ Lakes and rippers from CASP.” *A women’s group*

A men’s group

All the six men who participated in the focus group discussion said that they practice conservation agriculture but not on 100% of their plots due to labor constraints. The main methods used are pot holing and ripping. They said many farmers in the area prefer ripping because it does not demand much labor. The men said that CA was introduced in their community by NGOs and government agencies as a method to mitigate the negatives effects of droughts. They said the technology is used in both women’s and men’s plots, especially those without draught animal power. Due to high labor requirements and the fact that pot holing has to start in April when the soil is still wet, most families cultivate less than 5 ha each under CA.

The men’s group listed the following as advantages of CA

- Better productivity;
- Less labor; fewer hours weeding since they use herbicides to control weeds;
- You finish early so you have time to do other farm activities;
- Timeliness of planting. You can harvest more even when you have no oxen;
- No flooding as water does not stagnate in plots even when it rains heavily;
- Early growth with first rains;
- No soil erosion;
- Economic use of fertilizer; and
- Can be done even in gardens.

Disadvantages of CA

- Expensive herbicides;
- No adequate knowledge or education on use of chemicals; and
- Free range animals bury holes or lines.

The men's group was asked to construct an activity profile for their plots:

Activity	Who does it
Stamping	Men, women and children
Potholing	Mostly men
Ripping	Exclusively men
Liming	Men, women and adult children
Manuring	Mostly women and children
Planting	Mostly women
Covering seed	Women
Harrowing	Men
Spraying with herbicides	Mostly men
Top dressing	Men, women and children
Harvesting	Women, children and workers
Ferrying maize	Boys
Building bans	Mostly men
Shelling	Women and children
Budgeting HH food	Exclusively women
Marketing	Mostly men but receipts in owner of crop's name
House budget	Joint with men's guidance
Keeping house cash	Women but men have high control

The difference in the activity profile done by men and women on female managed plots is that the men plow and harrow with oxen in the women's fields while they do all other activities in their own plots with the help of children or hired labor in some cases. These include seeding, weeding, manuring/fertilizing, and harvesting. Men may transport the cow manure to the field.

When asked to comment on the gender division of labor between men and women in their community, the headman said that women do most of the general activities in all the plots including CA. He said was expected of women to do that because it is *mulawo* or culture. A woman who is lazy and fails to grow food for her household will starve with her children. Two men said that women and men in households should work together if food security and development is to be achieved in the community.

“I can allow my wife to invest in water technologies. This time it is possible as we have laws that protect widows from property grabbing. Land O’ Lakes was giving cows to women and as husbands we have accepted this. My wife is milking but I have no cows myself...”

“At Harmony settlement where I have come from the Catholic Church gave a lot of cows and goats to women, they were also given solar panels and their homes have electricity. There is happiness in households as men have accepted this. Even in villages women own property.”

“The common water technologies are buckets, open wells and hand pumps. You cannot irrigate a big field with a bucket because they are heavy. Water pipes are also expensive for most households in rural communities.”

Male respondents

Another key informant, a retired district agricultural officer, said that the coming of commercial farming in Southern Province promoted polygamy among the Tonga speaking people as they viewed women and children as a source of cheap farming labor. The white farmers could afford to hire paid laborers while the indigenous farmers had to depend on family labor. He said in the olden days additional wives were usually widows of deceased brothers who had to be married to take care of the children.

Men’s crops

The men’s group said that maize for consumption and sale is still their responsibility as heads of households. They said that of late, men grow sweet potatoes and groundnuts sold at the road side by women or taken to Livingstone and Siavonga where men do the selling in bulk. The men have started growing sweet potatoes because it’s a cash crop, but not many men grow sweet potatoes. It is still a women’s crop and the men jokingly said that one man had died last year because to sell sweet potatoes at the roadside was taboo.

Women’s crops

The crops that men considered to be common on female plots are maize, sweet potatoes, ground nuts, cabbage, bambara nuts and peas. When asked whether as men they work in their wives’ bucket or treadle pump irrigated plots, men said they so do especially for plowing with oxen or ripping. They also said that occasionally they buy inputs and pay for workers to assist in the wife’s plot. The men confirmed that they get gifts of cash, clothes and other items from their wives after the sale of crops grown in their own plots.

CHIBOMBO DISTRICT, KATUBA SITE

Meeting With Chief Mungule at Kakoma Palace

Introductions and Purpose of Meeting

Miriam Nkoloma took over the throne as Chief Mungule when her daughter Daisie Mulisa died. The first settlers after the indigenous Lenjes were the Shonas and Ndebeles from Zimbabwe and other Zambian tribes such as the Tongas, Ngonis, Lozis, Luvale’s and Bembas. The reason for the migration were business opportunities, retirement, and search for farm land.

There are 265 headpersons, of these only about 5% are female. The chiefdom has three headpersons chosen as advisors and all are men. The three sit with the chief during the traditional court sessions. Court sits every Tuesday and Thursday. Most cases involve land disputes and marital problems.

The chief explained how marriages were contracted. The modern way of contracting marriages has eroded culture and tradition as a young man and woman start cohabiting but eventually follow tradition. The man sends elders to the woman's home. The elders ask the woman whether she has given the man consent to marry her. If she consents, negotiations for payment of the bride price are carried out. After the *lobola* is paid, the woman is married. Should the two divorce, *lobola* is paid back. The chief said that about thirty thousand kwacha (K30,000) is paid. The woman then shifts from her paternal home to her husband's village. However, there are some cases where the man shifts to stay in his wife's village but these cases are few.

If the man fails to pay *lobola*, the children would belong to the wife if the two divorce. If however, one of the spouses dies and had left a will, the will is followed, otherwise the Intestate Succession Act takes effect.

The husband is given land where the new family settles and engages in farming. This land is either given by the village headperson or by his father. The wife gets her land from her husband. Usually the husband buys farming implements and the woman buys utensils for the kitchen. In the husband's field, cash crops and crops for consumption are grown. The woman grows crops and disposes of those crops however she likes.

There is a difference in the crops grown in the man's field and in the woman's field. Usually cash crops such as maize, cotton, and sunflowers are grown in the man's field and crops such as sweet potatoes, ground nuts and other green leafy vegetables are grown in the woman's field. The woman's field is taken away when not in use for a long time. The woman only has user rights to land given. This right can be extended even after the husband dies.

The chief went on to explain how traditional land is changed to titled land. The person would have lived on that land for at least five years. The head of the village would write a letter of consent for the person to the chief. The chief would then write to Chibombo District giving her consent for the person to put the land under title. The person then pays homage or gives a gift of appreciation to the chief. The district land survey would be informed and send a surveyor to survey the land and give a report.

Day Two Focus group discussion with community leaders

Meeting held at Moomba Catholic Church Hall, at Moomba Parish

The group was asked to discuss the migration trends in Katuba. Some said people migrated as a result of retirement from their formal employment to settle in Katuba; others said people migrated because of business opportunities and to look for farm land, while some were refugees from Zimbabwe. Among the first settlers were the Ndebele and Shona from Zimbabwe. Others were the Tongas, Chewas, Lozis and Bembas.

The headmen were asked to inform the group about the process of acquiring land. The headmen said that people paid K300,000 for them to be given land and to be entered into the village register as title holders. The title holders relinquish this land back to the headmen should they decide to leave the village. The title holders only have user rights and cannot sell this land. Women and men are free to obtain land in this manner, although women rarely ask for land from headmen because a woman would be perceived as competing with their husband if she requested her own land.

After land is given to the title holder, he has to stay on the land for five years before he can request full title to the land. The headman then introduces him to the chief to request full title to the land. When the chief consents, the title holder then hires a surveyor to survey the land and demarcate it. When the chief is satisfied with the demarcation, the title holder is given a consent letter to take to Chibombo District Council where further processing for title deeds is done. The title holder is then called for interviews to tell the Council what his plans are for the land. Officers at Chibombo also carry out their own physical inspection of the land to ensure that information obtained from the title holder is correct. Fees are paid to Chibombo Council for land and the Council then gives the title holder consent papers to take to Ministry of Land in Lusaka. It has been known however that in recent times, many title holders do not stay on acquired land for five years as they immediately request for the land to be put on title. In the recent past (about last three years) people purchase land from locals and immediately process title deeds.

The group was asked to discuss the advantages and disadvantages of selling land

Advantages

- The seller acquires purchasing power of other products and items that they never had before;
- Home improvements made by locals who build durable housing structures;
- Welfare of the household generally improves depending on how much land has been sold and money acquired as result of the sale. Locals compete to build better housing structure;
- Local people also have a chance to secure their remaining land as they use the money acquired from the sale to process title deeds for their land;
- Some traditional leaders encouraged their people to process titles for their land to secure their land and the only way possible was to sell some to raise money. This was done to block further encroachment into Katuba by Lusaka City Council; and
- Farming systems have improved with the acquisition of money to purchase inputs. Many have bought motorized pumps.

Disadvantages

- Danger that indigenous children will have no land to settle on as population increases; and
- Title holders may not feel the obligation to pay homage to the headmen or the chief as they become independent of the local leader when they put their land on title. (the leader has no say over that land any more).

The group also informed us that when a couple acquires land from the headman, the land belongs to the man. The couple will till the man's land and prepare it for farming. Weeding is usually the woman's responsibility. At harvesting time the husband takes the produce to the market for sale and he has the power over the use of the money. The group made the activity profile below;

Responsibility	By
Plowing	both man and woman
Weeding	women and children
Fertilizer	man and woman
Harvesting	man and woman and hired labor
Marketing and selling	mainly by the man (produce belongs to man)

After the produce is sold, the money is given to the wife for safe-keeping, however, the woman cannot use any of it without her husband's consent. The household budget is made in consultation with the wife. However, Headman Mutakwa was quick to point out that not all decisions need consultation with the wife lest she boasts that her husband always does what she says.

Emmanuel Kondowe disagreed that the couple consult each other when it comes to the use of money. He indicated that young couples had a tendency whereby each person had their own money and thus women were able to buy or use their money in whichever way they liked. He saw this as a disadvantage and an erosion of culture because then the couple does not work in union to develop their family. Kondowe attributes this freedom of expenditure to misinformation about gender. He stated that people did not understand the meaning of gender equity as equity comes with responsibilities. A long time ago, the power to spend money was vested in the man and not the wife. The wife's responsibility was to keep the money safe. This has been the norm for older people. It was also true to say that men did benefit from their wife's garden or harvest.

It was observed that immigrants or urbanized citizens tend to distort the local social cultural relations. Katuba area has been highly infiltrated by other cultures for a long time and because it is close to Lusaka there is a tendency to copy a lot of other people's cultural norms. The patriarchal norms that were promoted by the British and religious leaders seem to have eroded the decision making power and control of women over major productive resources and benefits and everyday life of Lenje women..

Traditionally, where women's status is valued and respected (e.g. Barotseland for Lozis) women do not change their maiden names even after marriage. The MRS is a borrowed culture from the global north. Women are called by their maiden names or when they have the first child they are called "mother of so or so". This is still true in most parts of Zambia.

The group talked about agriculture practices or methods used in Katuba. They said it was a mixture of conventional and traditional farming. The use of tractors and animals, mainly cattle for plowing, was common. Conservation farming was also practiced. The technologies used for water conveyance were buckets, treadle and motor engine pumps. World Wide Fund (WWF) distributed motorized pumps. WWF also trained some community members to repair domestic water pumps.

Cooperatives had been formed where ten or more people put resources together to practice vegetable farming. Katuba obtained its farming inputs from Lusaka. The market situation is most of the time not favorable as small scale farmers compete with commercial farmers in marketing and selling their produce. The market is quite harsh to small farmers who have to transport their produce to Soweto Market where middlemen have to be paid.

When the market is good and farmers are able to sell at a profit, farmers are able to buy assets such as television sets, bicycles, build better houses and buy water pumps. The standard of living also improves as farmers are able to pay their children's school fees and are able to provide more meals for their families.

The group was asked to point out what it would take to support small scale farmers in Katuba. There seemed to be an agreement that usually the people targeted and who benefit from farming technologies brought by donors were not the right people because they were not farmers. Emmanuel said there was need to organize those interested in farming and to make sure those who benefited were real farmers, otherwise people just sold the pumps they collected from donors.

Others said donors usually asked farmers to be in groups and that sometimes group formations were not successful. He said groups of ten members was just too many people to succeed. He recommended five people in one group. Ms. Shaba said the best entry point for donors would be through cooperatives. Farmers would need the following support; training, export markets, pricing, transport inputs and technology. Before the end of the groups discussions, the group was asked to map Atuba's community capital that represents resources of most importance for use by farmers.

Case study of Emmanuel Kondowe

Emmanuel Kondowe lives in Manyama village. His father was a farmer who died and left land of about one hectare for his children. Emmanuel and his siblings use this land to cultivate vegetables like rape, cabbage, and sweet potato leaves. The garden has about five wells which do not dry. Emmanuel harvests about 20 boxes of tomatoes every week for nine months by using good seed varieties that give crops for up to nine months. During the case study tour, the garden had no crops. Emmanuel said he had planted rape but was disappointed by the prices at Soweto Market because he had a tremendous loss. He gave away the rest of his crop because he did not see the need to continue making losses by tending the crop and using more energy and other inputs to make it ready for the market. Emmanuel usually uses a motorized pump to water the garden twice in a week. He also had polythene pipes which he uses to convey water to the crops. He uses about five liters of fuel every week.

Emmanuel said his wife had a garden also and that he helped get inputs for her garden. He also helped with cultivation and selling the harvest. He was quick to add that his wife was free to spend the money from her harvest but indicated that some of the produce in his field was used for home consumption and some was sold. It was clear from his explanation that he had knowledge of farming and the crops he planted. He said that his father was a farmer and that he grew up helping his father in the garden.

Emmanuel explained the difficulties faced when marketing his crops. He said that competition was tough as he had to compete with commercial farmers who had better crops because they had access to technology, inputs and transport. Emmanuel was proud to showcase his field by producing photographs that showed his crop at the peak of harvest.

Emmanuel's wife was interviewed. She was found at the market selling chickens. Emmanuel said this was because gardening was not profitable anymore and so the couple made money selling chickens. Emmanuel's wife sold about seven to fifteen chickens a day. She confirmed Emmanuel's assertions that she was free to spend money from her garden sales. She also said that she kept money from sale of produce from Emmanuel's garden and that sometimes Emmanuel consulted her in the use of money.

Case study in Kalabo village

Naomi Tembo who is the Chief Local Court Justice was interviewed. Naomi resides in Headman Kalabo's village and introduced some of the farmers; Kent Shambukila, Victor Kalabo (Deputy Headman), John Nyati, Caroline Shimindi, Esnat Kalabo, Modern Shyenge, Mariana Kalabo, Mary Tembo, Angela Miyanda, Rabeca Tembo, Martha Shimbukila, Evelyn Chiyenge. These people are a group of farmers who have gardens next to each other and grow crops such as cabbage and sweet potatoes leaves and rape. Naomi showed us a field in which cabbages were almost ready for harvest but was very dry. She said the field belongs to one of the women we found at the market. This woman was not able to continue tending and watering her crop because she was tired. Her water conveyance method was a bucket. She complained of muscle ache around her shoulder and back as a result of carrying water in buckets to water the garden. The crop had been abandoned and was going to waste despite the fact that it was almost ready for harvest.

We found Kent Shambukila and his wife tending their garden. Kent had put up nursery beds for rape and was watering using a motorized pump. The crop had just sprung up. Kent said that the pump was not his, he was renting it at K50,000 a week. Despite paying this amount he had to buy the fuel. He said he used about five liters of fuel every week.

Two young boys came carrying a motorized pump and we were told they were Caroline Shiimiindi's children. They had come to water the garden. Caroline is second wife to a Mr. Shimindi who lives in the next village. She told us that her husband helped her obtain farming inputs. She lamented that renting pumps was just too costly and the owner of the pump always required her to pay in advance. She said she could not plow a bigger portion because she did not have enough inputs and transport to take her harvest to the market. Caroline reaffirmed Emmanuel's fears over marketing crops. She said it was difficult to fetch a good price for her crops, especially that the market in Soweto was not favorable to small farmers who competed with big farmers.

Victor Kalabo was interviewed at his homestead. Victor was proud to show off his new house which was made from cement blocks and iron roofing sheets. The house was reasonably well furnished. Victor had bought a generator which he used to light his house and was able to watch television. He was a subscriber of a multichoice television network. Victor said he was able to acquire all this through vegetable gardening and that he had recently sold a part of his field so that he could build a better house. He showed us his old house which was made of mud with a grass roof. He was proud to say he had stopped drinking beer and that was why he was able to buy all the assets we saw.

Naomi then took us to her homestead where she said she migrated to in 1961. She showed us her garden of vegetables (cabbages and tomatoes). The cabbages were ready for harvest. Naomi had a well and a motorized pump that was used for watering her vegetables and pumping water into a tank. She was proud to show us her building projects. She had built a bar with modern toilets (flush, not pit latrines).

Naomi was interviewed to confirm certain information obtained from the chief and other people. She said she held court sessions every Tuesday and Thursday at the *inkuta* or traditional court and that the majority of cases involved disputes over land and marital problems. She told us of a case in which some religious cult, the Lenshinas, were evicted from titled land. This group of people had settled on someone's land who had not given them permission to do so. This person allowed them to stay there. However, the owner sold the land and now the new owner wanted them out. The Lenshina's had been resisting this. She said there was a need to resettle this group elsewhere and was working with the chief to do that.

Naomi reaffirmed the procedure for contracting marriage although she mentioned a higher amount for payment of dowry or bride price. Bride price usually ranged from K200,000 to about K400,000. Other payments included three to six cows. If the groom did not have cows he would pay about three million. Other payments included purchase of a blanket, a suit and a *chitenge* (women's wrapper) for the bride's parents.

Naomi said the man can shift to the woman's village if the woman's family is richer or if the man was an orphan and had no family support. If the woman shifts to stay with her husband's family, her husband allocates her a field. The practice is that the husband buys clothes for his wife twice a year in June and December.

Day four visit to Lumina, Watunyama and Chikumbi villages in Chombela

Met Ms. Veronica Ndalela whose father was a Lozi from Western Province but settled within the area after retirement. She had got married in Lumina village and had all her children there. She had eleven children and had about one hectare of land which she wanted to sell to obtain money to improve her house and livelihood. We visited her field. She used this field only during the rainy season and had planted some tomatoes and maize last season. The field was near a dambo area in Chikumbi village.

The brother to headman Chikumbi (Miriam Mwiinga's husband) was also interviewed. Mr. Mwiinga also had one hectare of land for sale. This land had been given to one person who wanted to sell it and go back to his paternal village in Mazabuka District of Southern

Province. His children had called him so they could look after him as he was getting old and was frequently ill. There were about six wells and some fruit trees on this land. The person cannot sell this land without the approval of the village headman.

Mr. Mwiinga was interviewed. He was deputy headman of Chikumbi village. Mr. Mwiinga has two wives and said that he gave each of his wives a field. He said he took turns to help his two wives in their fields. He affirmed Miriam's statement that as head of the household he was the owner of the crops harvested and therefore was also in charge of marketing the crops. That Miriam was the safe keeper of the money for the household. Although Miriam kept the money she was not allowed to send any without the husband's consent. He also reaffirmed that he was not in charge of the harvest from Miriam's field but that he did help Miriam with inputs.

Day five visit to Chiimbo village

A transact walk through Mr. Mpofu's vegetable garden was made. Mr. Mpofu was proud to show his vegetables (tomatoes and cabbages) to the researchers. The garden had a well and Mr. Mpofu said he used a motorized water pump. He reaffirmed the need to source for markets outside the country and also the traditional culture of allowing his wife to keep money for household use but not to use it without his permission or authority. He also confirmed that he helped with his wives' gardens. Mr. Mpofu had two wives.

Mr. Mpofu belongs to a cooperative which was assisted with a hand pump and a project for reforestation. The cooperative had a nursery for trees like neem and moringa. Their plan is to plant the trees in their area and then sell extras to other villagers

Key thematic findings in Katuba

Social organization: The people are matrilineal but men follow patriarchal norms and behavior. There is a need mainstream gender in all activities of any project that can have meaningful benefits to the people in this area, especially the indigenous peoples. This will help to provide equitable opportunities for women and men in Katuba.

Plot ownership: Most crop plots are owned by men and women and children work in the field to harvest crops whose benefits they do not control. Even where wives may harvest their own crops from their own fields they have to pay the husband who would be the owner of the land. Some women who owned plots inherited from parents or deceased spouses. These women have more control over the management and benefits of the plots they own. Some women had acquired land through purchase or requesting from the traditional leadership (village head person) and also worked well with their spouses.

Water availability and technologies: The area has a lot of wells where motorized pumps and buckets are used to irrigate crops. The major crops grown under irrigation are cabbage, rape, tomatoes, sweet potato vines and green maize. As in most study sites, women and children are the main providers of labor. The research observed that buckets as a water technology are predominantly used by women (married and single) and children while motor pumps are used by men and boys. This is true for both female and male gardeners. There is a gender division of labor and access to and control over the water pumps between women/girls and men/boys that shows that when water technologies improve, men and

boys take control of sophisticated operations. It is recommended that women/girls should be exposed to the operations and maintenance of water pumps so that they can also increase their control over resources and benefits. This can be done through affirmative action of selecting and training women in pump operations and then giving them loans to purchase motor pumps as women's groups of two to six members.

Access to water financing and markets: We were told by respondents that some groups had got group loans to buy motorized pumps from Hamos facilitated by IDE, but further probing revealed that although loans were disbursed, the recipients used the money for small businesses and only two bought treadle pumps. The amounts in the first phase ranged from K250,000 to K750,000 while the second phase ranged from K750,000 to K1,500,000. They said the amounts they were given as individuals for the first phase were insufficient to buy a motorized pump. Their repayment has been 100% and the potential to provide more male and female farmers with loans to buy water technologies is high. They just need mobilization as Homas is still willing to provide the loans.

The 30 pumps that were accessed from WWF for groups of women and men had done very well. All except one were still operational and 30 individuals (men and women) had bought their own individual motorized water pumps from the profits they got after using the group pump.

Providing assets to women in groups was found to be effective as it ensures group solidarity. Women have increased control over assets of the group as rules and regulations are made collectively and they can use that to protect themselves from husbands who may want to misuse women's benefits. The women's groups should be smaller to ensure that adequate individual benefits are accessed within a short time.

KEY FINDINGS, OBSERVATIONS AND CONCLUSIONS

Local culture/custom and control over water technologies and benefits: It was established that the local culture and custom has a great influence on the levels of access, control and ownership of water technologies and benefits derived from them. All the people in the study sites still have a strong belief in local customs and culture. In communities where matrilineal and matrilineal residence patterns are practiced, women will have high control over decision making. In patrilineal communities, whether matrilineal or patrilineal, this study found that women will have less control over the agricultural water technologies and the benefits derived from them. The presence of relatives of either the wife or husband's kin will give an advantage to the wife or husband. Thus, the women in Mpika got more benefits from agricultural water technology use than men, while those in Sinazongwe and Monze had low benefits. The implementation of any water technology project should be preceded by gender sensitization workshops for women and men to create awareness of the importance of gender mainstreaming in the targeted communities for effective program delivery.

The couples involved in AWM solutions do not pool their resources to buy improved water technologies for increased productivity. This could be attributed to the fact that joint titling (joint ownership) of assets is still not common in Zambia. Women and men may be in a marriage but still acquire productive assets separately due to the influence of culture and

tradition that still considers the two people to be unrelated and therefore share properties in the event of death or divorce. The recent practice of property grabbing after the death of husband or wife discourages women to have joint ownership of durable assets. More work needs to be done to take advantage of the benefits of joint ownership in households.

Water availability and utilization: In all the study sites, water was readily available for multiple uses, but its effective and efficient use for productive purposes was hampered by lack of support or provision of appropriate water technologies and markets. There is no active provider for financing of water technologies and the buyers of products are also informal as farmers have to seek their own markets outside their communities where competition with commercial farmers or transport difficulties were a major challenge. The entry points for up scaling opportunities for water technology adoptions and management could be input market-side in some areas such as Katuba and Monze. Then the women and men who sell their produce can be assisted to buy inputs from within their communities or outside. In distant areas such as Mpika and Sinazongwe, it may be necessary to strengthen the supply of inputs and markets at the same time. In all cases, the government, privates sector and individual men and women should collaborate for effective business model implementation.

Male headship of households: Since official and societal norms see men as heads of households and decision makers in most community or household matters, men in Sinazongwe, Monze and Katuba study sites have exclusive control over benefits from water technologies even where they put minimum effort. This calls for participatory gender and entrepreneurship capacity building for the target communities.

Female headed households are autonomous decision makers and implementers in agricultural water technologies and management.

Roles of households in the community economy

Households (HHs) are defined to be all the people who live under one roof and who make (or are subject to others making for them) joint, social, cultural and financial decisions. The household constitutes the most important component of the local economy. The main economic functions of households relevant within the context of the local economy or water technology management include the following:

- HHs provide labor and management (or decision making) services to businesses, both local and external, as well as to the government sector, schools, hospitals, and private investors;
- HHs are a source of savings that can be used by enterprises, both local and external, to finance investment and build physical capital such as water pumps, canals, motor vehicles, and water storage facilities;
- HHs are the purchasers of goods and services sold in the local economy, thus they are the basic unit of consumption;
- HHs pay taxes and as a consequence are a major source of government revenue;

- they undertake some production functions directly through micro enterprises, home-based production (including production for sale), volunteer activities and the like;
- HHs are the principle source of reproduction, care and education in the community and national labor force.

The contribution that households make to the economy is multidimensional, affecting not only adoption, management, production and consumption of products, but other aspects of community life as well. Economists have approached the economic significance of the household from two perspectives. One approach focuses on the *external* relations *between* the household and the larger economy, and examines the particular role and characteristics of the household as a unit of production and consumption.

The second perspective looks at the *internal* dynamics of the household economy, focusing on the division of labor and wealth *within* that basic unit, and how these internal relations affect and are affected by external economic forces.

These two approaches are complementary and their strategic use positively affects water technology adoption and management and has benefits of household food security and wealth creation. This calls for participatory gender mainstreaming in the sites of the projects so that the local socio-cultural and economic dynamics at play can be understood and effectively used.

Stages in Forming Community Partnerships

1. Recognize that a problem or need exists and that more than one party needs to be involved (government, private sector, community/households).
2. Establish common goals and interests to create the incentive to work together in AWM solutions.
3. Recognize that all players can best achieve some of their goals by working together.
4. Develop a strategy and work plans for reaching mutually agreed upon goals.
5. Commitment of resources to implement and evaluate the strategy and work plans.

Annex 1: Field work timetable

Gender in water technology adoption and management survey; funded by IWMI and implemented by FASAZ.

Proposed fieldwork timetable

DATES	LOCATION/SITES	TEAM MEMBERS
Sunday 22nd August to Saturday 28th August 2010	Mpika Boma, Chikwanda Palace, Katongo Kapala Katibunga and Mwansa bamba	Vincent, Gondwe, Enerst, Emmanuel & Phiri Mr. Nsampa-Local support
Sunday 29th August to Saturday 4th September 2010	Sinazongwe – Boma, Maliko Palace, Buleya Malima & Kaluli	Vincent, Gondwe, Mweembe, Munachilao & Enerst Mr. Mwaanga-Local support
Saturday 4th September to Saturday 11th September 2010	Monze- Boma, Chongo Palace, Hamwiimbu & Kayuni settlement	Vincent, Gondwe, Mweembe, Munachilao & Enerst Mr. Sangulukani-Local support
Monday 13th September to Friday 17th September	Katuba- Kamaila, Chombela, Chibombo Boma, Chief Mungule	Vincent, Gondwe, Florence, Lutangu, Enerst & Phiri Mr Moonga & Ms Mwiinga

ROPOSED KEY ACTIVITIES

Day 1: Sunday—Travel to study site

Day 2: Monday—District HQ & Chief’s Palace

1. Courtesy Calls, Key informant Interviews MACO, NGOs, Traditional Leadership etc by qualitative research team
2. Obtain the District Situational Analysis Report and Farmers’ register
3. Gather any other secondary information on access to agricultural water in the district (Annual reports, Evaluation reports)
4. Quantitative research team administers questionnaires in sites from Day 2 to 6
5. Sharing of experiences, Initial data analysis brief report writing and plan for day 3 & 4

Day 3: Tuesday—Within the Community

- 1) Transect walk
- 2) Key informant interviews with:
 - a) Water technology leadership committees, committee of elders,
 - b) Village heads, school teacher, extension worker, health centre.
- 3) Community Meeting – Resource Mapping

WRITE UP AND INITIAL DATA ANALYSIS

Day 4: Wednesday— within the community

1. Focus Group Interviews (users of technology or producers of irrigated crops):
 - a. Men group
 - b. Women group
2. Sharing of experiences, Initial data analysis brief report writing and plan for day 5 & 6

Day 5: Thursday— within the community

1. Focus Group Interviews (users of technology or producers of irrigated crops):
 - a. Men group
 - b. Women group
2. WRITE UP AND INITIAL DATA ANALYSIS

Day 6: Friday— within the community

1. Case Studies:
 - a. Rich, Adopter, non-Adopter
 - b. Medium - Adopter, non-Adopter
 - c. Poor.- Adopter, non-Adopter
2. Initial District data analysis and sharing of Key lessons

Day 7: Saturday—Travel from study site

Annex 2: People met

Summary 53 women 56 men total 109

Name	Title/Affiliation/ Position in community	M/F
1. Muyangana Walubita	Acting District Commissioner	M
2. Mulenga Maipambe	Acting District Agriculture Coordinator	M
3. Egbert K. Kasanga	Acting Senior Agricultural Officer	M
4. Beatrice Njamba	Junior Technical Officer (JTO)	F
5. Annie Nyirongo	Junior Technical Officer	F
6. Annie C. Kaunda	Junior Technical Officer	F
7. Mutende Musonda	Agric specialist	M
8. Teddie c. Kaunda	Principal Technical Officer	M
9. Simbeye Kalolo	Junior Technical Officer	M
10. Chief Chikwanda	Traditional leader	M
11. Fredrick K. Chilombe	Village Headperson	M
12. Lewis Chongo	Village Committee secretary	M
13. Godwin Kampamba	Village Committee member	M
14. Christine Phiri	Seed grower	F
15. Agness Chewe	Seed grower	F
16. Dorothy Chanda	Seed grower	F
17. Anthony Mutale	Catholic father	M
18. Beauty Chikwanda	House wife	F
19. Michael Kolala	Village Headperson & Chair of all villages committee	M
20. Emmanuel C. Kapema	Vice Village secretary	M
21. Simon Kalolo	Youth	M
22. Princilla Mwansa	Treasurer - Robert village	F
23. Grace Mwelwa	House wife	F
24. Genala Ng'ambi	House wife	F
25. Rosemary Mumbi	Committee member village committee	F
26. Agness Mwaba	Member of Village Committee	F
27. Ethel Mwape	Youth	F
28. Justin Sicalwe	Member of Village Committee	M
29. Naomi Kazembe	Member of Village Committee	F
30. Bridget Mwaba	Community Development Facilitator	F
31. Cecilia Pensulu	Community Development Facilitator	F
32. Loveness Chifutwa	DAPP District Facilitator	F
33. Evans Mabuku	Managing Director	M
34. Chief Sinazongwe	Local chief	M
35. Peter Munakacheke	Board Chairman	M
36. Boston Siamasana	Board Secretary	M

37. Part son Siakalinda	Board Member	M
38. Henry Siamunyandi	Board Member	M
39. Alfred Mungazi	District Cooperative development officer	M
40. Dais Mweetwa	Farmer	F
41. Oris Mweetwa	Farmer	F
42. Jeria Chileka	Farmer	F
43. Florence Muzambalika	Farmer	F
44. Martin Mulenga	Camp Extension Officer	M
45. Winterson Milambo	Farmer	M
46. Getrude Milambo	Farmer	F
47. James Malambo	Farmer	M
48. Mentor Malambo	Farmer	F
49. Saleki Malambo	Farmer	M
50. Andrew H. Mazuba	Acting Block Supervisor	M
51. Crispin Michelo	Project Leader- Total Water Sanitation-DAPP	M
52. Christeters Malambo	Farmer	F
53. Collard Kalyalya	Secretary Village Committee	M
54. Caroline Mooya	Farmer	F
55. Lent Simwami	Farmer	F
56. Alence Hatembo	Cooperative Board Secretary	F
57. Family Chiluli	Farmer	F
58. Flaya Chiluli	Farmer	F
59. Dailas Mulungu	Farmer	F
60. Felistus Munsanje	Farmer	F
61. Harris Ngoma	Contact farmer	M
62. Callman Mukanda	Lead farmer, Vice Chairperson	M
63. Raphael Hamuchamba	CASP Lead farmer, contact farmer ZNFU	M
64. David Michelo	Chairperson Development Committee	M
65. Vincent Mukanjo	Lead farmer CA	M
66. Jonathan Mwila	Secretary CA Platform	M
67. Daniel Sangulukani	Principal Extension Officer -MACO	M
68. Miriam Nkoloma	Chieftaness Mungule	F
69. Samuel Anthony Chachipa	Headman Chikumbi	M
70. Anna Shawa	Secretary Cooperative	F
71. Emmanuel Kondowe	Rep of Head man Manyama	M
72. Alfred Mutawa	Headman Mutakwa	M
73. Mirriam Mkankumi	Farmer	F
74. Melody Chitambala	Trustee Tusekelele Women's Club	F
75. Evans Chanda	Camp Extension Officer	M
76. Sabina Simuyandi	Farmer	F

77. Janet Makukula	Farmer (FHH)	F
78. Melody Cheelo	Farmer	F
79. Mercy	Farmer	F
80. Mutinta	Farmer	F
81. Edith Munakaceka	Farmer	F
82. Ashiwell Munanje	Farmer	M
83. Victor Kalabo	Depute Village headperson (Kalabo)	M
84. Naomi Tembo	Local Court Justice	F
85. Kent Shambukila	Farmer	M
86. John Nyati	Farmer	M
87. Caroline Shimindi	Farmer	F
88. Esnat Kalabo	Farmer	F
89. Mirriam Kalabo	Farmer	F
90. Mary Tembo	Farmer	F
91. Angela Miyanda	Farmer	F
92. Rebecca Tembo	Farmer	F
93. Martha Shimbukila	Farmer	F
94. EverlyChiyenge	Farmer	F
95. Modern Chiyenge	Farmer	M
96. Mwiinga	Farmer & deputy village headperson Chikumbi	M
97. Mpofu	Farmer	M
98. Lute	Chief's retainer	F
99. Mutinta Muleya	IDE Extension Officer	F
100. Charles Siziba	IDE Field Officer	M
101. Mulilo John	Chairman –Katuba SSIWRM	M
102. Wellington Shankomo	Central Zone Chairperson	M
103. Noah Phiri	Zone Treasurer	M
104. Andrew Mwanza	Eastern Zone Member	M
105. Hastings Luputa	Board Secretary	M
106. Jimmy Ngwese	South East Zone Secretary	M
107. Robert Mwanza	Board Vice Chairperson	M
108. Beatrice Nkuwa	Branch Supervisor Hamos	F
109. Nkosilathi Moyo	Chief Executive Officer - Hamos	M

Annex 3: Field research methods

Identifying business models for investments in agricultural water management that benefit both women and men

Implemented by

Farming Systems Association of Zambia (FASAZ)

Introduction:

The field research will be conducted using a combination of qualitative and quantitative research methods. There are two primary levels of analysis: 1) household and 2) community. In addition, linkages with the meso-level (external to community, district level) and macro (provincial and national) policy levels will be investigated and analyzed.

The field methodology begins with the broad context of the community and then moves to the household level. Initial research activities will involve community leaders and group discussions; the household survey and in-depth household interviews will follow.

Community Meeting

Before

Research team will meet with Village Authorities to ask for permission to conduct the study and sign consent forms.

Time: 3 hours

1. The research team will notify the community leaders prior to arrival and set a convenient time to assemble community members for an introductory meeting.

2. The research team will prepare an **introduction** that can be used in all 4 communities for the purpose of introducing themselves, the study, and their proposed research activities in the community. It should include the following information:

- Brief introduction of each team member
- Purpose of our arrival to community
- Explanation of study in simple language

Plan of activities over the next 6 days (group meetings, survey with ~60 households, and in-depth interviews with spouses of male- and female headed households, with total of ~10 households):

- We will notify households a day in advance and set appointments for interviews
- Ask if they have any questions for us
- **Organize some snacks (e.g. goat) we can buy or hire someone to make some during the week for group meetings (take petty cash with us)*

After addressing any questions with the community, the research team will start a general discussion:

3. During these 7 days we would like to learn about your community and what both men's and women's experiences and strategies to use water are. Many people may have come to talk about the problems, we want to learn from you some of the solutions you have tried, their strengths and weaknesses so that we can use the information to build on the successful solutions at the community and household level and make recommendations for policy makers and investors. We would also like to understand why people tried adoption of AWM but abandoned, and why people do NOT adopt AWM technologies.

4. General Guided Discussion:

What are some of the main problems/concerns in this community concerning water technology adoption and management for men and women? (i.e. Markets, Inputs, availability of water resources, technologies, labor constraints). How has the community tackled these problems? (i.e. Markets, Inputs, availability of water resources, technologies, labor constraints).

How have households responded to these difficulties?

Probe about how the community and households are getting by in the face of these problems.

4. What are some of the different organizations, associations, or groups in your community? (Natural resource management, women's groups, cooperative society, DFA).

5) After the meeting –ask for a meeting with:

- a) Community leadership to do mapping and collect community profile information.
- b) Assemble a community map that locates key resources, boundaries and important institutions according to women and men.

Community Profile in small group of Community Leadership: (Chief and Council of Elders)

Time: 1 hour

OBJECTIVE: This is the entry point activity that sets the framework for the rest of the research in a particular village. It is an opportunity for the research team to:

- a. Collect background information on the community, its resources, social and economic groups/divisions, local institutions (rules, norms of behavior), and internal and external organizations located in or working directly with the community.

MATERIALS: Pre-prepared template to enter community profile information and flip chart paper and markers for mapping activity.

PARTICIPANTS: The research team consults with community headman/leaders, and other key informants with in-depth community knowledge. Key informants will be identified because of their position in the community, as having good knowledge about different aspects of community (e.g., teacher, healthcare worker, other leaders, investors in water).

PROCESS AND QUESTIONS

- Introductions
- Opening remarks and purpose of the study
- Consent

1. As you are custodian of custom, tradition and culture in this area, we would like to be educated on the procedure that is followed when young people (woman and man) want to marry and start a family. Please kindly explain the rights, roles, duties and responsibilities of the bride and bridegroom and their respective family members.
2. What kinds of payments are done by a man or woman in the traditional marriage?
3. What are the conditions regarding these payments? Please explain.
4. In what circumstances can the payments be refunded and what happens to those who fail to pay them?
5. What are the rules of residence during marriage?
 - a. How is this in practice currently?
 - b. *Make estimates of marital residence patterns in reality.*
6. What are the conditions for accessing, controlling and owning productive resources (land, plows, and inputs) by the newlyweds (men/women)?
7. Who between men and women have more: (*May do access and control profile of Resources and Benefits*)
 - a. Access to resources (specify: land with some tenure security, capital, skills) required for participation agwater management technologies?
 - b. Control over benefits derived from agwater management activities?
8. What forms of contribution do the following categories make to implement water related programmes:
 - a. Community members (men, women, girls, boys, etc)?
 - b. The government?
 - c. Church?
 - d. Local leaders? (Civic & Traditional Leaders)
 - e. NGO?
 - f. Other (specify) -
9. Between women and men in your area who have more power over agricultural activities? – [Ownership, management of plots, Disposal of output]
 - a. *Dig into the issue of different plots or crops, as this seems the key way to express such power.*
10. Are labor obligations on spouses' plots fully reciprocal? Why not?
11. Who do you think should be targeted for support? Please explain/give reasons for your answer.
12. What do you think should be done to increase house hold food security and create wealth for the men and for women in your community?
13. Please do you have any questions that you would like to ask the researchers concerning water management?

ACCESS AND CONTROL PROFILE – for resources in the household

- a) Definitions of the concepts 'access' 'control' and 'ownership'.
 - i) Access is just being able to use under some circumstances (and being pushed out first

under scarcity, for example). *Probe whether outsiders have weaker use rights than community/clan members.*

ii) Control and ownership come close to each other.

(1) It is the ability to decide about the siting, use, or taking out of the technology, renting out and setting rental tariffs, allowing others to also use the water conveyed or not, and make them pay (water markets) or contribute to maintenance or not.

(2) to set the rules for allocation, enforce the rules, impose solutions in conflicts, etc,

For differentiating between 'access to water' and 'control over water' prioritization of users and uses under water scarcity is a critical issue.

a) Prioritization for any user and his/her use come up

i) (a) During initiative and siting of the technology: which uses are implicitly favored by that? and

ii) (b) When water becomes scarce, seasonally, or over-time. What happens under such growing scarcity? Who appears to have more social power and can enforce his/her use – also taking into account upstream – downstream dynamics?

iii) Are the more water-consuming productive uses curtailed first?

iv) Can the more powerful get away with breaching the rules?

v) Are women 'pushed out' as a gender for e.g. washing the clothes of their husbands? What happens in domestic systems, which are typically designed for a single use (although people need water for multiple purposes): if there are productive uses, are they curtailed when water dries up, by rule, and is the rule enforced?

Also, when differentiating between men and women, other variables are also important: wealth, class, role in investment, type of use, inside/outside community, etc.

Proposed Tools to be used: Access, Control and Ownership Profile, Opportunities and Constraints Profile, Participation profile, Practical and strategic gender needs, Risk analysis

Community Profile Information: Community Leadership

We are interested in learning the general characteristics of your community.

1. Community Name:
2. Ward:
3. District:
4. Agricultural Block:
5. Agricultural Camp:
6. Date of interview: (dd/mm/year)
7. Start Time:
8. Place of Interview:
9. Names of key informants/ title or position in community:
Name (*optional*) Title/Affiliation/Position in community M/F
10. Names of interviewers

Community Structure

1. How many people and households are in the community?
(extended families, kin groups)?

Population: No. of Households:

2. What different ethnic, cultural, economic groups are there in the community?
 - a. List ethnic groups represented in the community:
 - b. Does anyone group hold a majority? Minority?
 - c. If so, does this relate to marriage customs, exogamy?
 - d. What are the lineage patterns and rules of inheritance? (bilineal, matrilineal, patrilineal)
 - e. Are there different economic groups (i.e. based on livelihood activities, professions)?
 - f. How are the groups defined?
 - g. What are the relations between groups?

Community History

1. How long has the community been in existence and how was it founded?
2. How did the different ethnic, economic groups settle into the community?
3. Make an overview and time line on investments in water
4. What is the most important event that you remember in the community
5. When were the most important migrations into or outside the village
6. Information on occurrences of drought, epidemics, hunger, floods and other natural disasters
7. What is the good thing that the community made, when was that done.

Agricultural/Livelihood Activities Overview

1. What are the major crops grown in this community by?
 - a) *Women*
 - b) *Men*
 - c) *Jointly*
2. How is the agriculture practiced?
 - use of draught power
 - technologies
 - fertilizers and other inputs
 - Growing crops in the dry season
 - Types of irrigation practiced
3. What is the main purpose for *keeping* these crops?
 - home consumption (subsistence)
 - sale/marketing (cash crops)
 - other
4. What livestock are kept in the community by ?
 - a) women
 - b) men
 - c) jointly
 - For what purpose (subsistence, sale, trade)
 - How do the animals get water?

5. Other income generating activities by community members?

Community Mapping and Household Listing (*Refer to p2 point# 5*)

1. We'd like to draw a map of your community that locates the important resources. Researchers demonstrate the idea of drawing the map so that participants are comfortable with the idea using what they have seen that day. Then participants are divided into male and female groups to draw the map on flip charts. After drawing the group share their maps to come with one consolidated map for the community.

Maps should include important resources identified by participants such as the following:

- a. infrastructure, (roads, buildings, houses, electricity)
- b. land resources: agricultural land (crop variations); pasture/grazing lands; forest lands
- c. naturally available water resources (and rainfall seasons)
- d. public/communal and private water technologies
- e. uses and users of each technology
- f. institutions managing the technologies
- g. other water management rules (e.g. upstream-downstream allocation, pollution prevention)
- h. services (health, education, religious, transport, communication, extension)
- i. markets
- j. *Take note of type of resources etc.*

Ask the other participants present whether or not the placement is accurate, encourage group discussion to complete the map.

List and/or locate households on the map by name/gender of head or adult member. Use the listing info for this.

If map is drawn on the ground, researchers will need to transfer it onto paper at the end of the activity.

Make a legend/key to indicate what different symbols represent.