Report reference NO: NF/GD/01/02

PARTICIPATORY FOREST RESEARCH AND MANAGEMENT IN KWALE 2001/2002

GANDA FOREST ADJACENT AREA -MARENJE FOREST -KWALE DISTRICT

By

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Acknowledgement

We are very grateful to the MRIMADZO community for the continued participation and their dedicating of their resources to this process all hinged on the vision that the forest will managed on a sustainable basis and they will live to draw benefits.

We appreciate the support of Forest Department (FD) and the provincial administration for their continued support especially in mobilizing the community.

We also thank the local leaders for the support extended to us during the field work.

The Mrima catholic clinic management is acknowledged for providing the hall and facilities used during the workshop.

Special all to the FD officers Mr. Joseph Kibugi and Erastus Ochieng for mobilizing the community and for field logistical support.

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Chapter 1

Introduction

Participatory forestry research and management in Kwale was initiated in 2000/2001. It was started with a baseline socio-biophysical data collection about the forest resources and the communities adjacent to the three forests i.e. Mrima. Dzombo and Marenje (Wairungu. *et. al.* 2001). During the 2000/2001 financial year baseline data was completed in Dzombo and Mrima forests. Socio-economic data collection was initiated in Bando and Marenje villages of Marenje forest. Ganda area that is adjacent to Marenje was not covered. The key activities during the 2001/2002 financial year for Participatory Forestry Management (PFM) research in Kwale was completing the socio-biophysical data collection in Ganda and undertaking baseline vegetation survey for the whole of Marenje forest, electing a community forest association for the three forests, initiating the process of registering the association, developing a proposal jointly with the Forest Adjacent Community, the Forest Department and other identified stakeholders and solicit for support from several Donors. The latter activity was differed to the 2002/2003 financial year with the baseline socio-biophysical data collection being completed during that period.

Justification for the study

There is hardly no existing information on the Marenje forest and therefore there is need to collect data on existing resource base in and outside the forest including the social set up around the forest.

PFM research in Kwale was initiated with the following objectives;

- To test the Arabuko-Sokoke forest (ASF) PFM approach.
- To assess whether PFM can be implemented with normal Government of Kenya funding.
- To develop a management approach that will facilitate community involvement in forestry management

The key areas where Kwale PFM deviates from the Arabuko-Sokoke forest (ASF) PFM approach are;

1. Low funding levels

PFM as an approach will succeed if it can be initiated with minimal external funding support or initial GoK strategic increased funding to specified forests. It will also succeed if it can be demonstrated that subsequently (after initiation) Forest Department is able to implement this approach with normal GoK funding.

2. Involvement of both Forester Management and Extension but having strategic reliance on the Forester Extension.

PFM involves the management of forest and people. The main problem facing forest management is the people management aspect and this is where the Forester Extension becomes a critical officer in this process. The major problem facing forest management is about decision making and implementing the decisions. Foresters in charge of management have always been making decisions or have been implementing what has come from the headquarters but ways of communities participating in the decision-making process and implementation has been missing. This also applied to systems for ensuring the communities are aware of the decisions that are being made by the forest managers. In ASF, this role (of involving the communities) was being done by Project employed Extension officer. This has shown that its not sustainable and by making the FD officer a non-participant when he should be an implementer results in two scenarios; first scenario, taking the officer through the process again once the experimental process is completed and it has proved successful (if funds are permitting), scenario two, the

process stalling immediately the project ends or staff is withdrawn because the FD officer did not know what was being done or never had a chance to develop the skills.

3. Initially having PFM contact persons before holding an election to have elected officials. Adequate awareness should be created before elections are held. This should include consensus building, developing a common vision and creating adequate time and opportunities through and during which the community and the other stakeholders will be able to know each other well to a degree where they will elect the right persons.
4. In Kwale PFM covers the whole forest unlike ASF where it covers part of the forest.

The 2001/2002 report

During the 2001/2002 financial year (FY) Participatory Forestry Management activities in KWALE were concentrated in Ganda area. Ganda area is located to the South-East of Marenje forest. The area is composed of three villages namely Mianzani, Mangawani and Mwambo/Ganda. The other villages surrounding Marenje forest of Bando and Marenje had been covered in 2000/2001FY (Wairungu, *et. al.*, 2001). The final activity was crafting a community-based organization that would bring together the PFM contact persons from the three forests. The key activities have been developing a constitution and registering the association.
The report is divided into three sections. Section A deals with the social data collection and management implications and section B deals with vegetation survey analysis with section C dealing with discussion and way forward.

Section A. Social Biophysical Information

The results

Social organizations and groups in Ganda Area
This was done through listing the external and local organizations located and or working in the area. Further probing also established the key activities the organizations are involved in.

They includes the following:

- Heifer Project International (HPI), which has completed its operations and the main concentrating was improving dairy farming in the area.
- Twende Mbele Dairy Group. This is a group formed by dairy farmers by coming to maximize on milk production.
- Forest Department. This mainly deals with forest management in the area.
- Beekeeping Group. This is one of the women group's activities in the area, currently focusing on honey production.

Ganda Village has few organizations. Most of them were formed to improve the livelihoods of the local people and increase the value of their farm produce. This is and indication of low social capital hence the need to create a new organization to address forest management issues.

Participatory forest mapping
This shows the forest area and the main features in the forest like rocks, roads, streams, springs and other features that the community uses. Features like rocks and rivers could be used as reference points when distinguishing different parts (zones) of the forest (appendix 6 and 7). Maps may also show the location of different forest resources within the area the community feels belongs to them or they use/used to use most.

This PLA tool combined with mobility mapping from the community into the forest will assist forest management through:

- *Identifying which areas of the forest that communities move to as compared to what products are found there.*
- *Identifies the areas, which are used by many hence the possibility of degradation and can assist in locating areas are likely to be used by poachers.*

Participatory household listing and mapping.

The area has 88 households. The mapping shows the area of the village, the locations of the households and assists management when combined with wealth ranking.

This will assist management through;

- *Provision of households and their heads.*
- *This makes patrol easy.*
- *Targeting of support and facilitating the provision of biodiversity conservation incentives.*
- *Supports the establishment of model farms and facilitates monitoring and evaluation*
- *Balance of resource sharing within the community.*

Wealth ranking

The communities came up with seven wealth categories. These are:

- Wealth category 1 (Richest)
- Wealth category 2 (Richer)
- Wealth category 3 (Rich)
- Able to survive and not rich category 1 (Well – off person)
- Able to survive and not rich category 2
- *Dhaifu (fukara)*[3]
- Poor

The characteristics of the wealth categories are:

Wealth category 1 (Richest)

The above has the following:

- Cattle
- Goats
- Sheep
- Poultry
- A big *shamba* (farm)

Big Permanent house
Bicycle
Radio
Educates hisher children

Wealth category 2 (Richer)

He/She owns the following property:

- Few cattle
- Few Goats
- Few Poultry
- Has a small farm
- Bicycle
- Temporary house
- Educates his/her children

Wealth category 3 (Rich)

- Has a bicycle
- Temporary house
- Educates his/her children

Able to survive and not rich category 1 (well-off person)
He/She has:

- Goats
- Farm
- Poultry
- Educates children
- Has a temporary house

Able to survive and not rich category 2
He/She has the following characteristics;

- He/She is employed
- Has no farm
- Has a temporary house
- Educates his/her children

Dhaifu (Fukara)

- Has a degraded *shamba* (farm)
- Owns a temporary house
- Has a few poultry
- Unable to educate his/her children

Poor

- Owns nothing
- No house
- Depends on begging for survival

Wealth ranking as a management tool will assist in management through the identification of; Who in the community owns what? Who is likely to be used? and Who can commission others to poach for them. This will assist in other PFM related activities like IGAs and micro-credit schemes through providing a basis for targeting the right person.
In the classification, on-farm trees were left out as a criteria for wealth ranking. The area has very few on-farm trees as its newly settled and with time and as farmers plant more trees it will definitely be incorporated as ranking criteria. This implies that the area requires on-farm tree planting programmes.

Table 1. Forest products and producing tree species

Timber	*Millicia excelsa*(Mvule), *Afzelia quancensis*(Mbambakofi) Mnomvi, Mkungu-Mandano, Mchingozi
Log	Mlea, *Hymenea verrucom* (Mtandarusi), Mpera-mwitu, *Dalbergia melanoxylon* (Mpingo), (small logs are available too)
Herbal Medicine	Mhonga, Mnyenye, Mgwene, Mragapara, Mvule, Mchani, etc.
Wood Curving	*Dalbergia melanoxyloni*
Poles, posts and withies	___

Food Plants	Mvivi, Mviru, Mbungo, Mkwakwa, Mkororoi, Mhonga
Source of Water	____
Building Stones	____
Meat	Antelopes, Buffaloes, paa, kongoni etc.
Wild fruits	Vitoria, Mabungo, and Mchanua etc.
Thatching grass	____

This combined with mobility mapping will determine whether the paths drawn by the communities lead to areas identified as sources of the products through social mapping.

Table 2 Wealth ranking and forest products use matrix

Wealth Category	Timber Spp.	Logs	Herbal Medic.	Wild Fruits	Building trees	Wood Curving	Stones	Animals (wanyama)	Food Tree spp	Grass	Lake Pool (ziwa)
1	++	+++	+	-	++++	++++	++++	+++	-	++++	-
2	+	++	+	-	+++	+++	+++	++	-	++++	-
3	-	+	++	+	+++	++	++	+	-	++++	-
4	-	+	++	++	++++	+++	++	++	-	+++	+++ +
5	+	+++	+++	+++	++++	++++	+++	++	-	++	+++
6	+++	+	++++	+++ ++	++++	++++	++	+++	+++	++	++
7	-	-	++++	++++	+	-	+	+	++	++	++

This indicates who relies in the forest and also who has a chance of being used to poach for others. This tool could be used to compare several factors within the communities.

Table 3. Forest problems and their solutions

Problems	Solutions
1) Animals destroying crops in the farms and killing livestock.	• Government to compensate farmers whose crops are destroyed. • The government to keep off this wild game from the farms. • The community members to be allowed to kill these animals on the spot.
2) Drought – due to forest destruction.	• Government should re- aforestate areas felled and to improve/intensify protection of the forest.
3) Lack of permits has led to failure in availability of building materials e.g.	• People to be issued with permits to fell trees in the forests at a subsidized rate

poles, posts etc.	for the common man to benefit.
4) Problems of forest fires.	• Improving forest road network around the forest for easy patrolling.
5) Lack of water catchment during drought.	• Government to encourage the community to plant trees in the forests and on their farms.
6) Bribery and corruption of forest guards leads to forest destruction.	• The guards to be trustworthy and to be satisfied with the little they are getting. • Dedication to serving the public.
7) Lack of farms for the community due to the forest occupying a large portion.	• The government through the Ministry of Lands and Settlement should allow part of the forest to be subdivided (Excision).
8) Lack of awareness on importance of the forest.	• The government to create awareness about forest use and its importance.

The history[1] of Ganda forest area

Table 4. Trend Analysis

1920	▫ Mzee Kimera Mwamuzi came to Ganda to stay there ▫ He was later followed by Kubo and Ezi ▫ Kimera Mwamuzi subdivided and gave Bunguu and Mtondoo pieces of land on which to live.
1936	▫ They were chased by elephants from the hill on which they were staying and shifted to Majoreni. ▫ The white men came after word got out and had an intension of subdividing the forest of Ganda but Mzee Mumbwe Mwandaro stood firm and refused the subdivision. ▫ The County Council later took the forest management. ▫ From County Council, the forest was given to the Forest Department. The officer on the ground was a Luo man, who's the only name given was James. ▫ The forest boundaries were then extended to cover some of the people's land and this was aimed at reducing the problem of animal damage to the crops. ▫ Destruction of the forest then started by Arabs and then Akambas followed. These were both legal and illegal operations.

This tool shows major events that have happened and they should be analyzed to show how they have contributed to the current management advantages and or problems.

Information Flow:

What media to use?, Who to use? and *When to pass the information to the community or Government officers?*

There are several ways of communication within and amongst people living in Ganda. The methods identified by the Ganda community are:

1 Letter writing.
2 Verbal messages – people are sent to take information to a specified recipient.
3 Through whistling or making a specific kind of noise e.g. wailing.
4 By drum beating.
5 Specific creatures seen at a place also convey a message e.g. birds songs signify different things like presence of a human being or a snake or finished laying eggs etc.
6 Fires and smoke.
7 Reading newspapers, magazines.
8 Listening to the radio.
9 At funerals, churches, mosques.
10 Through announcements in schools.
11 Sticking posters.
12 Through village chairperson to the chief and other heads.
13 Public meetings and other meetings.

This could be further analyzed and ranked to identify the most used and the most preferred medium by which category of the community so as to be effective and efficient in community mobilization.

Visioning

This tool is used to facilitate the communities develop or bring up their preferred future by analyzing what has contributed to their past, the present (current), situation and what would they like to have (preferred future). The question this tool was trying to answer was, *what shall we do in case we are given the responsibility of managing the forest?*

This was done to gauge whether the communities have an idea of the following

- What it involves to manage the resource?
- Whether they feel that they can manage alone? Is there need for partnership?
- Feel that they need to craft a forest management structure.
- Assess whether there are areas of common interest.

The issues that came up were:

- We shall recruit community forest guards to work together with Forest Department forest guards.
- We shall maintain forest roads for easy movement during forest fires, forest protection and patrol.
- We shall plant trees i.e. afforestation e.g *Afzelia quanzensis, Millicia excelsa. Casuarina equisetifolia,* etc.
- We shall form a forest management committee (forest association).
- We shall request to be taught forest protection skills to enable us work efficiently.
- We shall request to be assisted to get tools e.g. slashers, jembes etc. from the government for forest roads maintenance.
- We shall request for tree seeds and food crop seeds to increase the tree cover.
- We shall protect the forest against tree destruction and wildlife poachers.

- The forest management committee we shall have formed will set rules and regulations and anyone acting on the contrary, will face legal action. The rules and regulations shall be copied to:
    - Chief.
    - Assistant Chief.
    - District Officer.
    - Officer Commanding Station (Police).
    - Forest Department.

This is an indication that the community has a clear idea of what it entails to manage a forest, making regulations for internal use and in case a member decides not to comply the need to seek support from other partners like the Chief, the police etc. They are also aware that for these partners to make the right decisions they need to be informed hence the need to send a copy of the regulations to them.

Elections of PFM contact persons for Ganda Forest Adjacent Area

This process was done to appoint three representatives from each village, whom we called PFM contact persons. Since Ganda has three villages the communities elected nine (9) from the whole of the Ganda area. They will assume a representative role in meetings and give the feedback to the community. The community members elected are:-

PFM Contact people:

Mianzani:

1. Daniel Mkaya
2. Ali Thomas
3. Limazi Zimba

Mangawani:

1. Hamisi Rajabu
2. Shee Kassim
3. Chiriro Mwambanga

Mwambo/Ganda ::

1. Masai Yawa
2. Paul Mwabwanga
3. Domitila Kassian

The elected officials were to meet with the others from the other villages adjacent to the three forests of Mrima, Marenje and Dzombo to elect the forest association interim officials to facilitate registration of the association.

Chapter 2.

Section B Vegetation status Analysis

Methodology

The Belt Transect Method was used as it was done in Dzombo and Mrima. The parameters taken included GPS reading at the starting point of transect along the forest edge and at the end of the transect which was determined by traversing the forest block in a given direction e.g. for Bando (doing a cross-section of the forest) or the prevailing social (Ramadhan) conditions (e.g. for Ganda.

Other parameters are the species of trees and shrubs, the diameter at breast height and height of some trees, which were good representatives of the species and noting saplings and seedlings along transect. Also notable human destructive activities e.g. pit-sawing, tree stumps etc. were recorded along transect.

The Team worked with a Team of two community para-taxonomists who were identified by the community during the first day of starting the research programme. The criteria used was based on their vast knowledge of the forest area, the plant names and their uses and their ability to walk long distances.

Results and Discussion

Preliminary results show the most frequent and abundant species[2] to be *Cynometra webberi, **Mbava,** Nesogordonia africana, Combretum Stuhlmanii, Fernandoa magnifica and Memecylon mourilifolium.*

Those, which are abundant and restricted in distribution, include *Cynometra webberi, **Mchilatsaka and Mwachibandu.**.*

Those of moderate frequency and distribution include *Bombax rhodognophalonCeriops tagal **(Mkandaa),*** Nchibandu and ***Chikuro*** . A mangrove species was listed because the forest is joining the mangroves to the south-east.

Among the rare and less frequent species are *Afzelia quancensis, Hymenea verrucosum, Millicia excelsa, Ficus natalensis, Adansonia digitata, Diospyros squarrosa, Balanites wilsoniana, Pleurostylia africana **etc**.*(see appendix 1)

The regeneration potential of the various species is seen in terms of the number of saplings of a given species. The more the number of both, the higher the potential and vice versa. Species which had higher number of saplings includes ***Msokoronyambwi,*** *Allophyllus rubifolius, Fernandoa africana, Nesogordonia africana, Cola clavata, , Fernandoa magnifica, Memecylon maurilifolia* and *Grewia phlagiophylla.* Those, which showed moderate potential, includes *Trema orientalis, Grewia calymmetosepala, Caesalpinia volkensii and Marhamia zansibarensis.* Those with low potential are *Xylopia arenaria, Adansonia digitata, Newtonia paucijuga, Huslundia opposita, Toddalia asiatica and Blighia unijugata.* (See Appendix 2).

Species, which had highest number of seedlings, are *Cynometra webberi, **Mvunja Kondo, Msokoronyambwi,** Alchornea laxiflora, Allophyllus rubifolius, Fernandoa magnifica, Nesogordonia africana, Monanthotaxis fornicata* and *Securidaca longipedunculata.* Those with

[2] Local manes given in either Digo or Duruma.

moderate numbers are *Clerodendrum acerbianum, Prema chrysoclada, Milletia usamarensis, Tarenna littoralis, Harungana madagascarensis, Memecylon mourilifolium, Grewia plagiophylla, Caesalpinia volkensii* **etc.** The rare and less frequent species are *Cola clavata, Thespesia danis, Nectaropetalum kaessneri, Afzelia quancensis, Canthium glaucum, Terminalia polycarpa* etc (Appendix 3).

In table 1 above, the community members had listed some important timber species to be *Millicia excelsa, Afzelia quanzensis, Cordia africana, Newtonia paucijuga,* ***Mnomvi*** and *Hymenea verrucosum*. In Appendix 1 below, showing the species of trees and shrubs, most of these species are shown to have a restricted distribution, which could be as a result of the soil factor and the adaptation of the species. It was only two species i.e. *Newtonia paucijuga* and *Cordia africana* which showed a wider distribution by occurring in three transects whereas the rest appeared in only one of the four transects, which were assessed.

Also, all the species mentioned above had very low numbers recorded and it is therefore important for further research to be conducted to establish/ascertain the ecological status of the said species and others in the forest. This if done will make it possible for the team to establish the entry points into further work in research and management as well. It might even become necessary to rehabilitate some areas in the forest by enrichment planting and to undertake agroforestry activities in the forest adjacent community's land.

As a measure to control the destruction of the forest by the Forest Adjacent Community (FAC) members, it would be important to propose the establishment of home-gardens or woodlots of important species for timber/logs, herbal medicine, food trees/fruits, curving wood e.t.c. Such measures in the long run will lead to self-sufficiency in wood products for the community as well as reinforcing the concept of Participatory Forest Management (PFM), because they will undertake such activities under the guidance of the Forest Managers and technical backstopping by Researchers.

4. Amina Ali (Mwanguda)
5. Mwingo Mangisi (Dzombo)
6. Umazi Ziba (Mianzani)
7. Salim Uyani (Dzombo)
8. Simon Mwakamba (Marenje)
9. Domitila Kassian (Mwambo/Ganda)

Th e elections were followed by the partners developing the activities they were going to be engaged in during the following year (2002/2003). The table below gives the summary.

Table 5. Schedule of activities

	ACTIVITY	RESPONSIBILITY	TIME
1	Elections	Community	November
2	First meeting	Community	
3	Minutes	Community	
4	Drafting constitution	Joint	
5	Discussions about the constitution	Community / joint	
6	Endorsing the Constitution	Community / joint	
7	Edited report	KEFRI / joint	
8	Registration of the association	Community / FD	
9	Proposal writing workshop	KEFRI / joint	
10	Seeking for funding	Joint	
11	Final report	KEFRI	

The workshop decided to come up with a name for the community association, and three names were floated by the community as follows:- MAMRIMA, MUUNGANO and MRIMADZO. Through voting it was agreed that the forest association be called MRIMADZO, which are initials of the names **MRI**MA, **MA**RENJE, and **DZO**MBO.

The association should be registered under the MRIMADZO FOREST ASSOCIATION and the Forest Extension Officer, Msambweni Division, Mr. Joseph Kibugi, will facilitate and coordinate the registration of the association.

Emerging scenarios and their Management implications

- The community has an idea of what is expected of them if they are to participate in forest management.
- The social capital is not well developed, as the area seems to have few community based organizations. The notable NGO in the area is Heifer Project International.
- The community relies on the forest for their domestic life.
- Though the community identified and listed some species of trees as their sources of timber, the resource inventory preliminary results shows that those trees are few/rare in the forest calling for some/possible intervention.

Key activities

- Initiating participatory forest assessment in Dzombo hill-top forest.
- Detailed socio-economic data collection in Dzombo and Mrima.
- Initiating awareness creation on PFM to the wider stakeholder.
- Developing forest Association working procedures and modalities.
- Initiating joint working guidelines development.
- Developing a proposal.

Appendices

Appendix 1. Trees and Shrubs of Marenje forest

No	Local Names	Botanical Names	T_1	T_2	T_3	T_4	TOTAL	DBH(M)	HT(M)
1	Mfunda	*Cynometra webberi*				127	127	28.5	18.00
2	Mbava		29	23	6	21	79	16.5	
3	Mhzondoheranguluwe	*Memecylon mourilifolium*		31	23	1	55	24.5	22.00
4	Mranza	*Nesogodonia africana*	13	15	7	10	45	38.5	25.00
5	Mgurure	*Combretum stuhlmanii*	4	9	16	9	38	40.0	20.00
6	Mlangalanga	*Fernandoa magnifica*	7	10	7	6	30	30.5	
7	Mkungu Mwitu	*Monanthotaxis fornicata*		22	1		21	34.3	22
8	Mchibandu		1	1	17		19	30.0	20.00
9	Msufi Mwitu	*Bombax rhodognophalon*	7		2	6	15	58.5	23.00
10	Chikulo			8		5	13	10.5	
11	Mkandaa	*Ceriops tagal*		3	7		10	21.5	
12	Mvunza Jembe	*Deinbolia bornonica*		8	1		9	36.5	16.00
13	Mguoguo	*Antiaris toxicaria*			2	6	8	32.0	26.00
14	Mlala	*Diaspyros greenwayii*	4			3	7	24.5	
15	Mziazia	*Hunteria zeylanica*		2		5	7	23.5	
16	Mbokoboko				7		7	87.5	26.00
17	Mkwakwa	*Strychnos madagascarien*	1			5	6	20.0	
18	Mleya	*Newtonia paucijuga*	1		1	4	6	39.0	
19	Mkungu Mandano	*Cordia africana*	1		3	2	6	59.0	27.00
20	Mchanibawa	*Albizia adianthifolia*				6	6	40.5	
21	Mkokobara		1	2	2		5	13.0	
22	Mng'ambo	*Manilkara sansibarensis*			1	3	4	43.5	23.00
23	Muomvi					4	4	39.0	24.00
24	Mchibomba		3				3	28.0	
25	Mkizatsaka		1	1	1		3	30.0	
26	Mvumba	*Vitex strictus*			3		3	7.0	
27	Mrusapungu	*Gassypioides kirkii*			2	1	3	28.0	
28	Mkone	*Grewia plagiophylla*			3		3	7.5	
29	Mwazizunga					3	3	20.0	14.0
30	Mpalapala					3	3	32.5	16.0
31	Msambia		1	1			2	30.0	

32	Mkoko Mwitu		2				2	7.5	
33	Mkibantu		2				2	8.5	
34	Mwakala		2				2	45.0	
35	Mfune	*Sterculia apendiculata*			1	1	2	38.0	24.0
36	Mfyofyo	*Drypetes natalensis*				2	2	6.0	
37	Chipapa					2	2	14.5	
38	Mvule	*Millicia excelsa*				2	2	29.0	
39	Mbambakofi	*Afzelia quanzensis*				2	2	75.0	
40	Kidore	*Harrisonia abysinica*	1				1	27.5	
42	Mgandi	*Ficus natalensis*	1				1		
43	Mtandarusi	*Hymenea verrucosum*	1				1	30.0	
44	Mbuyu	*Adansonia digitata*	1				1	29.0	25.0
45	Mpepe			1			1	10.0	
46	Mnyanya Kanda	*Lonchocarpus bussei*		1			1	7.0	
47	Mwavidzonga			1			1	12.0	
48	Mvunza Kondo	*Allophylus rubifolius*		1			1	5.0	
49	Mkamba Vitu	*Phyllanthus welwitchii*				1	1	5.0	
50	Mkonga	*Balanites wilsoniana*				1	1	8.0	
51	Mpweke	*Diospyros squarrosa*				1	1	73.0	22.0
52	Mranze	*Dalbergia boehmii*				1	1	30.0	
53	Mpakapaka	*Chytranthus obligene*				1	1	7.0	
54	Kinyandege					1	1		
55	Mbabaro					1	1	59.0	20.0
56	Mchinza Tsaka					1	1	60.0	24.0
57	Mfudu Madzi	*Vitex mombasae*				1	1	14.0	
58	Mporojo	*Albizzia anthelmifica*				1	1	11.0	
59	Mvungunya					1	1	9.0	
60	Mtangae	*Pleurostylia africana*				1	1	33.0	18.0
61	Mparawanda	*Markhamia zanzibarica*				1	1	11.0	
62	Mkulu	*Diospyros cornii*				1	1	92.0	26.0

Appendix 2. Saplings of Marenje forest

	Local Name	Botanical Name	T_1	T_2	T_3	T_4	Total No.
1	Msokoranyambwi		0	0	0	104	104
2	Mvunzakondo	Allophylus rubifolius	7	35	45	4	91
3	Mlangalanga	Fernandoa magnifica		13	12	22	88
4	Mrunza	Nesogordonia africana	30	45	12	0	87
5	Mbavava		21	5	24	18	68
6	Kipandelua	Cola clavata	0	0	0	54	54
7	Mvunja Jembe	Alchornea laxiflora	1	33	18	0	52
8	Msaviaa	Pachystela msolo	0	17	22	9	48
9	Mzhondoherangulue	Memecylon muririifolia	12	2	3	38	45
10	Mkone	Grewia plagiophylla	1	1	4	31	37
11	Mpepe	Lantana trifolia	22	3	9	1	35
12	Magwene (Mgwene)	Monanthotaxis fornicata	0	3	2	26	31
13	Chikulo		0	0	0	27	27
14	Mnagwe		0	0	0	23	23
15	Mbonobono	Harungana madagascarensis	0	0	19	0	19
16	Mbwava		0	5	12	0	17
17	Mkibantu		6	4	3	4	17
18	Msokote	Grewia calymmetosepala	8	8	0	0	16
19	Mbware		0	13	0	0	13
20	Muumba (Muhumba)	Cassia abbreviata	5	3	4	0	12
21	Mfethofetho	Terenna littoralis	0	4	0	7	11
22	Mlehaa	Hyphaene copresa	4	2	1	3	10
23	Mparawanda	Marhamia zanzibarensis	4	0	6	0	10
24	Mlindazia	Mimosa pigra	0	0	9	0	9
25	Mlala	Hyphaene compresa	0	0	0	9	9
26	Mkame		6	0	3	0	9
27	Mwangala	Abrus precatorius	8	0	0	0	8
28	Kivuvahee		0	0	0	8	8
29	Acacia spp	Acacia brevispica	0	0	0	0	8
30	Mchinzatsaka		2	2	4	0	8
31	Mburuga	Caesalpinia volkensii	0	0	0	6	6
32	Mnyala (Mnyazaa)		5	1	0	0	6
33	Mpera Mwitu	Coffea pseudozangubaria	4	0	2	0	6
34	Mbokoboko	Harungana madagascarensis	0	0	5	0	5
35	Mkambaa		3	0	2	0	5
36	Mkibanda		3	2	0	0	5
37	Mkorongo(lo)		3	2	0	0	5
38	Mwahafuhafu		0	4	0	0	4
39	Kinyereree		0	0	4	0	4
40	Mkokowa		0	0	4	0	4
41	Mngo'ondang'onda		0	0	0	4	4
42	Mdaa		0	1	3	0	4

44	Mrehee		3	0	0	0	3
45	Mkibomboo		3	0	0	0	3
45	Mdimutsaka	Allophylus p[illegible]illei	0	0	3	0	3
46	Mfalafala (Mpalapala)		0	2	1	0	3
47	Litugu (Mbugu)	Paullinia pinnata	1	0	2	0	3
48	M[illegible]galanga (Mke)	Fernandoa magnifica	2	0	0	0	2
49	M[illegible]mbe Mwitu	Vismia orientalis	2	0	0	0	2
50	M[illegible]okame		2	0	0	0	2
51	Mk[illegible]mbwi	Lannea stuhlmannii	0	2	0	0	2
52	Mchamimbawa		0	0	0	2	2
53	Kipwe[illegible]wa		0	0	0	2	2
54	Mkambee		1	1	0	0	2
55	Mvuuga mvuge		1	0	1	0	2
56	Mkone Mume	Grewia densa	1	0	0	0	1
57	Acacia rovumae	Acacia rovumae	1	0	0	0	1
58	Mbarawa	Xylopia arenaria	1	0	0	0	1
59	Mkulukazingwea	Adansonia digitata	1	0	0	0	1
60	Mvuma	Premna chrysoclada	1	0	0	0	1
61	Mchunga N[illegible]'ombe		1	0	0	0	1
62	Mvinzovinzo		0	1	0	0	1
63	Kaziazia		0	1	0	0	1
64	Mkibohooya		0	1	0	0	1
65	Mtondoo		0	1	0	0	1
66	Mbwafwebwafe		0	1	0	0	1
67	Kwehee		0	1	0	0	1
68	Msaviaa Mwitu	Pachystela msolo	0	1	0	0	1
69	Mpekezee		0	1	0	0	1
70	Mabwe		0	0	1	0	1
71	Mbwi		0	0	1	0	1
72	Msakapaka		0	0	1	0	1
73	Mleha	Newtonia paucijuga	0	0	1	0	1
74	Mvuge		0	0	1	0	1
75	Mtelelee	Huslundia opposita	0	0	1	0	1
76	Mlembelembe		0	0	1	0	1
77	Msalaa		0	0	1	0	1
78	Mtembeteembe		0	0	1	0	1
79	Kikombe chui		0	0	0	1	1
80	Mbowe	Thespesia nanis	0	0	0	1	1
81	Mpwakapwaka	Bligbia unijugata	0	0	0	1	1
82	Masomaso		0	0	0	1	1
83	Kiwazaa		0	0	0	1	1
84	Mranze		0	0	0	1	1
85	Mpalapala		0	0	0	1	1
86	Mbwananyoma		0	0	0	1	1
87	Mkalakala		0	0	0	1	1

Appendix 3. Seedlings of Marenje forest

	Local Name	Botanical Name	T_1	T_2	T_3	T_4	Total No.
1	Mfunda	Cynometra webberi	0	0	0	203	203
2	Mvunja kondo		5	46	36	8	95
3	Mvunja jembe	Alchornea laxiflora	1	70	15	0	86
4	Msokora nyumbwi		0	0	0	80	80
5	Mlangalanga	Fernandoa magnifica	1	18	10	27	56
6	Mrunza	Nesogordonia africana	12	20	2	12	46
7	Mbavavaa		5	0	8	9	22
8	Mgwene		12	3	0	2	17
9	Mzizi		0	10	7	0	17
10	Mrehee		16	0	0	0	16
11	Mkibantu		0	3	1	10	14
12		Acacia spp	1	7	4	2	14
13	Kikuro (Chikulo)		0	1	0	12	13
14	Mpepe	Lantana trifolia	0	8	3	0	11
15	Mkone	Grewia plagiophylla	0	4	1	5	10
16	Msaviaa	Pachystela msolo	0	5	4	0	9
17	Mkame	Clerodendrum acerbian	7	0	0	0	7
18	Mvumaa	Premna chrysoclada	7	0	0	0	7
19	Mzhondohera ngulue	Memecylon Mauririfolia	1	0	1	5	7
20	Mvavaa		0	6	0	0	6
21	Mwahafuhafu		0	6	0	0	6
22	Mfethofetho	Tarenna littoralis	0	0	0	6	6
23	Mpwakapwaka	Blighia unijucata	2	3	0	1	6
24	Mshindaalume	Drypetes natalensis	5	0	0	0	5
25	Mlindazia	Mimosa pigra	0	0	5	0	5
26	Mbonobono	Trema orientalis	0	0	5	0	5
27	Mwangala	Abrus precatorius	4	0	0	0	4
28	Mvinzovinzo		0	4	0	0	4
29	Mtandarusi	Hymenea verrucosum	0	4	0	0	4
30	Mleha	Newtonia paucijuba	0	0	0	4	4
31	Mburuga	Caesalpinia volkensii	0	0	0	4	4
32	Mperamwitu	Coffea pseudozangubaria	0	1	3	0	4
33	Mdimutsaka (Mke)	Suregada undata	0	0	3	0	3
34	Mlala	Hyphaene compresa	0	0	0	3	3
35	Mtelee, (Mtelelee)	Huslundia opposita	2	0	0	1	3
36	Mumba muhuma (Mume)	Cassia abbreviata	2	0	1	0	3
37	Mkongolo		0	0	2	1	3
38	Mparawanda	Markhamia zanzibarensis	0	1	2	0	3
39	Mdimu mwitu (Tsaka)	Allophylus pervillei	0	0	2	1	3
40	Msalaa		0	0	3	0	3
41	Mbugu		2	0	0	0	2
42	Mchinzatsaka		0	2	0	0	2
43	Mchanimbawa		0	0	0	2	2
44	Mng'ambo	Manilkara sanzibarensis	0	0	0	2	2

Appendix 4. The Daily Field Schedule Activities

DAY ONE ***The community to work in small groups followed by merry-go-rounds***

- Registration of workshop participants by Forest Guard or Community Member
- Opening of the workshop by prayers
- Introduction: to cover name, village/department, interests if possible focus on forestry or environment
- Introduction remarks by FD Officer (DFO or the Forester)
- Official opening of the workshop by the DFO Kwale
- Overview of the activities (on flip chart) for Dzombo, RO GRRC (Mr. Mbuvi) Stress on the need to volunteer some community members to assist in the conventional resource management
- Team contract
- General overview of the process of PFM: from reconnaissance to working together with all stakeholders in managing together the forest resource (steps on flip chart – pre-local forest association (in our case we should aim at establishing contacts and establishing interim forest association officials), local forest association formed, forest resource assessment/initiation of biological diversity conservation incentives, legal and policy environment and final PFM plan agreement (*bring out the issue that this is a slow process)*
- Workshop objectives (Mr. Wairungu)
- Workshop process (*emphasis on community led and participatory approach*)
- Workshop expectations (if necessary)

Activities (to be undertaken by different groups and then each group presents to the other groups – facilitators have to ensure adequate time for discussions on each groups' presentation)

Village map –to show the main features like shopping centers, schools, rivers etc.

Social mapping/Resource mapping/transect walk

Stakeholder analysis

Household mapping and listing

Forest Map: to show the forest roads and the areas where different forest products are found in the forest (*discuss accessibility of the materials if necessary; -Do the communities know the procedure)*

Review of the Days activities

Nomination of the Community conventional inventory Team

DAY TWO (*aim to finish by 3.00pm*)

Wealth ranking in the village

Listing forest products

Forest product matrix/Mobility mapping

Forest Related problems and solutions

Flow diagram/solution tree/problem tree diagram

Trend analysis/Timeline/historical profile (*focus on hill side forest*)

DAY THREE (*aim to finish by 3.00pm***)**

Information flow analysis

Developing partnership protocols (*how we shall work together*) interim association formation (*it is advisable at present we call them PFM community contact persons*)/

Visioning

Checklist of guiding issues

- Level of involvement/ways of participating
- Stakeholders/Partners
- Benefits
- Responsibilities
- Agreements
- Implementation
- Monitoring

Within the current management: who are the stakeholders

What are the changing trends?

- How are we to achieve this
- What procedures do we follow

Community Action Plan

From the days discussions

Address the issue of information flow about forest resources

For example how do they get information about fuelwood pricing from FD or how do they plan/acquire information about tree planting.

What is it that we can do together

This should lead to appointment PFM contact persons from the community for Ganda area.

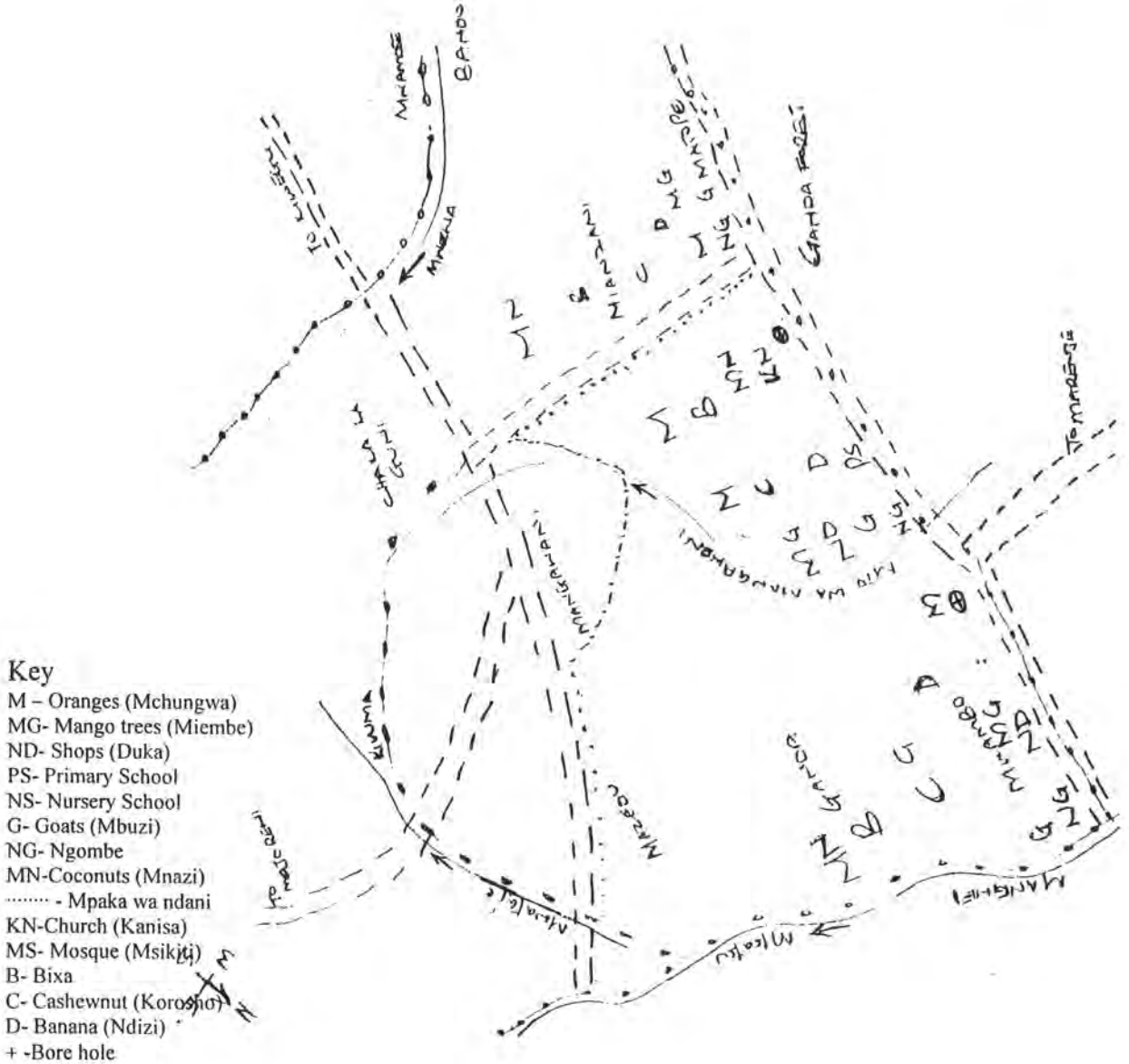
Immediate plan,

A workshop for all PFM contact persons to elect the interim officials of the forest Association.

Appendix 5. MINYANZANI,MANGAWANI,GANDA/MWAMBO household listing

1	Nesphori Mwakamba	45	Peter Chengo
2	Cassian Tumna	46	Rajab Hamisi
3	Mwambwanga Julo	47	Manga Mwakio
4	Mpate Ndaro	48	Kasimilu
5	Nyasi Ndaro	49	Adija Abdalla
6	Maphungo Beja	50	Rajab Kassim
7	Nahenza	51	Shee Kassim
8	Mzungu	52	Mohamed Kassim
9	Dzeha Tsuma	53	Bi. Kassim
10	Kombo	54	Omar Kassim
11	Mwachupa	55	Ngao Kengo
12	Peter Ndeka	56	Maneno Daniel
13	Mangule	57	Kornell Nandombi
14	Degwa Sindi	58	Lugwimbu
15	Genya	59	Alois Asusie
16	Swalehe	60	Athanas Mpishi
17	Omar Hamisi	61	Simon Mpishi
18	Ruwa	62	Bushiri masangano
19	Kassim	63	Masai Yawa
20	Mkondo Tsuma	64	Gitau Githaiga
21	Mtinda	65	Nyambura Githaiga
22	Ziba Mwambome	66	Abdalla Kassim
23	Thomas Kitibwa	67	Ali Kassim
24	Nyawa Dumba	68	Jumaa
25	Njemo Lewa	69	Mwakasembo
26	Mazera Mwahni	70	Karima
27	Thomas Sogo	71	Gitau
28	Mricheni	72	Fredrick Nyanje
29	Mazera Mwachupa	73	Ndegwa
30	Edward Sinyonga	74	Mwero Mrinzi
31	Hendrick Madudi	75	Nassir
32	Simon Macharia	76	Masai Kitumbua
33	Salim Juma	77	Mlongo Kionzo
34	Agastino Kijazi	78	Mwakidudu
35	Rama Tsonzo	79	Mwaruwa Kidanga
36	Mohamed Mwakitu	80	Njoroge Ndung'u
37	Ali Mwashambi	81	Lewa Mwahui
38	Johnson Mwero	82	Mohamed Hamisi
39	Joseph Tumna	83	Hassan Hamisi
40	Mwachupa Said	84	Nimgongo Hamisi
41	Hassan	85	Nichaliki Matezi
42	Mbwana	86	Bechizi
43	Katambo Ndegwa	87	Jumaa
44	Mkala Mwachupa	88	Nzai

Appendix 6. Ganda Area Resource Map



Key
M – Oranges (Mchungwa)
MG- Mango trees (Miembe)
ND- Shops (Duka)
PS- Primary School
NS- Nursery School
G- Goats (Mbuzi)
NG- Ngombe
MN-Coconuts (Mnazi)
..... - Mpaka wa ndani
KN-Church (Kanisa)
MS- Mosque (Msikiti)
B- Bixa
C- Cashewnut (Korosho)
D- Banana (Ndizi)
+ -Bore hole
═══ Road
-·-·- -Outside Boundary (Mpaka wa nje)

Compiled from Community drawn maps by Welimo. O. M.

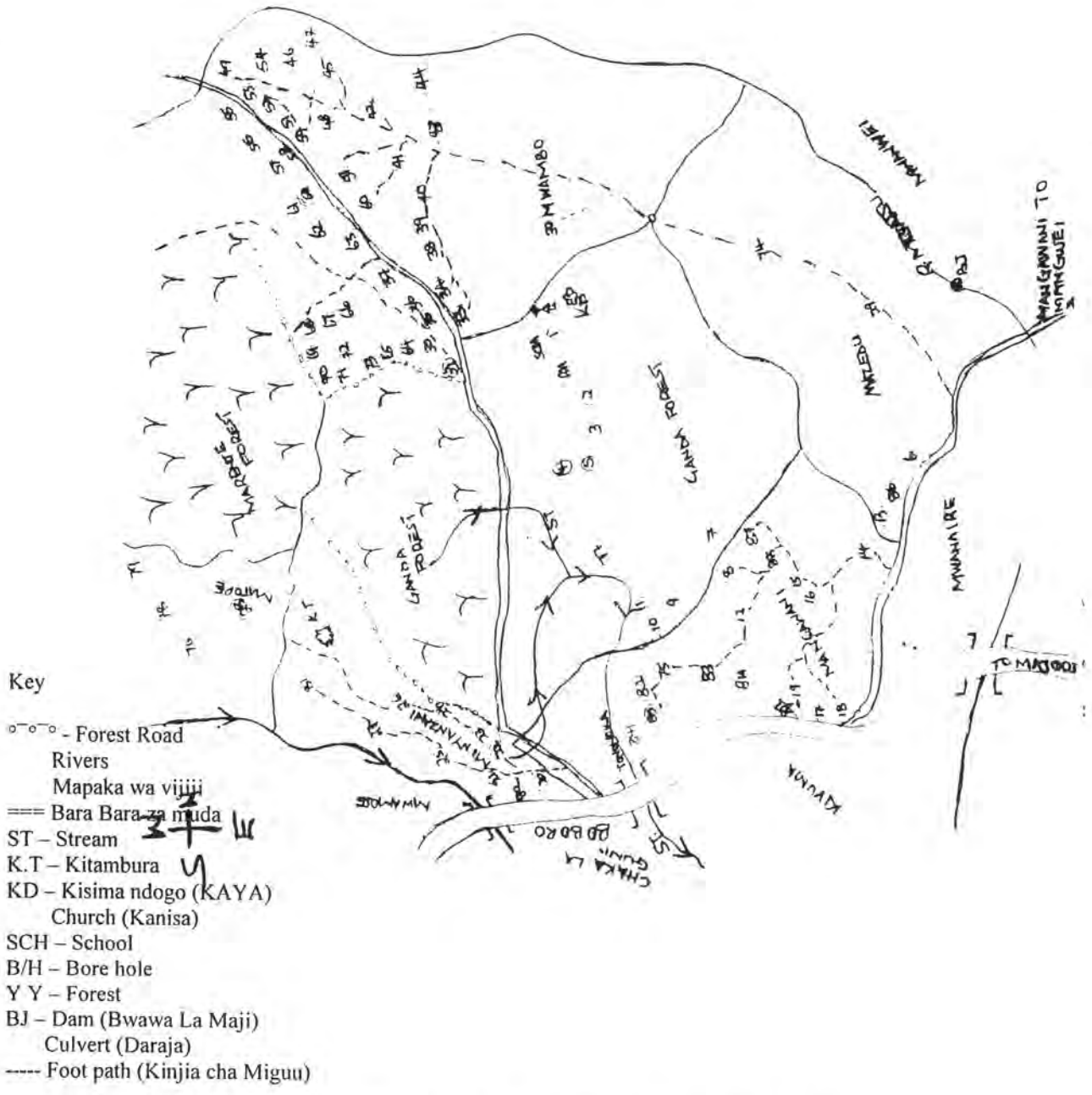
Appendix 7. Ganda area Forest Adjacent Area Resource Map.

Key
== Road (Bara Bara)
M – Guavas (Mpera)
F - ---- (Msufi Mwitu
V - (Mramba)
O - (Minovi)
R – Grass (Nyasi)
L – *Milicia ecelsa* (Mvule)
Y – *Afzelia quanzensis* (Mbamba kofi)
X – Well (Kisima)

Common Animals
1. Buffaloes
2. Monkeys
3. Antelopes
4. Tumbili
5. Mbega
6. Wild pig (Nguruwe)
7. Chui
8. Snake (Nyoka)
9. Tortoise (Kobe)
10. Warthog (Ngiri)
11. Nugu
12. Kuro
13. Thomson gazzele (Kongoni)
14. Kibaya

Compiled from Community drawn maps by Welimo. O. M.

Appendix 8. Minyanzani, Mangawani, Ganda/Mwambo Village Household Mapping



Compiled from Community drawn maps by Welimo. O. M.