MUJIKA PERSONAL STORIES: CLIMATE LEARNING CHANGING LIVELIHOODS

by

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8.1 Introduction

Governments, donors and or communities themselves have often spent appreciable efforts and resources on projects aimed at addressing community problems. The challenges however at times arise in knowing what happened during the project, what influence the project had on the community and even whether it was successful or not. The main purpose of this chapter is to use selected Mujika community members' personal stories to inform one of what occurred during the climate learning project sponsored by IDRC/CCAA conducted from 2007 to 2010. The information required includes how the project began, the community status at the start of the project, what happened during project implementation, the influence it had on the community members and whether it was successful or not. It describes a situation from stories which after evaluation, lessons could be learnt could be drawn concerning the project management or possible improvements. The issues were explored, phenomena sought to improve understanding of the situation and answer some questions. It is about Mujika community's culture, what they said, did, meant, needed or desired. It enables to gain insight into Mujika community's attitudes, behaviour, value systems, concerns, motivations, aspirations, culture and lifestyles by looking at their participation in the climate learning and interpreting the stories of the five farmers. All these aspects are considered as data.

8.2 Material and methods

Five farmers were identified by the researcher from the three villages, considering 3 males and 2 females. The selection of these farmers was to meet at least one of the following criteria:- considered by the community as being difficult in interacting with community developmental programmes; a crop traditionalists; friendly; desiring to learn SCF outcomes or a key informant. These five people were then tracked at regular intervals without them knowing that their lives and interactions were being documented. Notes were made of their actions during regular visits to their homes and/or fields noting their involvement in the community agrometeorological participatory extension strategy (CAPES) from the beginning through to the end of the project period. However, later th4ey were asked whether they could be included in the report concerning their participation in the project. Documented actions of their project related sayings, actions, changes in behaviour and attitudes informs the story regarding what happened in Mujika during the CAPES project. The translated comments and observations will be presented with date of occurrence in a box prior to the relevant discussion. The comments, were translated from the local language Tonga, and related to a subject of discussion. These stories were then analysed to follow the Mujika community through the project implementation, giving relevant information as well as insights into how the project influenced community members and individual livelihoods. This is a particular scenario of stories by five "typical" farmers who

represent the rest of the Mujika community and provides cross sections of farmer types. Details of "story" farmers are in Table 1.

Table 8.1: Details of storytelling farmers in Mujika until 25th February, 2010

Name	Age 2007	Family #	Field size			Village
			2007/8	2008/9	2009/10	
Mosley Hamabuyu	35	3	½ ha S			Malomo
Sharon Hamabuyu	31			0.9 ha S	1.5 ha S	
Beatrice Chiluli	46	5	0.5 ha S	1 ha S	1.5 ha S	Bulimo
Owen Htwiinda	24	4	½ ha S	0.7 ha S	0.5 ha S	Nkabika
Getrude Malambo	43		2x (5 m x 10 m) Baby trial	2x (5 m x 10 m) Baby trial	2x (5 m x 10 m) Baby trial	Bulimo
Clement Mwiinga	36	5	¼ ha	½ ha S		Malomo

S = Sunn Hemp field

8.3 Results and Discussion

The identification of the five farmers (3 males and 2 females) from Mujika's three villages of Nkabika, Bulimo and Malomo started the work for this chapter. The number of men in the second year reduced to two while the women became three. This was due to the death of Mosley Hamabuyu whose place was then taken by his wife Sharon Hamabuyu. Owen Hatwiinda from Nkabika village was chosen for being known to have difficulty in interaction with community developmental programmes, while Getrude Malambo from Bulimo village was chosen as she had a desire to learn about the SCF and apply them. Beatrice Chiluli, from Bulimo village, was chosen as she is a friendly and open person with the general public. Mosley Hamabuyu and Clement Mwiinga both come from Malomo village, and Mosley was considered a key informant and Clement always planted traditionalist crop varieties. The choice of these farmers was meant to cover the range of major aspects of community activities related to CAPES. The success of CAPES was dependent on whether the community was either receptive or uncooperative. The project could was to also succeed if the Mujika community was willing to learn and key informants supportive throughout, despite being dependent on their choices such as on the type of crop varieties selected. These five people participated in nearly all the project activities from the beginning of the study, through project implementation to the monitoring and evaluation processes. The interactions were documented by the researcher after each of the encounters, whether it was a public meeting or one-on-one conversation. Sometimes the actual questions were recorded, other times the impression or body language or reactions were recorded. During each of these stages, data was collected for each of these five participants. The absence of a particular farmer from a particular part of the project activity table means there was no detail captured from that farmer on that particular aspect or occasion. Unfortunately on 17th January, 2009, Mosley Hamabuyu passed away and his story is continued with his wife Sharon. God remember him even for the good lessons we learnt and are continuing to do so from his part of the story. The story of a particular CAPES participating Mujika member usually represents similar behaviour of other members of the community.

8.3.1 Baseline assessment

The farmers stories began during the baseline study where they participated in the groups drawing the community sketch maps, transect walks, presenting time lines, identifying and analysing community problems as well as the creation of the community information dissemination plan (CIDP). Therefore one can deduce that the dissemination of climatic information project in Mujika started during the baseline assessment where the larger community also participated.

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: We have not put everything on this map. I think the map is too small.
4/9/2007	Mr Owen Hatwiinda: I didn't know that Nkabika village is so small.
6/9/2007	Mr Clement Mwiinga: Malomo covers a very large area bordering with Kaumba to the south, east with Nabukuyu, north with Bulimo village and west with Nkabika village.

8.3.1.1 Community sketch maps

Table 8.2 Farmers observation on community sketch maps

The farmer's stories began with the baseline PRA activities by looking at the main community features from the drawn sketch maps. These maps enabled the community to realize the availability of major resources in their own villages and the opportunities that these could provide, such as the sizes of the communities. Although as Mosley commented, their maps did not provide every detail and Mosley wanted to record all the features of the resources of Malomo village on the map. This showed that he knew the resources very well. This acknowledgement of what was available to them was a very good start to addressing community concerns. In contrast, Owen was surprised at how small Nkabika village was, although he had lived there his whole life. Thus drawing the sketch maps of the village was a learning experience for people in their own villages and gave some people a new perspective and in sight to their own home area.

Figure 8.1: Clement Mwiinga presenting Malomo village community sketch map in the plenary at CARBLAC on 6th October, 2008.

The fact that Clement presented the community sketch map, meant he was respected amongst his fellow farmers in Malomo community, where he came from, when they gathered for the PRA baseline assessment on 6th October, 2007.

8.3.1.2 Transect walk

Table 8.3 Farmers observation to the transect walk undertaken

Date	Name of farmer and comment
7/9/2007	Mr Mosley Hamabuyu: *Responding to interview*: We use animal draft power tilling our land, animal manure to improve soil fertility and as a result get poor crop yields.
4/9/2007	Mr Owen Hatwiinda: We shall descend from the school west wards towards the Magoye river. Very few people grow sisal.

The transect walk provided a better view of the terrain details as well as the vegetation cover. It illustrates how the transect team interacted and interviewed people on route, so as to learn specific details such as about areas of poor soil fertility, availability of livestock and usage of animal manure in the Mujika area. The revelation was that Mujika area has rivers and one of the community's main occupations was agriculture managed by use of animal draft power. It provided an opportunity for the community to share and pool the group knowledge.

8.3.1.3 Historical timelines

Table 8.4 Farmers observation to the historical timelines

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: You elderly people must tell us what happened before we were born.
5/9/2007	Mrs Beatrice Chiluli: 1991 had food handouts, 2003 hunger over the whole area
4/9/2007	Mr Owen Hatwiinda: Headman Nkabika V was installed in 2005
6/9/2007	Mr Clement Mwiinga: In 1973 there was corridor disease breakout and I lost seven my animals as a result.

Further revelation was that the Mujika community valued history, and the different community members considered different events to be important while others not. Some of these events extended to before the current generation while others like the hunger situation experienced throughout the whole area in 2003 and the installation of Village Headman, Nkabika V, happened during their lifetime. The earlier events could only be told by the elderly persons revealing community had no usual forum or traditional ceremony for consistently sharing the community history. From these comments, it can be seen that at least two of the story tellers remembered weather and climatic induced disasters and were aware of the effects climate had on their livelihood. This created a desire for more climate learning. Understanding the community historical background and what they considered as major events improved understanding of that community's current situation and served as guide to planning future events.

8.3.1.4 Rainfall

Table 8.5 Farmers observation of rainfall performance

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: What I know is the rains were more in olden days than these days but 1993 rainfall was very high as my other low lying field was flooded.
5/9/2007	Mrs Beatrice Chiluli: Rains are more erratic from 1991 to date
4/9/2007	Mr Owen Hatwiinda: I don't like the way rains perform from 1995, this is why I am not a big farmer.
5/9/2007	Gertrude Malambo: Rainfall was also high in 2004.
6/9/2007	Mr Clement Mwiinga: It has been performing between normal and below normal since 1985.

Mujika community's perception of rainfall performance was that the years before 1985 experienced above normal rainfall amounts after which variations between the near normal and below normal were experienced with notable high extremes such as those mentioned 1993 and 2004 (Table 8.5). Farmer perception of rainfall performance determined the type of agricultural cropping activities farmers were involved in and that information was useful in designing the community agrometeorological participatory extension service. The community strategies for addressing their food insecurity need to be evaluated as to whether they meet the community expectations given the rise in population.

8.3.1.5 Population

In table 8.6 stories farmers indicate that population has had a steady increase from the time they could remember to date. This was an indication that by the start of the project in 2007, Mujika community was at its highest. This information was necessary in for planning especially when relating to the current and future community food security demands.

Table 8.6 Farmers observation of population trend

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: There were very few villages when I was growing in the early 1980s but now population is high.
5/9/2007	Mrs Beatrice Chiluli: By the mid 1960s population was high but not as high as it is now.
4/9/2007	Mr Owen Hatwiinda: As secretary of the village I can say the population is high now
6/9/2007	Mr Clement Mwiinga: Population has been increasing gradually since my childhood (1980) and now it is high.

8.3.1.6 Soil fertility

Table 8.7 Farmers observation of soil fertility

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: Soil fertility has just been reducing with time and now it is poor.
20/1/2009	Mrs Sharon Hamabuyu: I need my Sunn Hemp seeds. With the death of my husband on 17 January, 2009 I cannot easily get money for fertilizer unless I use Sunn Hemp for improving my soil fertility.
23/1/2009	I have planted my Sunn Hemp on a one hectare plot and I am assured of enough soil nutrients for my maize in the next cropping season.
23/11/2009	I have planted my Sunn Hemp over a three hectare piece of land. No more worrying of fertilizer for crop development.
5/9/2007	Mrs Beatrice Chiluli: If you don't use fertilizer you can not harvest anything substantial these days.
29/1/2008	From the field tour I learnt maize can grow with the Sunn Hemp fertility alone? I have planted my 2 x 50 Kgs Sunn Hemp seeds on a plot next to the mother field trial plot so more people will learn the benefits especially during the field day.
21/12/2008	Look at my maize crop, looking good as though I had applied fertilizer. I thank God; this is God's answer to a poor woman's soil fertility problems.
15/1/2008	Mr Owen Hatwiinda: My crops are yellowing now except where there are some Faidherbia Albida (Musangu) trees which provide nitrogen. The soils are poor and the fertilizer have become too expensive for some of us to buy.
5/9/2007	Gertrude Malambo; Around early 1970s we could grow maize without fertilizer but not these days
8/9/2008	I am collecting composite manure I made for last year for use in my maize field
6/9/2007	Mr Clement Mwiinga: The soils fertility is poor now because people have been using too much fertilizer in their fields after Zambia's independence in 1964.
28/1/2008	I have planted my 10 Kgs of Sunn Hemp on a plot I will plant maize next year. I am applying what I learnt at MTFC. My Sunn Hemp field this year will be bigger because I have bought 1 x 50 Kg bag of seed s from Mrs Sharon Hamabuyu.
14/9/2009	When I will have produced enough Sunn Hemp seeds for about five hectors I will be boasting of being food secure and with surplus maize to sell.

The stories reveal that the level soil fertility at the start of the project in 2007 was considered to be low by most farmers, and this was a greater concern to almost all of them. Therefore this state of the soil needed to be addressed for improved crop productivity, though some portions of the land were naturally being improved by the availability of the *Faidherbia Albida* (Musangu) trees.

The new innovations of using Sunn Hemp, a nitrogen fixing legume, was introduced and adopted by some farmers. It could be seen that that Beatrice and Clement have been quick to learn about the Sunn Hemp, and introduce it to other systems following the visit to CARBLAC. This shows that they are both early adopters as they implemented this crop choice as soon as possible. They also show that they had their own small trials before expanding the planting area the following year. Another characteristic was they were keen to learn from others as well as to

share their own learning with fellow farmers.

Mrs Sharon Hamabuyu's continued the use of Sunn Hemp in crop production and Mr Owen Hatwiinda's hosting of a field day to share lessons learnt (Figure 8.2) proved they found Sunn Hemp useful in improving soil fertility. Understanding the initial soil fertility state was therefore essential for building appropriate strategies that promoted community agrometeorological participatory experiments.

Owen planted the Sunn hemp in 2007 (Figure 8.2) and the following year (Figure 8.3) he planted maize. You can tell they are very happy with the crop development and so his story continues.

Figure 8.2: Owen in his Sunn Hemp field on 10/12/2007

Figure 8.3: Owen and his wife in their field of maize grown by using his Sunn Hemp nutrients only on 15/12/2008

Figure 8.4: Clement Mwiinga (c), his wife Grace (r) and a friend at home after interviews

8.3.1.7 Crop productivity

Table 8.8 Farmers observation of crop productivity

Date	Name of farmer and comment
11/3/2008	Mr Mosley Hamabuyu: The poor soils are contributing to food insecurity in the villages as farmers cannot produce enough maize to go all year round. I always keep extra maize in my house for assisting and selling to the local community when food security levels are low around August to December.
5/5/2009 8/6/2010	Mrs Sharon Hamabuyu: Mr Nanja, I harvested 189 x 50 Kg bags of maize and 13 x 50 Kg bags of Sunn Hemp which I will sell and gain money for family needs. Where are you? You don't call to ask what my harvest was. I got 145 x 50 Kg bags of maize and 18 bags of Sunn Hemp.
19/5/2010	Mrs Sharon Hamabuyu: More people are buying Sunn Hemp from me after comparing their farming strategies and mine. Thank you for this project and the many lessons I have learnt. My life is sustainable as a widow.
16/9/2009	Mrs Beatrice Chiluli: I remember when I was a child around 1968 my father was ever selling about 1000 x 90 Kg maize bags to the National Marketing Board but these days he only sells about 300 x 50 Kgs. I harvested 27 x 50 Kg bags of maize plus a full granary of maize to run me the whole year round with my family.
20/8/2009	Mr Owen Hatwiinda: My best harvest in life was last year when I used Sunn Hemp and got 45 x 50 Kg bags if maize.
24/9/2007	Gertrude Malambo: We don't usually have enough maize to go all year round.
24/9/2008	Mr Clement Mwiinga: I bought this broken down vehicle some time back from my crop sales but these days I only produce about 10 scotch carts of maize. Last year under floods I only harvested one scotch cart full (8 x50 Kg) of maize. This was one of poorest yield over.

Crop productivity at the start of the project was considered low to the extent that most farmers did not have enough food supplies to last them for the whole year round as shown byGertrude, Clement and Mosley's personal comments. Yield was low without any form of fertility when growing crops. Some individuals in the community were involved in new innovation of using Sunn Hemp to improve soil fertility and thus increased crop productivity. The current community crop productivity served as baseline for evaluating the community agrometeorological participatory extension strategies' capacity to increase the general food security of the Mujika community.

From comments on crop productivity during the 2007, it could be noted that these story tellers are typical of the Mujika community; in that they did not have enough of their own maize to meet their family's demands for the whole year (see Getrude Malambo). It provided motivation for the farmers to be willing to think differently from the traditional methods used for crop production by introducing a legume into the crop rotation. The contrasting report by Clement of low food security in 2008 was however worrying, but it must be noted that he had not used Sunn Hemp.

8.3.1.8 Seasonal timeline

The seasonal calendar begins with land preparations before the start of the season which was

around November. However, farmers planted a range of crops such as maize, their main food crop and others like groundnuts and cotton.

Table 8.9 Farmers observation of seasonal timeline

Date	Name of farmer and comment
7/11/2008	Mr Mosley Hamabuyu: The rains start around November but people plant crops in December and January when the rains would have established themselves.
13/9/2009	Mrs Beatrice Chiluli: The main community crop is maize mainly grown from December and January. Sweet potatoes and groundnuts are mainly grown by women alone.
7/11/2007	The crops Durton is planting on 7th November, 2007 will be eaten by stray animals because they are still loose to open grazing.
19/8/2008	Mr Owen Hatwiinda: I wonder why some farmers cannot start their land preparations earlier than October because they are never through with it even by the time of planting in December?
13/12/2007	Gertrude Malambo: I don't like planting cotton though most people do so because it is too labour intensive.
21/12/2008	Time is running out for planting groundnuts and must complete this portion before the start of the Sabbath.
24/9/2008	Mr Clement Mwiinga: Planting groundnuts is job for women. *How about eating? his wife asked.* I also manage jobs which you don't help me at all but do benefit the whole family.

There appears to be a large difference between how farmers worked in the community as some prepared land early so as to plant in November. Those who prepare their lands early do not understand the other farmers who delay land preparations and plant their crops late. Farmers also grew different crops for different reasons. Others found cotton growing difficult for being labour intensive. The growing of maize crop was done by both men and women though a crop like groundnuts was grown by women alone. Their cattle were let loose to communal grazing grounds and not herded until December; hence the early planted crops risked being consumed by stray cattle.

These reports recorded during the construction of the seasonal timelines reveal that farmers have individual choices and preferences as seen from Gertrude's comment about low preferences to cotton. So when agrometeorologists formulate advisories, they should remember these personal preferences. Another important aspect highlighted from the crop seasonal calendars was the social-cultural norms of the community. Outsiders from other communities such as extension officers and advisors may inadvertently violet these unwritten rules or regulations. Care must therefore be taken, by spending time with the elders of the community, to learn about the socio–cultural norms. However, sometimes in ignorance one may break the rules (see Beatrice's comment Durton planting maize on 7th November) and suffer the consequences. Sometimes one has to influence community to change such traditional rules so as to gain the increased yield benefit of planting maize earlier.

Understanding Mujika community seasonal activities and the likelihood of success of the

project allowed for effective designing of the type of agricultural interactions that can be undertaken. Recommendations for the introduction of new varieties and changes in planting times should therefore be taken cautiously and in consultation with the Headman of the area.

8.3.1.9 Institutional analysis

The farmer stories in table 8.10 indicate that education, health, local government, agriculture and CARBLAC (a local NGO) are operating in Mujika area. This was informative to know which other institutions working in the area could be approached to support the dissemination of climatic information.

Table 8.10 Farmers observation of available institution in Mujika

Date	Name of farmer and comment
22/2/2008	Mr Mosley Hamabuyu: The agricultural extension officer they have brought is hard working.
12/12/2007 11/2/2008	Mrs Beatrice Chiluli: I am going for a cooperative meeting at CARBLAC. Nobody will help you working tomorrow because it is a Sabbath and we shall all be at church.
13/8/2008	Mr Owen Hatwiinda: Nkabika Basic school is the only basic school in Mujika with other nearest ones being Ntambo and Kaumba basic schools.
19/11/2008	Gertrude Malambo: You are looking for Mr X (real name with held), he has gone to Mwanza court. He has sued someone for ploughing in his land.
7/3/2008	Mr Clement Mwiinga: I am tired as I have been at this clinic for some time waiting to be attended.

However, not all the comments are indorsing of the government, eg it appears that the service at the clinic is rather slow. Therefore it could be a good place to distribute climatic information or hold group discussions as people have to sit and wait for long periods. It also seems they do appreciate the new extension officer Mr Philemon Hakalembe who was also one of the IDRC/CCAA project team members which he attended to together with his normal work load. This endorsement made his work easier and made more pleasant as the farmers were enthusiastic about the changes in the crop production systems. At the end of the IDRC/CCAA project, hopefully these organisations, based in Monze area could continue sustaining the development impetus and support the CAPES initiative. The agriculture extension officer was effectively trained in disseminating climatic information and was expected to sustain the Mujika CAPES with support and advisories from ZMD.

8.3.1.10 Farm sketches

From the individual farm sketches farmers, gain a different view of what was available to them for their own agricultural development. They were glad to have a map of their farmsteads that they had drawn themselves. Farmers could use these sketch maps when planning future cropping cycles. Mr Clement Mwiinga's desire to go home with his personal sketch map was an indication that farmers saw value in developing a better understanding of their own environment

from these farm sketches and that they could use them in future. It also revealed personal sketch maps improved the vision and evaluation of the individual farmers' environment and self esteem.

Table 8.11 Farmers observations of farm sketches

Date	Name of farmer and comment
6/10/2010	Mr Mosley Hamabuyu: This is good. Families should know what is on their farms.
6/10/2008	Mrs Beatrice Chiluli: Should I include my father's compound and fields because we live as one large community and share field every year?
6/10/2008	Mr Owen Hatwiinda: My home and fields are far apart how do I link them?
6/10/2008	Gertrude Malambo: But I cannot draw very well.
6/10/2008	Mr Clement Mwiinga: Shall we take these maps home when we finish?

8.3.1.11 Gender daily calendar

Table 8.12 Farmers observations of the daily calendar by gender

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: Not all women wake up earlier than men.
5/9/2007	Mrs Beatrice Chiluli: Women plant groundnuts on their own while men are relaxing.
4/9/2007	Mr Owen Hatwiinda: Men do the hardest work for their families lives
5/9/2007	Gertrude Malambo: Some men can't even cook for themselves but have to wait for the wife to come from where ever she has gone.
6/9/2007	Mr Clement Mwiinga: I have never collected water from the stream for use at home on my head.

At the coming of every new day in Mujika, some jobs were undertaken by both men and women together while others were specifically designated to women alone such as the planting of groundnuts (table 8.12). It appeared that in general the women worked longer hours than men, although it appears Mosley wanted to disagree with this. Interacting with them about climate learning needed careful activities distributions as women could be overloaded with many important family centred tasks such the project results could be negatively impacted.

The household interviews provided diverse information on current farmer situation at household levels. The Tonga language was preferred in Mujika over other languages. The interviews revealed there were other non-climatic factors that affected agriculture productivity such as laziness. These interviews were vital for comparing a community wide view as given during the PRA meetings with the actual conditions at household level (table 8.13).

8.3.1.12 Household interviews for triangulation of PRA information

Table 8.13 Farmers observation of household interviews

Date	Name of farmer and comment
	Mr Mosley Hamabuyu: You ask on all details about farmer livelihood. Some will fail to tell you the correct details.
15/9/2009	Mrs Beatrice Chiluli: Some people are poor because they are just lazy. They even ignore climatic meetings that are able to help them improve their farming. I think I have found a solution to erratic rainfall problems with the use of Sunn Hemp.
3/9/2009	Mr Owen Hatwiinda: Every one you will talk to will tell you rainfall performance is poor and amounts are reducing these days.
	Gertrude Malambo: You must ask questions in Tonga.
	Mr Clement Mwiinga: You are the first person talking to us about climate information. It is all new.

Figure 8.5: Owen and his wife Mary during interviews at their home on 3/9/2009

Figure 8.6: Beatrice Chiluli during interviews at her home on 15/3/2009

After considering household situation one had to redesign the information dissemination strategies to be targeted at household. Climatic information dissemination was a new activity in Mujika and the time needed to be spent encouraging deeper understanding of it, but showed that the community was willing to learn and apply climatic information.

8.3.1.13 Farmers view of alternative interventions and opportunities

The community had listed various problems such as erratic rainfall performance, animal disease and lack of money, out of which they ranked erratic rainfall as their number one problem (see table 4.11). Understanding their most pressing problem placed the community members in a position to consider what they were to do about the problem (table 8.14). Their identified number one opportunity was awareness of climatic information and appropriate for addressing their community number one problem of erratic rainfall. It could be noted that not all farmers agreed it was their number one challenge though the majority had voted for it (see Owen's comment on lack of money and Clement's on animal diseases). However he was agreeable that erratic rainfall was a major problem especially for crop productivity. As this project was addressing climatic information one could tell that it was going to focus on farmers concerns

and needs. However the opportunity was probably or more involved that just an awareness of climatic information. The opportunity needed to be developed and exploited by obtaining the information and learning how to understand it and incorporate it into their on-farm decisions. The stories farmers show by their comment show arrange of insights into the understanding of the effects of the weather on crop production.

Table 8.14 Farmers view of alternate interventions and opportunities

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: Climatic information is the number one problem because people don't even know of coming rains and when to plant what. So if they learnt about climatic information they would improve their food security.
13/11/2007	Mr Mosley Hamabuyu: Erratic rainfall is the greatest problem people have followed by animal disease. But there are other problems such as type of seed farmers plant for a particular season like my friend Clement Mwiinga who plants local maize every year but gets low yield.
27/11/2007	Mr Mosley Hamabuyu: This is Clement Mwiinga the man I was telling you about planting traditional local maize in every year. Clement show him the seed. By the way there is another problem; people are hesitant of using SCF because they say you are not a god to tell them of the coming rains.
5/9/2007	Mrs Beatrice Chiluli: Poor rainfall performance followed by lack of animals. Not all people have cattle for ploughing fields. I think if we learnt about when and how the rains would come would be very good for us.
4/9/2007	Mr Owen Hatwiinda: Lack of money is number one problem followed by lack of fertilizer. With money you can buy fertilizer and have a good yield. I think if we first learnt about weather and rainfall we could manage our crops well every season because it is rainfall the that makes our maize to dry up when it is not there.
5/9/2007	Gertrude Malambo: I think the biggest problem is lack of animals for ploughing the fields followed by erratic rainfall. I see awareness of climatic information as a solution to most of Mujika community problems
6/9/2007	Mr Clement Mwiinga: Erratic rainfall is the biggest problem followed by corridor disease for animals. One season there is too little rainfall the next may have too much. With animal disease as my number one community problem followed by absence of water we should start by addressing animal disease first.

8.3.1.15 Planning for testing farmer choices

Table 8.15 Farmers' observation in planning and testing farmer choices

Date	Name of farmer and comment
6/9/2007	Mr Mosley Hamabuyu: Since we have chosen awareness of climatic information, does it mean that all the activities to be carried out in this project will be addressing awareness of climatic information?
25/9/2007	I think the team should be composed of all the three Village Headmen, agriculture extension officer and yourselves.
25/9/2007	Mrs Beatrice Chiluli: You should also include the 5 community radio listening club representatives.
6/9/2007	Mr Clement Mwiinga: So we shall have fields to see whether our decision with the forecast was correct or not?

The stories reveal that after evaluating their current situation, the community designed a plan of action especially to address their number one problem, erratic rainfall using awareness of climatic information their number one opportunity. The main purpose of evaluating their situation was to find the means of addressing their pressing needs and problem. When a community programme was designed it usually required leaders in place and the stories tell now the community participated in deciding who was going to be at the helm in managing CAPES. Their selection of men and women of authority in the community such as Village Headmen to manage the project revealed the seriousness the community attached to the project. Mujika farmers were proactive by designing a plan of action to address their choice, and they monitored it through the CAPET leadership that involved farmers as well.

Figure 8.5: Malomo radio listening club at Mosley's home on 17/01/2008

Table 8.16 Comments from the selected farmers on project implementation according to type of media used

Media column	Mr Mosley & Mrs Sharon Hamabuyu	Mrs Beatrice Chiluli	Mr Owen Hatwiinda	Mrs Gertrude Malambo	Mr Clement Mwiinga
1. Meetings **a) Public**	23-09-2008: Please wait in starting the forecast meeting as more people are still expected to come. Very few people attended last year because they said you were claiming the role of gods. However their view has since changed on that.	27/9/2007: People don't like attending meetings that provide them with productivity knowledge but prefer those for handouts only. 24/9/2008: There are more people attending climatic meetings these days. I think they learnt a lesson from the floods of 2007/08 season when they ignored and fear it may repeat.	17/2/2009: I received advice and learnt how to use climate information like deciding type of seed variety to buy, tillage practices to use and selecting of fields to plant according to forecast season. I also learnt when to plant what crop in the season.	23/9/2008: More people have attended the weather meetings because they want to get the forecast from you. They don't want to lose crops again as last year through floods. I introduced Mr Edson Malambo to these meetings and he volunteered as a baby field trial farmer (fig. 8.6).	10/9/2007: Are they gods to tell us of the coming rains? 22/1/2009: I don't miss weather meetings any more after the lesson I learnt in 2007/08 of disregarding SCF. You may think it is me alone thinking that way. It is the view of most of my friends (2008).
b) Training	25/1/2008: People expected agricultural inputs handouts from training you had at CARBLAC.	29/1/2008: After returning from CARBLAC training people started planting Sunn Hemp for improving their soil fertility for the next crop planting.	27/10/2009: My report is that the 2008/09 season performed as forecasted and that SCF is a factor in improved agriculture productivity	23/3/2009: I learnt that each forecast season required a different farming approach (type of seed to be bought and tillage practice to use).	22/1/2009: I have wasted yet another year in crop productivity but are glad to have learnt a life time lesson (2008).
2. Electronic **a) Radio**	24/9/2008: Why do you end the radio programs in mid-season? People still want them to continue all year round. (fig.8.5) There are so many Nkwaambila Bbwes in Mujika.	24/9/2008: Some losses farmers incur would not have been there had they been listening or coming to the radio listening clubs.	23/11/2007: I don't know why most people don't like coming to radio listening club meetings. May be they have radios in their home but no very few have I know.		I only like Rumba music but we differ with my wife over listening to your programme (2007). I repented. This time I make sure my radio is working every progamme time. My wife is happy (2009).
b) Radio listening club	17/11/2008: Sharon number 4 in picture figure 8.5 from left: Farmers attend the radio listening to radio programmes every Thursday here. They like the programmes so much. They mostly like the advisory discussions we hold after the programme. Malomo B radio listening club members on 17/11/2008.	24/9/2008: I don't like missing radio listening clubs because people advise on what to do under different weather conditions.	5/1/2008: From the time my parents and children heard the local people (Mosley Hamabuyu, Violet Ngwenya and Mrs Simunkombwe) speaking on radio they don't go to bed until it is over. 12/1/2009: People like the radio programme especially Nkwaambila	18/2/2008: I don't miss radio listening clubs unless I have a problem. Furthermore I have no radio of my own. People enjoy the climate programme. You must come during radio listening club meetings and see for yourself.	10/12/2008: My wife and I attend radio listening club meeting always. I like sharing my story at meetings.

			Bbwe's behaviour because it is what most farmers do.		
3. Print media **a) Handbills** **b) Cartoons**	23/9/2008: Most of you are getting forecast papers you won't read at all.	12/10/2009: Most of the women who can't read or write have since started attending the new adult school in the village and already some boast of reading English now. Greet them in English at the next radio listening club meeting you will hear for yourself.	18/10/2008: People want forecast papers. You can leave a number of them with me for distribution.	25/9/2009: I am now able to read the Tonga SCF because the newly introduced adult school in Bulimo village.	11/10/2009: I always ask the Agriculture extension officer Mr Hakalembe for a copy of the Tonga rainfall forecast. Please assist me with one copy as I have not yet received any.
	23/9/2008: Let us go and practice what we have learnt and not to behave like Nkwaambila Bbwe in the cartoon who was sleeping when his friend was planting.	23/11/2007: With the cartoons most farmers, those who cannot read or write including the shy ones were free to talk. Go and draw more cartoons.	18/10/2008: But by the way is it you who drew the cartoons?	23/11/2007: We like cartoons because you can deduce the meaning from pictures even though most of us especially women cannot read.	23/9/2008: I think the one who was drawing the cartoons was talking about me but just changed the name. The cartoons teach the truth and have kept copies in my house for reference.
4. Personal contact	17/11/2007: Had you not come and introduced SCF, I would have never planted the late maturing seed variety MM 709 which I have planted. It is a good variety for a long season. People have a habit of planting late in December till January.	13/1/2009: Just let Bulimo village stage the main sketch during the field day and you will be surprised at what we are able to do.	14/1/2009: I have learnt a lot of lessons from the experiments that I am considering of hosting a field day.	13/1/2009: Thank you for coming because we have learnt a lot and have answered all our questions.	15/1/2008: From the day you and my friend Mosley visited me, I vowed to consider the weather forecast in my planning.
5. Farmer to farmer	23-09-2008: Farmers influence each other regarding what and when to plant and even the type of meeting to attend. 12/4/2009: Sharon Hamabuyu: I will make a lot of money from Sunn Hemp sales this year because I already have 8 people asking for seed.	13/1/2009: Our discussion with Getrude yesterdays discovered some farmers still depend on traditional indicators for season expectations despite the availability of the forecast every year.	14/1/2009: I received 23 inquiries this year on my field trials and kept sharing my lessons learnt from the project.	13/1/2009: I inform others that at these meetings we learn how to use the SCF in planning one's agriculture cropping season. Edson Malambo has since stared attending climatic meetings.	22/1/2009: Mosley my friend introduced me to SCF and its importance in agriculture planning. But Mosley my friend, even if I have considered planting hybrid maize, I will also be planting this local maize because it is resistant to disease and not attacked easily by insects
6. Passing through	25/2/2008: Saw you pass by and suddenly a very serious argument started on the role of the Meteorological department and the use of the SCF in agriculture	25/12/2009: We laughed on Wednesday when my father (Nathan Chiluli- Headman for Bulimo village) saw you at a distance on a motorbike and			15/12//2009: You have now become my weather man friend people are saying. Whenever we see you even at a distance my friends say there goes your

	productivity. Others said you are liars and not gods while others said it helped them improve crop production .	said there goes the weather man.			weather man friend.
7. Experiments	3/12/2008: Farmers are complaining they want plot sizes as of last year they say these are too small to get a meaningful harvest. 21/12/2010: Some of your baby farmers whom I won't mention names because I don't want to be beaten are saying they may not plant the trial fields because they don't get any meaningful yields at all. I think they don't understand why they have those small trial fields.	17/2/2009: I have no field trials but what I am doing in my own field using the climatic information you are teaching us and lessons I am gaining from the field trials is benefiting me more than some farmers with baby field trials.	27/2/2008: Long maturing crops are better planted early in the season. 16/12/2008: People were saying I wasted seed when I planted at the start of the season and with minimum tillage on my field where I had Sunn Hemp previously.	17/2/2009: I think I am learning a lot from these trials as I now know how to plan my cropping activities by different seasons. 27/2/2010: Without some form of fertility added to crops one is like to get no harvest at all.	22/1/ 2008: I have worsted another year but wished could carry all these crops to be mine and at my farm. 17/2/2009: Though I have no field trials with you, I believe I am benefiting a lot even more than those with baby fields because I practice the lessons on bigger plots than those small ones.
8. Field day	27/2/2008: Most people especially men come to the field day for the meat that is available and not to learn. Sharon: Are we going to contribute and cook in the village grouping as it was last year?	23/3/2009: Please make the people stop at my Sunn Hemp field to watch the drama my sister Esther Chiluli and I have planned to explain the benefits of climatic learning to field day participants. 29/9/2009: But prepare for a larger gathering at this year's field day than that of last year because more people are planning to attend.	25/2/2010: Forecast is useful in agriculture decision making (seed selection and planting time) I chose medium variety and planted early. Any form of fertility will bring about change in crop performance. I hope you have learnt something useful for your individual agriculture practices.	10/5/2009: A lot of people will come to the field day next year because you mostly discus crop production and rainfall which affects them most.	25/2/2010: I don't miss field days at all. It is a good time for learning more from others. But I don't really understand why men are difficult to attending weather meetings but when it comes to the field day here today they are majority. I think they mainly come to eat meat which is prepared and not to learn.
9. Monitoring and Evaluation	21/11/2008: Some baby field farmers are not committed and are just doing it to please you. Their main interest is yield and not experimental results. Their behaviour proves.	25/2/2010: I have to be frank the project has been successful. It is unfortunate for those who haven't learnt anything over the three years of working together on weather issues.	25/2/2010: I am happy with how the project performed and most people learnt something. Especially the value of forecast in decision making. This was revealed in the way they attended to meetings.	18/12/2008: Come and see my field trials I believe I managed it the way we had agreed and I am very happy with the result. 17/2/2009; May I talk to you (Durton & Prof Sue) privately. I think I learnt more from trials this year than last year. If I put seed alone it is useless unless with some form of fertilizer as well.	My project assessment during the 2007/ 2008 season helped me to make my position clear regarding weather information. I realized it was essential for any successful farming.

Figure 8.6: Edson Malambo (L) on his baby field trial with Durton on 11/12/2008

Figure 8.7: Mosley participating in radio programme design and recording on 8/12/2007


Figure 8.8: Getrude Malambo (r) and her friend during harvesting of mother trial

The stories of individuals within Mujika community have highlighted the opportunities for capacity building, via a "learning by doing" methodology with climate classes undertaken over three years (table 8.16). The interaction started with a large sector of the community having reservations about the whole project. For example, Clement Mwiinga on 10/9/2007 inquired whether the agrometeorologists were gods to tell them of the coming rains (Table 6.2). This was followed by a change of attitude (E.g 1: on 17/11/2007 Mosley Hamabuyu said *"Had you not come and introduced SCF, I would have never planted the late maturing seed variety MM 709 which I have planted. It is a good variety for a long season")* e.g. 2: appreciating and adopting of climatic learning from Beatrice on 17/2/2009 saying *"I have no field trials but what I am doing in my own field using the climatic information you are teaching us and lessons gained from the field trials is benefiting me more than some farmers with baby field trials";* resulted in improved livelihood (… "*I realize it was essential for any successful farming",* said Clement*)*. There are limitations in the use of some dissemination modes, such as small baby field trials and engaging farmers with different project expectations or of not being fully committed were also revealed (see Mosley's comment in Table 6.2 on monitoring and evaluation). They highlight the fact that the project was successful, with community members learning various lessons such as the value of SCF in agricultural decision making. However they also tell of the remaining challenges of how to get the larger Mujika community into participating in climate learning programmes.

8.4 Analysis Story tellers information and reactions

The story tellers' information was also analysed under the category of wealthy (status), education and opportunities. This was to explain how they represented the Mujika community by telling their stories.

Every story teller had some form of status, form of education and opportunities they could use to improve their livelihood with the introduction of climate learning. The analysis of the five story tellers in representing Mujika community did not change with the departure of Mosley as Sharon assumed the role of head of the household. The change was only in the gender situation where there were now two men and three women under study.

8.4.1 Overview of the story tellers

The story tellers were analysed by looking at their status, education and opportunities. This established the farmers' suitability in representing the Mujika community.

Table 8.17: Status of the story tellers

	Category		
Name	Livestock Status	Education (# of years)	Opportunities
Mosley Hamabuyu	20 Cattle + chickens	12	Head of Home
Sharon Hamabuyu	20 Cattle + chickens	9	Wife/Head of home
Beatrice Chiluli	8 goats + chickens	7	Daughter of Headman
Owen Hatwiinda	Chickens	7	Son of Headman
Gertrude Malambo	10 cattle + chickens	7	Land occupation
Clement Mwiinga	15 cattle + chickens	7	Head of home, One vehicle & land

Table 8.18 Story tellers by percentage ranking by number of livestock

	Categories					
Wealth Indicator	Null	Chicken Only	Goat and chicken	5 head of cattle	20 head of cattle	50 head of cattle
Estimated percentage	5%	10%	20%	30%	35%	5%

The analysis under status for each one of them looked at what they owned in terms of animals which was the symbol of wealthy in southern Zambia amongst the Tonga people. The wealth status of the story tellers was not very high as all fell below the category of having less than 50 cattle per family. They effectively represented the Mujika community very well. Table 8.18 shows the use of the livestock as a wealth ranking where those with cattle are considered most wealthy and privileged in the community. Those without cattle are considered to be the poorest (e.g. Owen Hatwiinda).

As the selected farmers were across most of the wealth ranking range, expected at the extremes, effectively

they represented the Mujika community well. This community looked forward to developing and improving their livelihood. The project by working with this category of people was addressing the Mujika community and more effectively promoting dissemination of climatic information.

Table 8.19: Education of the story tellers

	Category							
Education level	Illiterate	No education	Adult education	1 – 4 years	5-7 years	8-12 years	Skills training	Formal post education
Estimated percentage	5%	10%	15%	20%	32%	8%	8%	2%

The education percentage levels of Mujika community are estimated by the researcher. The education levels for Mujika community were categorized in percentages and shown in (table 8.19). The story tellers were found to be mostly in the 5-7 years and 8-12 years of education categories which is representative of for Mujika communities. The level of education this category probably influenced their decision making and interacting with category was with the right Mujika community that was looking for change.

Table 8.19: Story tellers' opportunities

1	2	3	4	5	6	7	8
No opportunity	Child	Wife	Head of house	Church authority	Son or daughter of Headman	Assistant Headman	Village Headman
0	43%	10%	36%	5%	2%	2%	2%

This categorization of the farmers according to the education the amount of education received illustrated that those that have at least had some basic education will grasp the concepts of climate information easier and quicker than those who are illiterate.

It therefore was justified to acknowledge their stories as being a sorted snap short of the community sections or farmer types. The CAPES worked with the right group of people in Mujika that had the desire to learn and improve their status by use of climate learning and it was successful.

8.5 Influence of the project on individual story tellers lives

8.5.1 Mr Mosley Hamabuyu:

From Mosley Hamabuyu's story, represents key informant and a farmer with the highest education and wealth rankings. I reason he understood that although the community's major problem was erratic rainfall, there were also other problems such as planting of maize varieties not related to a particular season which was a matter where farmers needed guidance from SCF. He was quick to acknowledge SCF as a decision making tool to improve agriculture productivity and utilize it in his farming practices especially for selection of maize varieties selection (Table 6.2). He openly shared the initial community view of the project (Table 6.2) causing farmers not to use SCF information in 2007 where they said the researcher could not tell them of the coming rains. However the researcher was able to address this matter and the people acknowledged the usefulness of SCF after the first year of interaction. Mosley represents some farmers in

Mujika who had a broader view of the community problems and insight into possible working solutions to address them. He represents the group of early adopter of SCF. He felt that the need to address the non-climate related problems as well. He represents a group of early climate learning innovations adopters, who were influential in the farmer to farmer interaction of SCF.

8.5.1.1 Mrs Sharon Hamabuyu

Even after Mosley's death, his wife Sharon was still convinced of the use of SCF for selection of appropriate maize varieties for a particular forecast season. She knew that sustainable agricultural practices were also required to improve soil fertility in order to obtain improved agricultural productivity. She started in 20098 and continued to use Sunn Hemp each year, by consistently producing and planted maize crop with the first rains, which she said was sustaining her livelihood with sufficient maize for her household. Climate learning to Mosley (35 years old) and Sharon Hamabuyu (31 years old) was vital to enable them to change their crop productivity levels and livelihood which they managed to attain and even had surplus food to sell. My findings were that an improved understanding of climate matters contributed to Mosley and Sharon's better crop production. Sharon's food security despite being a widow by the end of the project, was not adversely affected by her husband's death. This particular situation gives the illustration that there were families in Mujika that attended and adopted climate classes together and despite difficult family circumstances, they could continue with the sustainable approaches learnt.

8.5.2 Mrs Beatrice Chiluli

While Beatrice agreed erratic rainfall was her community's number one problem, but she saw laziness as another serious hindrance that affected successful agriculture production amongst some community members. The solution she saw to the current problems lies with farmers attending climate meetings to obtain information that can serve as a guide to improved agricultural production. Her solution to the soil fertility problem as a widow, was the adoption of Sunn Hemp in a rotational cropping system with maize. This particular report reveals the food security limitation in Mujika were not only due climatic factors but also affected by others as well. She finds the solution to something like laziness as participating to climate learning meetings where more climate knowledge and encouragements was given to farmers.

Her desire was to have more people learning and adopting the improved practice. This was fostered by planting her Sunn Hemp field next to the mother field trial where it could be easily seen by more people who were coming to learn during the field days. Her use of drama in presenting lessons learnt from the project was to attract more community attention and focus the climate learning activities and benefits. Her character reveals that there were farmers in Mujika who introduced innovative ideas to disseminate climate information other than those used by the project. They did it in their own time and place like the farmer to farmer interactions (table 6.21). At the age of 46 years, she increased the area planted with Sun Hemp every year over the three year period, showing practical climate learning and attaining a sustainable system despite climate change. Thus she improved her food security which was her primary goal. She also saw the potential of having surplus production to sell to meet the other family requirements such as clothing. This story also reveals the fact that some early adopters in Mujika did not limit the knowledge gained to the

experimental field sites alone but expanded them to the management of their whole family cropping lands. Such a result was probable characteristic of those in the Mujika community with a desire to learn about with SCF.

8.5.3 Mr Owen Hatwiinda

Owen attended most of the public and radio listing meetings from which he realized the community problems of erratic rainfall, poor seed selection and soil fertility could be addressed using the newly introduced climate information from 2007-2010. Owen saw the introduction of the project as an opportunity to remind the community that, the current agricultural practices needed evaluating and reviewing, and so he volunteered as a baby field trial farmer. His careful management of the trials provided him the confirmation that the application of climate learning to his own fields was a sustainable solution to the community's poverty situation. He was so enthusiastic and absolutely convinced of the results from the baby trial that he was determined to transfer the information to his neighbours and fellow farmers. He felt that the information gained from the trial was so important that he needed much more time, (such as half a day) to share the benefits of tailored climate forecasts, so he organized his own field day on 3rd March, 2009. He planted his crop the start of the rainy season using appropriate maize varieties. He was food secure for the first time in his life at the age of 24 in 2008 due to using climate forecast information. Thus it was clear that climate learning had contributed to changing his family's livelihood. Owen's story is a model of climate learning changing smallholder farmers' livelihood, especially the fact that he was considered one of the least in community. This particular story tells us we should not judge our fellow farmers by their previous failures but rather that they should be given another opportunity to learn new techniques. Researchers and community members should allow for an equal opportunity for farmers to learn and improve their own livelihood regardless of any previous failure or any other bad experiences. This general community view was however proven incorrect by Owen representing that group of people who were instrumental and successful during the project. Effective interaction with the type of group that Owen represented would develop the community through application of climate learning.

8.5.4 Gertrude Malambo

In my view, Gertrude understood very well her personal and community problems of lack of animal draft power, erratic rainfall, poor soil fertility and inadequate food supply. She discovered the introduction of CAPES was helpful to improve her agricultural decision making and so was consistently in participated at all levels of meetings. Gertrude contributed to the fruitful farmer to farmer interactions about SCF that led to more farmers participating in CAPES activities. She introduced Edison Malambo to climate classes and later he volunteered as baby field trial farmer.

As a person desiring to learn she reached a turning point and declared her views privately to the researcher and Professor Sue Walker on 17/2/2008 that she would definitely incorporate climatic information in her practice. She stated she understood SCF was important for crop productivity and also that the use of some form of fertility improved crop yield. Evidence of practicing her belief was being found on 8/9/2008 applying composite manure to her fields before planting maize. It is true to say personal interactions around

SCF lead the Mujika community to understanding of SCF and it benefits. One can tell that there were farmers in Mujika who understood SCF and relate it to their own agricultural practices. Gertrude's story reveals climate learning had an influence in changing livelihoods of the women in Mujika.

Being a wise woman, Gertrude also advised researchers not to seek individual opinions on CAPES programmes in public. This especially applies to women in a community where women are not encouraged to speak freely in publicly, but to find other specific opportunities where one-on-one discussion with women could be held. She demonstrated it when she sought a private audience with researchers at the end of the on-farm trials field tour. Gertrude was aware that at times things in projects such as these were difficult for researchers almost to level where they could become disillusioned or give up completely. To avoid beneficiaries from losing out completely, she encouraged the researchers and reminded them she, and the larger community she was representing, were benefiting from all the activities for dissemination of climatic information. This revealed that some women in Mujika were not free to communicate their views at public meeting therefore, getting their views required additional opportunities than those of the public meeting. Gertrude, at the age of 43, found that climate learning changed community livelihood by including a change of behaviour and attitude towards SCF and implementing better planning of their cropping programmes. It also reveals there were probably many Mujika women who benefited from CAPES but whose views were never heard of.

8.5.5 Mr Clement Mwiinga

Clement saw corridor disease of livestock as the major community problem. He initially received the climatic information, especially that of SCF being given by humans instead of "the gods" with much reservations The accuracy of the ZMD 2007/08 SCF when compared to the actual rainfall performance and the flood impact on his crops which he had been warned of, then increased his desire to find out more about SCF continued reliability. Clement's story reveals that not all smallholder farmers in Mujika acknowledged SCF when it was first introduced. Some of them had reservations and needed to learn more before applying it to their agricultural practices. The field training tour he took with 40 other Mujika farmers on 6th January, 2008 to MFTC marked his turning point, when he realized that those who considered SCF in their practices had fewer risks on their crops (Hansen, 2002). On return he planted a quarter hectare field of Sunn Hemp, demonstrating his conviction about using climatic information in his agricultural practices. The continued interaction with community in CAPES, helped these farmers to obtain a better understanding and adopted climatic information in their practices. This story teaches us that undertaking climatic information dissemination for only one growing season in a community that depended on IK for planning and management options, may not yield a good enough result, but a commitment to a least 3 or 5 years is needed.

By attending all climate learning meetings over the following two years was proof of Clement's determination to learn and effectively use climate information by integrating it into his own decision making information style. Maximizing crop productivity using climate appears to be his new aim when he increased the Sunn Hemp plot during the 2009/10 season to one hectare. Though he introduced the planting of hybrid maize varieties he also continued planting local maize verities but at appropriate planting times in the ideal

planting window for their best tolerance against diseases. He considered both SCF and IK; and followed the response farming approach. Climate learning for Clement changed his attitude towards SCF, farming and improved his decision making regarding when to plant which maize variety according to climate forecast available. His story also tells us that there were other farmers in Mujika who integrated SCF together with IK in the agricultural programme after the first year of interaction. He represents a group of slow adopters but through CAPES they changed in their attitude, to SCF, decision making and management of crops. Their visioning and cropping practices also changed. At 36 years of age Clement, a crop traditionalist like others he represented in Mujika, eventually realized application of both IK and SCF was better that relying on IK alone in crop productivity. He found climate learning through CAPES providing responses to the many questions concerning sustainable agriculture under climate change. It was in the continued regular interactions through CAPES that most Mujika farmers had their many questions SCF and its benefits answered. So Clement's story motivates researchers and disseminators of climatic information to have more than a single research cycle within one community where farmers could plan, implement, reflect and evaluate the process again.

8.6 Summary

The stories of the five smallholder farmers from Mujika' three villages of Nkabika, Bulimo and Malomo effectively represented the climate learning of the whole Mujika community that occurred from 2007 to 2010. Actually each one of the baby trial farmers and many others who attended CAPES activities could tell their own stories of climatic learning and when considered together they could tell of the Mujika community climate learning also. The view of Mujika's climate learning from the particular specific situations of five community members provides evidence of CAPES's effectiveness in reaching the individual households with climatic information. The community was friendly and open to researchers, willing to learn while key informants assisted researchers. The crop traditionalists selected crop varieties for planting each season based on their suitability while the difficult community members were also instrumental improving to all that given an opportunity they could do better. This approach hence is a useful tool for evaluating climate learning of a community and is recommended as a monitoring and evaluation for other areas. Thus individual learning was useful in determining the effectiveness of CAPES from the community baseline, through design and implementation of community information dissemination plan; to monitoring and evaluation phases.

Each individual farmer's story starts with information that presents a series of problems such as lack of money, poor soil fertility, erratic rainfall etc that were used as baseline to monitor changes related to the individual and community. One could tell every farmer in Mujika area understood their personal problems quite well. The Mujika community members had different views of the priority of community problems and strategies for addressing them but by consensus agreed that erratic rainfall was their number one problem and awareness of climatic information was the best available opportunity to address. The stories reveal the CAPES used the multi-disciplinary climatic information dissemination modes such as public meetings, learning by doing, radio broadcast, radio listening, printed literature etc were effective in regularly reaching the Mujika community with climatic information. The stories further reveal that CAPES was successful in

Mujika where both early and late adopters were identified. The large numbers of slow adopters were identified during the period. From the stories the one could tell that community farmers participated in climate meetings, interpreting the forecast, decision making using IK and SCF where crop variety selection and management practices were chosen. Farmers in Mujika were also involved in the farmer to farmer interactions; they participated in field experiments and introduction of Sunn Hemp and they evaluated the project activities at the field days.

These stories also reveal that some Mujika community members adopted a combination of SCF and IK and changed the way they made decisions concerning their cropping system, particularly in the matter of choice of cultivars, planting dates, and crop rotation with legumes. Crop traditionalists like Clement did not totally abandon their local maize varieties after acquiring climate information but planted them along with the hybrid varieties at appropriate times for each specific season due to their generic properties. This was also true for their indigenous knowledge which they used alongside with the seasonal climate forecast for decision making.

The community and researchers are discouraged from considering any community member as not being able to make a significant contribution in the community agrometeorological participatory extension service based on the individual's past failures but rather to encourage them to be given an equal opportunity. Some community norms such as considering women inferior in society hinder effective data collection and information transfer in the community agrometeorological participatory extension service. Special considerations and forums for receiving personal views especially from women should therefore be taken by use of gender sensitive approach or home visits in the community where possible.

Mujika community was made up of members with diverse characteristics that required diversified multi disciplinary dissemination modes for effective dissemination of climatic information. Each group required special attention and accommodation using different approaches to achieve the full benefits of CAPES. Each dissemination mode however, influenced the Mujika community differently.

The print media of cartoons and SCF handbills, meant for easy references to disseminated messages, was not used often but once every year with the release of the seasonal climate forecast. This was mainly due to low literacy levels of the Mujika community. The community however, found it useful in the farmer to farmer interactions as those contacted that could read got the original unaltered message. The cartoon effectively communicated information to both the literate and illiterate, and was a favourite amongst the people but confirmed the low Mujika literacy level.

The vernacular radio broadcasts together with its radio listening groups achieved heightened climatic information awareness. Radio programmes also gave training, and promoted self-learning each week Thursday for three months from November to January for three years. The climatic drama introduced attracted listeners to the programme. The audience over the three years period was consistent indicating farmers were learning something every week. Use of the vernacular radio programmes was effective but

requires innovation to use drama to communicate climatic information and maintain a consistent audience over a long time. The experiments with the accompanying its modelling, field days and the social process for training, learning by doing and self-learning were used every season for three years around the mother field trial at Bulimo village. These baby trial farmers documented every activity and learnt by doing from their trials while the neighbouring farmers visited and also learnt from these trials. The annual field day provided for sharing of information by all baby field farmers and researchers with the larger Mujika community. The increased participation by the community in the field days revealed the community was learning something. Experiments are a practical approach for sharing the benefits of climatic information in agriculture production and in CAPES. Farmers can see, and feel the result and relate it to their own situations at home.

The individual personal contacts were used for interactions and receiving feedback over the three years project period. It happened at any time using the most appropriate manner and with who so ever one met. This mode with its wide usage however, required effective training on climatic information at the beginning to ensure farmers fully understood the message so as to reduce the error that occurs during communication from one person to the next.

Information sharing using large meetings enabled easy distribution of climate information, literature and collection of monitoring and evaluation information. Farmers gathered at agreed place to interpret and discuss the climatic topic of the day. This allowed for community participation in interpreting SCF and making decisions based on the forecast for a particular season. Farmers' contributions enhanced other farmers' interest in SCF. This approach was useful in bringing the larger community's interest to the climatic recommendations made on that particular topic and for their information. However, careful usage when disseminating SCF is required as there were some farmers that could not interpret or remember the forecast correctly even after when it was repeated several times.

From the stories, my view is that climate learning and its dissemination modes made significant positive influence in changing the Mujika community attitude, thinking and vision of climatic information to assist in agricultural production and the necessary agricultural practices. I am convinced a detailed community agrometeorological participatory extension services evaluation where a logical process should followed from the initial stages through implementation to monitoring and evaluation. An alternative evaluation could also be provided by following by selected farmers stories in the community, by researchers documenting throughout the project period. Given the fore going one can say that the qualitative research approach used in this chapter ably evaluated the CAPES project that took place in Mujika from 2007 to 2010. Thus being a complement of the quantitative approach used in the main project. It is hereby recommended that a combination of both qualitative and quantitative approaches in CAPES would provide a better evaluation of benefits of the disseminated climatic information to other community where the CAPES will be used.

Extract From Chapter 8 of:

DISSEMINATION OF CLIMATE INFORMATION TO SMALL-HOLDER FARMERS: A CASE STUDY FOR MUJIKA AREA, ZAMBIA

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