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**Socio-Economic Baseline Survey of Villages  
Adjacent to the Vidunda Catchment Area,  
Bordering Udzungwa Mountains National Park**



*Incorporating a Socio-Economic Monitoring Plan for 29  
Villages North and East of the Udzungwa Mountains  
National Park*

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# **Socio-Economic Baseline Survey of Villages Adjacent to the Vidunda Catchment Area, Bordering Udzungwa Mountains National Park**

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# Abbreviations and Acronyms

AIG	Alternative Income Generating Activity
CBFM	Community Based Forest Management
CBNRM	Community Based Natural Resource Management
CEPF	Critical Ecosystem Partnership Fund
CFR	Catchment Forest Reserve
CMEAMF	Conservation and Management of the Eastern Arc Mountain Forests Project
EAMCEF	Eastern Arc Mountains Conservation Endowment Fund
FAO	Food and Agriculture Organisation
FBD	Forestry and Beekeeping Division
FINCA	FINCA International - provides financial services to poor families
GoT	Government of Tanzania
ICTZ	Intertropical Convergence Zone
IUCN	International Union for the Conservation of Nature
JFM	Joint Forest Management
MNRT	Ministry of Natural Resources and Tourism
NGO	Non-governmental Organisation
NORAD	Norwegian Agency for Development Cooperation
PFM	Participatory Forest Management
PLUM	Participatory Land Use Planning
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
SACCOS	Savings and Credit Cooperative Society
SSI	Semi-Structured Interview
TANESCO	Tanzania Electric Supply Company Limited
TANAPA	Tanzania National Parks
TAZARA	Tanzania Zambia Railway
TFCG	Tanzania Forest Conservation Group
UMNP	Udzungwa Mountains National Park
UNDP	United Nations Development Programme
VDC	Village Development Committee
VFMP	Village Forest Management Plan
VLFR	Village Land Forest Reserve
VLUM	Village Land Use Management
VNRC	Village Natural Resource Committee
WWF	World Wide Fund For Nature
Tsh	Tanzanian Shillings

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# Executive Summary

## *1 Background*

The densely forested Udzungwa Mountains in Tanzania's southern highlands are internationally recognised as an area of rich biodiversity and a hotspot for a range of unique endemic species. Considerably more degraded, the Udzungwas are neighboured to the north east by the Vidunda Mountains, divided by the Great Ruaha river. Both ranges are part of the Eastern Arc biogeographical range that span from south-eastern Kenya to south west Tanzania.

The main objectives of this study are to research and summarise baseline socio-economic information for nine villages in the Vidunda area, and develop the framework for a sustainable socio-economic monitoring plan for both the nine Vidunda area villages, and 20 villages in the area to the east of the Udzungwa Mountains National Park. The monitoring plan is to be implemented during the course of the three year project.

## *2 Key Findings*

Research amongst communities was carried out in nine villages. These were chosen to best represent the total area under assessment, being villages either close to the Vidunda hills, or amongst the hills themselves. The research was divided into both quantitative and qualitative data in order to gain a detailed overall understanding; the former allows for specific data, percentages and numbers to be gathered. The latter allows for a more generalised view over a greater number of people. Key Findings are summarised as follows:

- Agriculture is the principal livelihood activity generating food and income and is essential to people's survival. Agriculture brings in food for everyone and money for 96.7% of respondents. Secondary activities are also important as people cannot live on farming alone. Small business is also important, with 77.2% of respondents gaining financially from this livelihood. Animal husbandry brings income for 47.2% of respondents.
- People perceive their surrounding natural environment as being a source of natural capital. The level of direct dependency on natural assets by communities from all sample villages is highly significant, and in the view of many, not sustainable without changes in usage patterns. There is widespread understanding that natural resources are decreasing.
- The degree of fuelwood dependency in the villages is usually considerable. There is a perceived urgent need for alternative energy sources, but most lack knowledge of what this would be or how it could be applied to people's lives, although awareness is slowly increasing.
- Putting in TANESCO electricity, or an alternative such as solar supply, into the homes of the study villages will vastly reduce the use of natural resources, particularly trees cut for firewood and charcoal. TANESCO is an unlikely prospect for most people, not because of the build of their houses but because many live too far from the current lines and new lines are not economically viable. Solar may be a very real option for the future. Its one-off costs may be prohibitive but once established it needs only the most basic of maintenance. The difficulty is likely to come with the cost, supply and with the amount of power that panels may generate.
- Whilst the use of rice husks have slowly become more common, many still feel that it is an inefficient means of firing bricks compared to firewood. In the Vidunda mountains, use of rice husks is altogether unfeasible and an alternative to firewood still needs to be found.

- The use of efficient stoves is likely to develop over time. With a careful awareness and training campaign they are likely to be used by a large percentage of households in future.
- There is a lack of knowledge about village and district level institutions that relate to management of the environment, the forests, water and land. Work is required in building up both these institutions themselves and greater awareness of them.
- Land ownership and land use planning are fundamental issues that will continue to need addressing. Having the assurance of a land use plan and clarity of ownership and usage rights for different zones is likely to have a positive impact on both economic development and sustainable management of village based and surrounding natural resources.
- Most participants in this study are broadly aware of the rules and regulations relating to what they can and can't do in their local woodland or forest environment. Despite this knowledge, however, most people openly admit that they are not always able to follow guidelines because of the adverse effect this regulation has on their livelihoods and the lack of alternative. Many recognise they are causing problems, but because they utilise their environment in order to survive they do not see any alternative.
- Social and economic aspects of life are both dependent on natural resources in the area under study and are market driven. In the difficult periods prices for goods are driven low due to the lack of ability to pay. In the good times, post harvests, prices for goods are driven high as people have more money to spend and are willing to pay. Likewise, with harvests, times of plentiful harvests see a drop in prices for the particular crop recently harvested. In difficult times, prices for forest products like firewood or charcoal rise, especially when issues of scarcity are also brought into play.
- The negative impact on natural resources is accelerated when people have no income, or worse no food, and look to the forests and nature for last chance support. The basic realities of supply and demand are prominent market forces dictated by seasonal change which in turn dictate peoples response to their environment. Any future interventions, whether of alternative fuels or alternative income generating activities must therefore take into account the place they must fit into the dynamics of the marketplace as well as the influence they are likely to have on that market, positive and negative.

### **3 *Monitoring Steps***

The following steps are recommended as key to the development of the socio-economic potential of 29 villages. For varying villages, some steps will be more crucial or relevant than others:

- Building Capacity of Village Natural Resources Committees
- Widespread Environmental Education and Awareness
- Initiating of Village Environmental Scouts
- Village and Local Area Tree Planting
- Development of Alternative Fuel Energy Sources
- Development of Income Generating Activities
- Support of Community Initiated Projects
- Land Use Planning
- Formulation and Enforcement of Bylaws relating to NRM
- Development of Village Forest Reserves

# Scope of Study

## *1 Importance of the Study*

The densely forested Udzungwa Mountains in Tanzania's southern highlands are internationally recognised as an area of rich biodiversity and a hotspot for a range of unique endemic species. Considerably more degraded, the Udzungwas are neighboured to the north east by the Vidunda Mountains, divided by the Great Ruaha river. Both ranges are part of the Eastern Arc biogeographical range that span from south-eastern Kenya to south west Tanzania and of considerable ecological importance to both East Africa and the wider world.

These mountainous ranges are essential as a water catchment areas which contribute significantly to the livelihoods of a large population who are reliant on forest resources, as well as affecting the economic development of the country as a whole, particularly as the source of vast volumes of water utilised in hydro-electric power generation and irrigation. Water from the mountains flows into the Great Ruaha and Kilombero Rivers and the Rufiji Basin. The Vidunda range in particular feed into the Great Ruaha including Kidatu dam, a principal source for Tanzania's hydroelectric power supply.

Unsustainable utilisation of natural resources in this area, particularly the Vidunda range is threatening livelihoods by restricting access to timber, wood, forest products and freshwater supplies.

## *2 Background to the Study*

WWF Tanzania Programme Office, funded by the Norwegian Agency for Development Corporation (NORAD) and WWF-Norway, is seeking to address the problems relating to this ongoing threat to natural resources and livelihoods. The project **goal** is:

*“The integrity of the Udzungwa Mountains Catchment is conserved so that it continues to provide vital sustainable goods and services at local, national and international levels”*

Specifically, the project **purpose** is:

*“to ensure reduced pressure and improved utilization of forests, water and land resources on the eastern side of the Udzungwa Mountains National Park by end of 2008”*

A number of activities under the NORAD funded project are underway by WWF and its partners and include; community level consultations and stakeholder input, mapping of the Iyunji Forest (by FBD), developing a PFM programme for Iyunji Forest (WWF/FBD); collaborative land use planning by communities (Kilosa District Council/WWF) and an ecological baseline study of the Vidunda Catchment Area (WWF).

WWF has worked with communities surrounding the Udzungwa Mountains since 1990, and has commissioned a number of pieces of socio-economic research, although this is the first time work has been carried out in the Vidunda area. From such previous research, it is understood that communities living around Vidunda are broadly typical to those of the Udzungwa area as a whole and have the following general characteristics.

- The majority have only primary level education
- Farming is the major source of income for the majority of households both for income generation and subsistence
- The majority of people depend on wells, streams and rivers for the water supply
- Seasonal farming means food scarcity is a common problem for part of the year
- The use of fuelwood is considerable, with little alternatives available
- Fire is a problem, partly due to shifting cultivation practices
- Local institutions are being developed to manage local environments

However, in order to develop greater knowledge on the communities living amongst and adjacent to the Vidunda mountains to be able to develop appropriate steps to work with communities in safeguarding their environment and developing their livelihoods, this socio-economic study was commissioned.

### 3 *Objective of the Study*

The main objectives of this study are to research and summarise baseline socio-economic information for nine villages in the Vidunda area, and develop the framework for a sustainable socio-economic monitoring plan for both the nine Vidunda area villages, and 20 villages in the area to the east of the Udzungwa Mountains National Park. The monitoring plan is to be implemented during the course of the three year project.

In more detail, nine villages in Kilosa district are the subject of livelihoods assessments because of their proximity and user relationship to the Vidunda mountains water catchment area. These are then assessed as part of a socio-economic monitoring plan which includes 20 villages of Kilombero district, which have been the focus of attention for WWF livelihoods-based projects since the early 1990s. The villages under study are listed below.

In the context of the required outputs of the NORAD-funded WWF programme, this report aims to fulfil in part (for the nine selected Vidunda villages), Activity 3.1.1 of Output 3: *Land use practices compatible with catchment forest protection, management and restoration in Vidunda, Kidatu, Mkula, Kisawasawa, Mang'ula, Sanje and Kiberege wards on the Eastern side of UMNP improved*. Namely to 'conduct adjudication procedures, and **socio-economic surveys to establish baseline household livelihood information**, land uses and practices and identify site specific income generating activities'.

In a more general sense, the report also aims to play an early part in the successful implementation of Output 4: *Increased supply of fuelwood and improved utilization of fuelwood efficient stoves* by providing baseline information in use of and perspectives towards fuelwood and fuel-efficient stoves. Likewise, the report supplies information that will assist in the implementation of Output 1: *Degradation of Vidunda water catchment adjacent to the UMNP reduced through catchment forest protection, management and restoration*'.

### 4 *Structure and Method of the Study*

The study begins with a section called *Context & Literature Review* which introduces the geographical and historical context of the study and some of the issues and theoretical arguments influencing and surrounding the research topic. It is intended as a contextual background to the research, and therefore does not go into particular detail. The study then goes on to show the results of the research of both consultations with communities living adjacent to the southern Udzungwa Mountains and stakeholders with an important role in the management or guidance of the areas natural resources.

Research amongst communities was carried out in nine villages. These were chosen to best represent the total area under assessment, being villages either close to the Vidunda hills, or amongst the hills themselves. The findings of the research are presented in the section *Report on Vidunda Villages*. The research was divided into both quantitative and qualitative data in order to gain a detailed overall understanding; the former allows for specific data, percentages and numbers to be gathered. the latter allows for a more generalised view over a greater number of people.

Quantitative research was gathered through questionnaires given to 180 individual respondents (see *Appendices 2 and 3*). Typically, 10 men and 10 women were selected at random to fill in these questionnaires per village. The data presented includes household profiles, resource ownership, standards of living and the livelihood priorities. Qualitative research was gathered by interviewing 360 people through sustainable livelihood assessments in which two discussion groups (male and female) were held per village. This method of gathering qualitative data was chosen because it uses participatory and targeted research methods to gather objective viewpoints of different groups within a certain society. It is a method very much based on the perceptions of the respondents rather than of the positions of external stakeholders. In livelihood assessments attention is first paid on gathering perceptions of the livelihood assets available to the communities.

Having understood the different assets available to communities as well as the direct and indirect values gathered from these resources, assessments of daily and seasonal activities were carried out. Each livelihood assessment then looked at the level of vulnerability and likelihood of suffering shocks with each group as well as perspectives on natural resource management.

The research also involved conducting interviews with a range of stakeholders with influence over forest management activities. The *Findings from Stakeholder Consultations* section details the semi structured interviews held with different stakeholders, both individually and in groups. The findings are stakeholder-led, namely they aim to represent the opinions of those interviewed and can be viewed from that perspective.

The section *Socio-Economic Monitoring Plan* details areas in which this and former research allows practitioners to develop a monitoring and evaluation regime to ensure WWF's objectives are met in this area. Notably, the steps outlined in this plan are based not only on the nine villages in the Vidunda area but also on 20 villages to the east of UMNP.

The *Discussion and Recommendations* section which follows, summarises and gives overall analysis of the findings detailed in previous sections and makes general conclusions. Further detail on the methodologies used as well as an example questionnaire and checklist can be found in the appendices.

# Context & Literature Review

## 1 Geographical Context

### 1.1 Location

The Udzungwa Mountains form one of the largest blocks of the Eastern Arc Mountains which combined together with the Coastal Forests of Eastern Africa are recognised one of the worlds' 25 biodiversity hotspots. These mountains are located to the west of the Kilombero Valley, an area of considerable agricultural importance to Tanzania.

Figures 1 and 2: Eastern Udzungwa Mountain Range and Kilombero Valley



Source: 1 After Google Earth, 2006; 2 After Tanzania Maps Office 2006

The Udzungwa Mountains Range consists of Udzungwa Mountains National Park and a number of forest reserves and village lands. The Vidunda mountains are situated to the north of the national park and are not currently afforded any protected area status. To their east is the northern end of the Kilombero agricultural heartland, which is dominated by the estates of Illovo, the Kilombero Sugar Company.

Figures 3 and 4: Vidunda Mountains Showing Area of Kilombero Sugar Company and Three Villages



Source: 3 After Google Earth, 2006; 4 After Tanzania Maps Office 2006

Atop of several low peaks of the Vidunda mountains is the Iyunji forest, found in Chonwe village. This relic of sub-montane forest is currently in process of becoming a Village Land Forest Reserve, part of the PFM process. It's ownership and management is shared between the villages of Chonwe, Vidunda and Udunghu (within Vidunda Ward).

## 1.2 Climate & Water

The Udzungwa Mountains forests play an essential role in water catchment, supplying water for agricultural and domestic usage in the lowlands. The Udzungwa Mountain range and its forests also generate a microclimate that increases rainfall in the area (Doody *et al*, 2005).

Rainfall is seasonal and variable in the region, and relatively abundant compared to the country as a whole. Rainfall is bimodal, produced by the movements of the Intertropical Convergence Zone (ITCZ). The ITCZ produces two wet and two dry seasons near the equator, with rainfall seasons occurring from March to April and from October to December when the ITCZ moves overhead.

## 2 List and Population of Study Villages

The populations of Kilosa and Kilombero Districts are growing at a considerable rate. Kilombero's growth rate is estimated at 3.4% a year. The growth of population in these areas, according to both community perceptions and stakeholder assessments is having an increasing impact in diminishing the amount of natural resources available. The following table gives population data for the nine villages in Kilosa that had livelihood assessments undertaken. It also lists the 20 villages in Kilombero District that have been under study by WWF Tanzania for many years.

**Table 1: Population Data (2002) for Kilosa and Kilombero Districts and Study Villages**

District	District Population	Male	Female	Individual Village	Village Population	Male	Female
Kilosa	488,191	243,329	244,862	Ruaha	22,700	5,675	17,025
				Msowero	1,811	876	945
				Tundu	3,437	1,200	1,200
				Lumango	1,320	678	644
				Kifinga	4,680	2,370	2,310
				Iwemba	2,700	-	-
				Chonwe	2,726	603	615
				Vidunda	3,062	724	709
				Udunghu	4,412	-	-
Kilombero	321,611	162,214	159,397	Mkamba	17,197	9,089	8,108
				Kidatu	6,882	3,404	3,478
				Msolwa Ujamaa	4,484	2,251	2,233
				Sanje	3,892	2,016	1,876
				Msufini	1,420	692	728
				Mkula	1,601	784	817
				Sonjo	1,202	600	602
				Katurukla	2,574	1,277	1,297
				Sole	727	357	370
				Mang'ula A	2,983	1,408	1,575
				Mang'ula B	3,992	1,975	2,017
				Mwaya	8,091	4,071	4,020
				Mgudeni	3,854	1,933	1,921
				Ichonde	2,322	1,134	1,188
				Kisawasawa	2,437	1,199	1,238
				Kanolo	1,121	555	566
				Mkasu	2,908	1,483	1,425
				Kiberege	9,774	5,117	4,657
				Signal	4,572	2,358	2,214
				Sagamaganga	1,205	583	622
Total	83,238	42,402	40,952				

### 3 Previous Socio-Economic Research

A range of work on the area has been commissioned by WWF. A five month study of the communities living to the eastern side of the Udzungwa Mountains National Park was carried out by Hoyle (1997). The study looked at 14 villages, examining their socio-economic characteristics, their resource requirements, attitudes to TANAPA and the effectiveness of a WWF funded agroforestry/tree planting programme attached to the TANAPA Community Conservation Service at UMNP. The study identified shortfalls between the supply and demand for natural resource products. In particular the lack of alternatives for fuelwood other than from the neighbouring forest.

The study raised concerns about a lack of involvement by the community in tree planting due to lack of land, insecurity of land tenure, lack of awareness and lack of incentives. The study recommended improving the degree of extension work and addressing the sustainability of tree nurseries.

A TANAPA-WWF socio-economic study was commissioned in 2004 involving communities and local businesses. Four villages were assessed from the western side of UMNP and eight from the east. The study indicated the low educational levels in the area (79% with only primary education) and indicated the difficulties of raising awareness of new ideas or innovations with a poorly educated population. The 2004 study found that farming is the major source of livelihood activity for majority of households. Food production therefore constitutes the majority of peoples time and the majority of respondents faced food insecurity at certain times of the year. This is attributed in part to the need to sell a high proportion of production for income generation to meet basic needs, rather than keeping agricultural surpluses in storage for times of hardship.

In 2006, a further WWF report, (Ngelima *et al*, 2006), was released. this was a situation analysis survey on WWF's tree planting program and the level of adoption of alternative sources of energy in twenty villages adjacent to UMNP. According to the report, WWF Tanzania Program Office in collaboration with UMNP have supported tree planting and agro forestry programs in villages adjacent to Udzungwa Mountains National Park for ten years from 1991. These programs were implemented by establishing seven tree nurseries in Kiberege, Kisawasawa, Mwaya, Mkula, Sanje, Msolwa and Kidatu villages. The main objective of these programs was to enhance capacity to provide alternative sources of fuelwood and other forest products that are obtained from the park. Tree seedlings produced in these nurseries were given out to communities to plant in their villages.

In the situation analysis it was found that only 30.5% of the village respondents under study had knowledge of tending tree nurseries, of whom the majority were either young and had learnt at school, or otherwise where retired who had worked with the forest department or Illovo (Kilombero Sugar Company), or who were trained during the tree planting programme supported by WWF. Due to a lack of skills and capital, 67.5% of respondents had no knowledge of managing tree nurseries. The reasons given by respondents were lack of skills and capital.

Ngelima argued that despite WWF's support in tree planting in villages in the east of UMNP there are still not enough trees to meet people's needs. The reasons identified were:

*The collapse of the tree nurseries programme after being handed over to the village governments as a result of lack of motivation to nursery workers, inadequate awareness and poor supervision of village leaders on tree nurseries management. Land scarcity and water logging were other factors identified to slow down the rate of tree planting" (Ngelima et al, 2006).*

Ngelima's report also found that 18 of the 20 eastern side villages have environmental committees but Kanolo and Mkamba village do not. These committees are considered to have the following weaknesses: "...[lack of].. meetings, poor leadership, no documentation of activities done and achievements... lack of [financial] motivation..". Consequently the report recommends increased capacity building of these committees.

Ngelima's report also assessed the use of fuelwood and alternative types of stoves and other energy supplies to limit fuelwood usage. Although the communities showed an interest in modern stoves,

and saw that they were more efficient, most people still do not use them because of established patterns, limited knowledge and because three stone hearths because they are easily adjustable to different sizes of pots and are transferable from one place to another, which the mud stoves are not.

The report also notes the issue of land shortage affecting tree-planting programmes and a lack of clarity in land ownership. Overall it recommended setting aside land for tree planting, increasing motivation levels for committee members, an increasing role by Division-level government and to improve workmanship of making energy saving stoves to be in same mode.

A further report in 2006 (Nyundo *et al*) on the impact of deadwood collection on the ecology of UMNP outlined the following:

*Socio-economic studies revealed a high dependency of local communities on deadwood from the Park as their main source of energy for cooking and heating.... Several alternative sources of energy are already in use in the area, but they account for a low percentage of the total energy use. Previous efforts to encourage local population to plant trees have not been very successful, mainly due to land shortage, but also in part due to complacency because of the free source of deadwood from the park. (Nyundo et al, 2006)*

The report concluded that there is a need for a gradual phase-out of deadwood collection on the park altogether, remarking that this period could be used to:

*...carry out an educational and public relations campaign, help village authorities to formulate land use management plans... help to find alternative sources of energy and increasing acceptance and use of alternative sources of energy already in place, and to help in identifying more feasible income generating schemes, so that the people around the park can afford other energy sources. (Nyundo et al, 2006)*

Additional assessments in this area has been carried out by Paul Harrison (2006) and Trevor Jones (2006), both commissioned by WWF. The former was a report carried out with support of CEPF on the villages south and south-west of UMNP, and the latter and ecological baseline study on the villages to the north and east of UMNP which compliments this report.

## **4 Participatory Forest Management (PFM)**

The objective of PFM is sustainable forest management through management or co-management of forest and woodland resources by the communities living adjacent or amongst the forest. PFM may be applied to forests that require full protection, typically catchment forests, or to forests that can be productive under a sustainable harvesting regime, or a combination of the two with management zones.

PFM is characterised by forest-adjacent communities sharing power as well as benefits, and assuming owner/user rights and management of the resources. As such it is a form of CBNRM. Since 1995 more than 500 Village Land Forest Reserves (VLFRs) have been declared by communities out of communal lands. Tanzanian law recognises two categories of PFM, Joint Forest Management (JFM), which allows communities to sign joint forest management agreements with government and other forest owners, and Community-Based Forest Management (CBFM), which enables local communities to declare and gazette village, group or private forest reserves (FBD, 2006).

The villages of Chonwe, Udunghu and Vidunda are currently being consulted in the early stages of CBFM, through which the aim is make the Iyunji forest of Chonwe village a Village Land Forest Reserve (VLFR). Notably, the PFM process for Iyunji is in its early stages and many are not yet aware of what will become of the forest, or who will own it. Chonwe village inhabitants remark that it belongs to them, others, including villagers in Udunghu and Vidunda say that the forest under PFM will be shared by three villages, which also appears to be the government position.

# Report on Vidunda Villages

## 1 Villages Profiled

The following villages were the focus of both qualitative livelihood assessments and quantitative household questionnaires:

- Ruaha, Msowero, Tundu, Lumango, Kifinga, Iwemba, Chonwe, Vidunda, Udunghu
- Of these, Chonwe, Vidunda, Udunghu are based in the Vidunda mountains themselves, and the remaining six villages can be found on the Mang'ula-Mikumi road to the eastern foothills of the Vidundas.

## 2 Household Survey

### 2.1 Household profile

The research illustrates male dominance over the social structure of the communities and over the household. Of the equal number of men and women interviewed, only 16.7% of respondents have female headed households.

Of the female heads of households, 43% are not yet married, while married and widowed women of the sample population interviewed each represented 20% of the sample. Divorced women made up 17.1%.

The average household is made of **6 people** (typically indicating husband, wife and children). As the table below shows, higher numbers of heads of households are of middle age, between 36 and 55 years of age.

**Table 2: Percentage of Respondents per Age Group**

16-25	26-35	36-45	46-55	56-65	65+
3.4%	19.2%	27.1%	31.6%	12.4%	6.2%

### 2.2 Migrant Population

62.6% of heads of households are born locally, whilst 37.4% are migrants who have settled into the area. The migrant population came to the area for a range of reasons, but principally for better agricultural opportunities and for employment.

**Table 3: Reasons Cited for Moving to the Area**

Reason for Coming	Sample	Percentage
Agricultural Opportunities	22	44.9%
Business Opportunities	2	4.1%
Employment Opportunities	20	40.8%
Labourer TAZARA Railway	1	2.0%
Marriage	2	4.1%
Other Reason	1	2.0%
Villagisation Process ('Ujamaa')	1	2.0%
	<b>49</b>	<b>100.0%</b>

The number of migrants to the area, according to this research, has been relatively consistent over the years although appears to have been at its greatest during the 1990s.

**Table 4: Timeline of Migration, as a percentage of respondents**

Year Arrived	Sample	Percentage
1950-1959	3	6.4%
1960-1969	5	10.6%
1970-1979	9	19.1%
1980-1989	8	17.0%
1990-1999	15	31.9%
2000-2009	7	14.9%
	<b>47</b>	<b>100.0%</b>

### 3 Land and Home Ownership

There are an average of **3.2 acres** of land per household. Because of the lack of land use planning in most sample villages, many individual household may not own their land formally. However in a *de facto* sense many do so, and certainly perceive so, with over 75% of responding that they have their own land.

#### 3.1 Land Ownership and Acreage

More people own land than rent land because the majority will have been allocated land by the village government or it inhabitants rather than having to rent off another. Those that rent land are often referring to agricultural land which they rent off neighbours and private farms and estates because of a lack of available land in their villages.

**Table 5: Degree of Land Ownership**

Land Ownership	Sample	Percentage
No Land	1	0.6%
Borrow Land	3	1.7%
Rent Land Private	66	36.7%
Rent Land Village	5	2.8%
Own Land	101	56.1%
Title Deed	39	21.7%
	<b>215</b>	<b>119.4%</b>

Multiple Responses Allowed

#### 3.2 Home Ownership

It is typical, within the communities surveyed, for heads of household to build their own houses once they have come of age/have settled into a new area and have been allocated or have procured a certain area of land. Many households have a second house on their land, often for extended family: the ratio of households to houses is **1:1.3**. A majority of nearly 80% of households own their own homes.

**Table 6: Type of home ownership**

House Ownership	Sample	Percentage
Family Members house	9	5.2%
Rent House	27	15.6%
Own House	137	79.2%
	<b>173</b>	<b>100.0%</b>

## 4 Standards of Living

### 4.1 Household Income and expenditure

In assessing financial assets and the degree of income and expenditure available, it is remarked that a sizeable majority of respondents interviewed do not have a firm grasp of basic financial accounting skills nor how to manage the balance of income of expenditure over extended periods, especially the men. Many, even after prolonged discussions are unable to say what they earn and spend, others state they spend more than they earn and are often in debt to informal providers.

**Table 7: Assessment of Average Monthly Income and Expenditure (from Discussion)**

Village	Ruaha		Msowero		Tundu		Lumango	
	Women	Men	Women	Men	Women	Men	Women	Men
<b>Income</b>	30,000	Don't Know	Don't Know	Don't Know	30,000	45,000	30,000	30,000
<b>Expenditure</b>	30,000	Don't Know	Don't Know	Don't Know	60,000	50,000	45,000	30,000
<b>Balance</b>	0	Unknown	Unknown	Unknown	-30,000	-5,000	-15,000	0

Continued:

Kifinga		Iwemba		Vidunda		Chonwe		Udunghu	
Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Don't Know	Don't Know	125,000	Don't Know	Don't Know	Don't Know	Don't Know	25,000	Don't Know	Don't Know
Don't Know	Don't Know	125,000	Don't Know	30,000	Don't Know	75,000	30,000	Don't Know	Don't Know
Unknown	Unknown	0	Unknown	Unknown	Unknown	Unknown	-5,000	Unknown	Unknown

This lack of financial awareness also became clear in the discussion relating to assessing available *financial assets* (below). It is important to realise the low level of financial management skills when looking at developing income generating activities and assessing the introduction of grants or microcredit.

### 4.2 Housing Conditions

81% of respondent houses are made of bricks, of which the majority have been burnt with firewood rather than the alternative energy means of rice husks. This data brings top light a number of observations relating to housing and building:

- The use of bricks indicates a permanence of settlement
- Bricks are in themselves not so inexpensive in price to make or buy that they restrict families from building their houses with bricks rather than mud and poles, or to put it another way, the income of families is sufficient to afford bricks.

- For the vast majority of those that use bricks, the alternative use of rice husks has yet to take hold. However this data includes all houses therefore there is a chance that new houses built will use rice-husks for firing.
- Notably though, individual village level data indicates that the use of rice husks in Vidunda, Chonwe and Uduunghu villages is highly unlikely to spread because of the lack of rice production in those areas and the difficulty in both procuring and transporting rice husks to the villages.

**Table 8: Type of Wall, as an Overall Percentage**

Wall Type	Sample	Percentage
Sticks/poles	8	4.4%
Mud	29	16.1%
Firewood Bricks	131	72.8%
Rice Husk Bricks	15	8.3%
Cement Blocks	7	3.9%
	<b>190</b>	<b>105.6%</b>

Multiple Responses Allowed

It is possible from the tables above and below to judge that 81% of respondents live in brick built houses with iron sheet roofs. However a significant minority of the community live in grass or thatch roofed houses.

**Table 9: Type of Roof, as an Overall Percentage**

Roof Type	Sample	Percentage
No roof	5	2.8%
Grass	38	21.1%
Thatch	13	7.2%
Iron sheets	147	81.7%
Tiles	11	6.1%
	<b>214</b>	<b>118.9%</b>

Multiple Responses Allowed

### 4.3 Transport

Due to the nature of the terrain, most of the areas are accessible by either foot or bicycle (except the mountainous areas), but the Vidunda hills are largely difficult or impossible to access by car. However, for the communities, lack of wealth means that none own cars in any case. The majority of respondents (85.6%) own bicycles however 10.8% have no means of transport.

**Table 10: Type of Transport per Household as a Percentage**

Private Transport	Sample	Percentage
None	15	10.8%
Bicycle	119	85.6%
Motorbike	4	2.9%
Car	0	0.0%
Tractor	1	0.7%
	<b>139</b>	<b>100.0%</b>

Multiple Responses Allowed

### 4.4 Source of Water

Despite the considerable amount of water running off the Vidunda Mountains and the Udzungwa range, facilities for access to water for the majority of respondents are still very basic, and usually rely on the village government facilities. Since most of the villages are dissected by numerous water channels and rivers, these have been the primary water supply to about 95.6% of respondents. Very

few people own private wells and private pumps due to high costs involved, and none have plumbing within their homes.

**Table 11: Source of Water for Household Use**

Source of Water Supply	Sample	Percentage
River/Community Well or Pump	172	95.6%
Forest Reserve	3	1.7%
Private Well	4	2.2%
Private Pump	4	2.2%
In-house plumbing	0	0.0%
In-house tank	0	0.0%
	<b>183</b>	<b>101.7%</b>

Multiple Responses Allowed

#### 4.5 Source of Electricity/Light

The majority of households do not have electricity of any kind, They use kerosene lamps to light their homes after dark. Those that do have electricity rely on supply from TANESCO. Those with electricity have to have homes that are seen to be permanent and solid enough structures to pass certain tests by TANESCO. Those that have are largely from Ruaha village; there is no access to TANESCO in the Vidunda Mountains and little along the roadside in general. Many can not afford it. None of the sample has installed solar into their homes, although some rely on batteries (torches) for light. None use a generator.

**Table 12: Source of Electricity/Light**

Source of Electricity	Sample	Percentage
None	0	0.0%
Kerosene Lamp	146	81.1%
Battery/Solar	5	2.8%
Generator	0	0.0%
TANESCO	29	16.1%
	<b>180</b>	<b>100.0%</b>

Multiple Responses Allowed

#### 4.6 Animal Husbandry

The majority of respondents keep livestock to diversity their incomes and provide food. 62% keep poultry (chickens and ducks) and 54% keep pigs. Largely this is due to the fact that most village land is set aside for cultivation rather than livestock, and both poultry and pigs are relatively easy to keep enclosed in small areas. It is also due to the fact that there is little habit of livestock rearing amongst these agrarian communities.

**Table 13: Type of Livestock Held per Household**

Livestock Type	Sample	Percentage
No livestock	11	6.1%
Chickens/ducks	112	62.2%
Geese	0	0.0%
Goats/Sheep	23	12.8%
Cattle	0	0.0%
Pigs	98	54.4%
Donkeys	9	5.0%
	<b>253</b>	<b>140.6%</b>

Multiple Responses Allowed

For those who keep livestock , the average number kept is given below. For example, the average poultry farmer within the sample has 10 chickens/ducks within his/her household.

**Table 14: Average no of Livestock per Household**

Livestock Type	Livestock Keepers	Total No Livestock	Average No per HH
Chickens/ducks	112	1,142	10.2
Geese	0	0	0.0
Goats/Sheep	23	112	4.9
Cattle	0	1	0.0
Pigs	98	207	2.1
Donkeys	9	1	0.1

## 5 Available Assets

Livelihood assessments in each village allowed the research to define the assets (also referred to as types of capital) available to communities of each village. Assets are divided in terms of *Natural* (nature, *Human* (skills and capacity), *Physical* (services and infrastructure), *Social* (community) and *Financial* (access to savings and credit and are defined further in the *Methodology*).

The following table lists the assets available to the community, as gathered from discussions. Note, as with all the findings that these are the perceived assets available to the community, not an independent statement of what assets there are.

**Table 15: Available Forms of Assets/Capital per Village**

Village	Natural	Human	Physical	Social	Financial
<b>Ruaha</b>	Trees, Mountains, Forest, Livestock, vegetables, Rivers, Fish, Wild animals, sand	Carpentry skills, Small business, Farming skills, Tailors, Brick layers, Doctors, Fishermen, indigenous healers	Primary schools, secondary schools, grinding machines, road, Dispensary	Self help groups, Community leadership, cooperatives	Credits institutions, Group savings project
<b>Msowero</b>	Trees, Mountains, Forest, Livestock, vegetables, Rivers, Fish, Wild animals, Forest products, stones, sand	Farming skills, weaving skills, farming skills, animal husbandry, small business, brick layers, local contractors, Dress making.	Primary schools and secondary school, water pumps, main road, Railway (TRC), milling machines	Self help groups, Community leadership, cooperatives	Credit institution, group savings project, group bank accounts.
<b>Tundu</b>	Trees, Forest, Livestock, vegetables, Rivers, Fish, Wild animals, Forest products, stones, sand	Farming skills, weaving skills, farming skills, animal husbandry, small business, brick layers, local brewing, dress making, indigenous healers	Primary school, court, water wells, Railway (TRC), water pumps, market, village bar	Self help groups, Community leadership, cooperatives, Group bank account, football clubs, natural resources committee	Credit institutions
<b>Lumango</b>	Trees, Forest, Livestock, vegetables, Rivers, Fish, Wild animals, Forest products.	Teachers, hair dressers, Farming skills, weaving skills, animal husbandry, small business, brick layers, local brewers, dress making, indigenous healers	Primary school, road	Self help groups, Community leadership, cooperatives	Credit institution, group savings project
<b>Kifinga</b>	Land, forest, stones, trees, Livestock,	Farming skills, weaving skills, animal husbandry,	Primary and secondary schools, railway,	Self-help groups, Community	Credit institution, self-help

Village	Natural	Human	Physical	Social	Financial
	vegetables, Rivers, Fish, Wild animals, Forest products.	small business, bricklayers, local brewers, honey harvesters, local contractors, fishermen, dress makers, drivers.	road, water pumps, health centres	leadership, sports clubs, environmental conservation clubs	group, group bank accounts.
<b>Iwemba</b>	Land, forest, trees, Livestock, vegetables, Rivers, Fish, Wild animals, Forest products.	Welding skills, Farming skills, weaving skills, animal husbandry, small business, bricklayers, carpentry skills.	Primary school, secondary school and technical school, churches, village office, railway, road, water pumps, milling machines	Self-help groups, Community leadership, HIV/AIDS awareness clubs, environmental conservation clubs	Credit institution, self-help group, group bank accounts.
<b>Vidunda</b>	Land, caves, minerals, forests, trees, vegetables, Rivers, Fish, Wild animals, Forest products.	Farming skills, weaving skills, animal husbandry, small business, bricklayers, electricians, dress makers, timber harvesting skills.	Primary schools, health centres, poor road linking the main road, churches, wells	Self-help groups, Community leadership, environmental conservation clubs	Credit institution, self-help group
<b>Chonwe</b>	Land, forest, trees, vegetables, Rivers, Fish, Wild animals, Forest products.	Farming skills, weaving skills, animal husbandry, small business, bricklayers, welding skills, dressmakers, timber harvesting skills, carpentry skills	Primary school, Milling machine, health centre, poor paths network that links to the main road	Self-help groups, Community leadership, environmental conservation clubs	Self-help group
<b>Udunghu</b>	Land, forest, trees, vegetables, Rivers, Fish, Wild animals, Forest products.	Farming skills, weaving skills, animal husbandry, small business, bricklayers, welding skills, dressmakers, timber harvesting skills, electricians	Primary school, they have poor health services and poor paths network linking to the road	Self-help groups, Community leadership, environmental conservation clubs, football clubs	Self-help group

## 5.1 Natural Assets

People perceive their surrounding natural environment as being a source of natural capital, available both in villages and in the surrounding areas, including forests and forest products.

### *Livelihood Activities Using Natural Assets*

To build on the findings listed in the table above, natural assets provide communities with the resources they require for their livelihoods, for example:

**Trees & Deadwood** Fuelwood for cooking, blacksmithing, brewing alcohol, brick making (where not fired with rice husks); Poles for Building; charcoal for cooking and blacksmithing; timber extraction (limited) for sale; trees for locating hives for beekeeping (limited), wood for building hives, timber for carpentry/furniture making; wood for making agricultural implements;

**Forest Products** Medicines for healing; Mushrooms for eating; Grasses for feed and thatch

<b>Water</b>	Rivers for water supply; Fish for food and business
<b>Climate</b>	Communities indicate the importance of mountains and forests in providing a climate conducive to good farming opportunities, particularly rainfall.

## 5.2 Human Assets

### *Skills*

As the assets table shows, depending on the size of the village, there are generally considered to be quite a broad range of skill-sets carried by community members and often utilised in artisanal trade. As a broad generalisation, business skills are more widespread amongst women, artisanal trade in men.

### *Education*

Levels of education are low in all villages sampled. Most people have primary education to some degree; usually people finish school at the end of class seven (formally standard four). A small minority in any discussion group have been to secondary school, if at all.

The implication of the lack of education is obvious. Communities often struggle to both comprehend and act upon new ideas and initiatives, and many fear development and change in general, partly out of concern about who they will react to it, with their limited educational capacity. Consequently, each new intervention will require a degree of clarifying and capacity building before it is introduced.

## 5.3 Social Assets

The communities interviewed have built up sound methods of cooperation through the development of various societies. Principally these are self-help groups, and it is clear that women dominate when it comes to developing groups of cooperation. Men are likely to be more individualistic. Self help groups are typical and form a means for helping out individuals in times of need, They usually work through a kind of shared pot, where each group member puts in a regular contribution. The benefits are then given to whoever has a particular need at a given time and are usually shared well so that each individual benefits at some stage. Their existence is of key importance to limit the level of individual vulnerability and they are best managed well by women, although in some villages it is clear that training on how to manage these groups would be both useful and recommended.

The development of environmental management committees has been key to raising awareness of their natural environment although it is clear from discussions that not all villages have active committees and work is required to increase both the capacity and their outputs.

### *Cultural Value of the Forest and its Myths and Fears*

The forest has a cultural value for communities as a whole, perceived as being a part of the their community. It is utilised by the community in a traditional manner through the practice of prayer and sacrifice. A clear definition is made by respondents between 'cultural' activities which involve selected knowledgeable elders, typically men in visiting the forest to pray for rains, good harvest or relief from hardship in general and religious activities which are defined by institutional requirements of the church or mosque.

Whilst there is a growing feeling as a general rule that such cultural/spiritual activities in the forest are withering as the elders themselves wither, that for now they remain important and trusted. Indeed, several groups stated that the elders subsequent recent rains following the drought in early 2006 through their activities in the forest.

Because of the considerable degradation of the forest of the Vidunda mountains, to a large degree such practices have become limited. However they remain particularly important to the maintenance of Iyunji forest. The forest has something of a sacred presence to many inhabitants of Chonwe,

Vidunda and Udunghu villages, a view which should be encouraged of it is a way to maintain a high level of respect and indigenous knowledge of the forest.

Of notable cultural importance are the many caves which can be found around the Vidunda mountains. Many of these are sacred, particularly in Iyunji forest where there are reported to be large caves where followers of *Kinjekitele* ran for cover being pursued by German Scouts during the *Maji Maji* rebellion a hundred years ago. Their bones are said to be still in the caves which add to the mythical allure of the forest for local communities; most seem unwilling to set foot there, for fear of a curse or reprisal of some kind. The Iyunji forest is not visited at night at all for this reason.

## **5.4 Financial Assets**

### *Savings*

As described above relating to income and expenditure, incomes, where they are known are not considered to be higher than expenditure for the majority, and few are able to save. Not a single group said they had savings (although individuals do). Many say they live part of the year in debt until a good harvest allows usually them to pay these off. If a harvest is not good, it is not uncommon to remain in debt until the next season.

### *Investments*

The majority do not have investments. Those that do rent houses, rear livestock, run milling machines and keep local shops and other small businesses.

### *Access to Credit*

Access to microcredit in rural areas is difficult. For the majority of villages sampled, microfinance institutions such as SACCOS and FINCA are slowly becoming known to the communities, but with a slow take-up. FINCA only supply loans to women. Few men have any involvement with microfinance, but a number of women's groups do, and a minority of female individuals. High interest rates, and lack of collateral and scare stories about people losing everything when they are unable to pay make many respondents sceptical about success. Further limitations are a lack of start-up capital to put down as deposits or bonds and difficulty in paying back loans due to low income enterprises, poor financial planning and insufficient knowledge of bookkeeping, cash flow management and the inability to control that the money is spent on the enterprise that it was lent for. Instances of non payment are therefore common (the average repayment rate in Tanzania is only 55% (Adkins, 2004). Capacity building will be required if microcredit schemes are to be successful.

## **5.5 Physical Assets**

Social services and infrastructure are basic. The limited number or lack of facilities such as schools and dispensaries make daily life time consuming and limit development. Fortunately, primary schools are common if secondary schools are not and dispensaries are reasonably easy to get to for most, albeit a long journey for many. Because of a limited road network, hospitals are hard to get to, especially for the villages of Vidunda, Chonwe and Udunghu and the sick regularly die because of the long trek down the mountains to the road, and onto hospital. Udunghu village tried to build a road from Msowero but were overwhelmed by the hard rock because of a lack of professional equipment and manpower.

## 6 Use of and Dependence on Natural Assets

### 6.1 Comments on Dependence on Natural Assets

The level of direct dependency on natural assets by communities from all sample villages is highly significant, and by their own view, not sustainable without changes in usage patterns. Very few people, a handful of the sample, have electricity in their homes. The rest rely on firewood and charcoal for their energy needs, or in the case of the villages in the mountains, on firewood only. There is a perceived urgent need for alternative energy, but a marked lack of knowledge of what this would be or how it could be applied to peoples lives, although awareness is slowly increasing.

### 6.2 Source of Fuelwood

47% of respondents mentioned a community forest area as their primary source of firewood, while 18% buy firewood from vendors. 30% of respondents extract firewood from their own trees and farms. 8% depend on reserved areas of forest as their primary source of firewood.

**Table 16: Source of Fuelwood per Household**

Source of Firewood	Sample	Percentage
Forest Reserve	14	7.8%
Farm	24	13.3%
Community Forest	84	46.7%
Own Tress	30	16.7%
Bought	33	18.3%
	<b>185</b>	<b>102.8%</b>

Multiple Responses Allowed

As part of understanding the level of dependency on firewood, each respondent was asked to describe the level to which their household depended on firewood to meet their energy needs. A considerable 74% say they are *very* reliant on firewood, indicating both a high usage and a lack of alternatives.

**Table 17: Declared Level of Dependence on Firewood**

Level of Dependence on Firewood	Sample	Percentage
A Little	7	3.9%
A Medium Amount	40	22.2%
A Great Deal	133	73.9%
	<b>180</b>	<b>100.0%</b>

### 6.3 Perceived Level of Fuelwood Dependency

A typical roadside household state they use eight bundles bags of firewood a month, and a hillside household 12 bags a month because of the lack of charcoal use. These estimates do not include that which is used to brew local alcohol or to fire bricks. Of particular note, fuelwood is seen to be running out in some areas, particularly Udughu village where the landscape is now devoid of indigenous trees and where the women often spend an entire day walking to collect firewood. Some of these say that soon there will be conflict over fuelwood with other villages as some are having to leave their own boundaries to find wood.

### 6.4 Source of Charcoal

A typical household state they use two bags of charcoal a month, not including that which is used to brew local alcohol. Nearly half or respondents state they burn charcoal from community forests locally. A significant 22% buy their charcoal from vendors. Many of these vendors come from smaller villages away from built up areas, whereas many of those who are buying are living in the more built up settlements like Ruaha. Charcoal is more commonly used in villages nearer to the roadside; for

villages in the mountains there is usually a logistical limitation in bringing charcoal from other areas because of the lack of motorised transport to carry it.

**Table 18: Source of Charcoal per Household**

Source of Charcoal	Sample	Percentage
Forest Reserve	15	8.3%
Farm	8	4.4%
Community Forest	82	45.6%
Own Trees	9	5.0%
Bought	39	21.7%
Not applicable	27	15.0%
	<b>180</b>	<b>100.0%</b>

## 6.5 Source of Medicines

Community forests and forest reserves are important sources for medicine, however, a third of people buy their medicines, whether traditional or modern pharmaceutical medicines.

**Table 19: Source of Medicines per Household**

Source of Medicines	Sample	Percentage
Forest Reserve	38	21.1%
Farm	12	6.7%
Community Forest	62	34.4%
Own Trees	25	13.9%
Bought	61	33.9%
	<b>198</b>	<b>110.0%</b>

Multiple Responses Allowed

## 6.6 Source of Grazing Pasture

Most of those who graze do so on their farms or in any open areas. A significant 22% bring grass from other areas, including forests, to their plots to feed livestock.

**Table 20: Source of Grazing Pasture per Household**

Source of Grazing	Sample	Percentage
Forest Reserve	6	3.3%
Farm	66	36.7%
Cut Grass	22	12.2%
Open Area	49	27.2%
Not Applicable	37	20.6%
	<b>180</b>	<b>100.0%</b>

## 6.7 Source of Building Poles

57% utilise community forests to extract building poles, while others typically use their own farms and forest reserves as their primary source. A significant minority buy building poles.

**Table 21: Source of Building Poles per Household**

Source of Building Poles	Sample	Percentage
Forest Reserve	23	12.8%
Farm	34	18.9%
Community Forest	103	57.2%
Own Trees	10	5.6%
Bought	22	12.2%
	<b>192</b>	<b>106.7%</b>

## 6.8 Source of Beekeeping Activities

Beekeeping currently has little importance in the area as a livelihood activity. Beekeeping activities are not among the priorities of the communities interviewed: 67% of the respondents cited out they don't keep bees, only 25% of respondents do. It should be noted that whilst there is little practice` of beekeeping perhaps because of relative inexperience, it is a difficult activity to carry out without trees and pollinating plant life, which in the degraded landscape of the Vidundas is not easy to do.

**Table 22: Source of Beekeeping Activities per Household**

Source of Beekeeping Activities	Sample	Percentage
Forest Reserve	11	6.1%
Farm	10	5.6%
Community Forest	34	18.9%
Do not keep bees	120	66.7%
Not Stated	5	2.8%
	<b>180</b>	<b>100.0%</b>

## 6.9 Experience of Using Energy-Saving Stoves

In the roadside villages, the majority of participants, especially the women, had heard of the use of energy saving stoves. However, no one, except one well known woman in Iwemba village has built one to date. In the hillside villages there is very little awareness of them. The general feeling towards the potential introduction of such stoves once they have been explained to people is that they will save time collecting firewood, energy in cooking and reduce the degradation of forests. If there is education in how to use them, they would be welcomed.

## 6.10 Experience of Using Rice Husks for Firing Bricks

In the roadside villages, such as Tundu and Ruaha, there is an increasing seasonal usage of rice husks as an alternative to firewood in firing bricks for building. This is linked to a growing awareness of the greater efficiency in using husks over firewood. However, the activity is seasonal and there are complaints that the firing process is considerably slower, and less intense, using husks, therefore less profitable. In the hillside villages, there is no use of rice husks because it is not a viable alternative due to the distance from the road and the markets.

**Plates 1 and 2: Brick Burning in Tundu Village; Fuel Efficient Stoves in Iwemba Village**

## 7 Values of the Forest

The cost of natural resource products, notably firewood and charcoal, are rising, especially if compared to other regions, such as Kilombero valley south of UMNP (Harrison, 2006). In the Vidunda mountains sample, firewood is TSh 1,167/= for every load carried on a head. In Kilombero, it is roughly half that (613/=). Charcoal is also nearly twice the price: TSh 6,616/= in Vidunda area, compared to 3,666/= in Kilombero. However, the cost of medicines, building poles and honey are only relatively more expensive in the Vidunda area. While this comparison indicates a higher stated cost of living in general it does suggest that scarcity is forcing prices up.

Traditional medicines are more expensive. This is a surprising finding, especially as some villagers say that they are free. This figure is likely to be either because traditional doctors are highly respected just as doctors in urban areas, or simply that respondents have over-estimated the costs of traditional medicines. Charcoal is considerably more expensive in Ruaha (a typical response is 10,000/=) where it is only bought, than in the smaller villages where it is sourced, such as Msowero (typically 5,000/=) or Lumango (as low as 3,000/=). A 1'by 12' board of hardwood timber is typically sold at 5,000/=.

**Table 23: Average Values of Forest Products**

Product	Average Unit Cost (TSh)
Bunch of Firewood	1,167
Dose of Traditional Medicines	2,190
Dose of Modern Medicines (non-forest)	1,746
Single Building Pole	732
Sack of Charcoal	6,616
Litre of Local Honey	2,205

## 8 Livelihood Activities

Agriculture is considerably more important to peoples livelihoods in the Vidunda area than any other livelihood activity. There is a notable lack of stated involvement in beekeeping, and logging, partly because there is a lack of timber, partly out of shame. Agriculture and animal husbandry are important both as sources of food and income, whereas business only brings money.

**Table 24: No of Households engaged in Specific Livelihood Activities**

Livelihood Type	Brings Food	Brings Money
Agriculture	177	174
Animal Husbandry	67	85
Small Business	25	139
Piecemeal Labour	0	5
Beekeeping	0	0
Fishing	3	6
Artisanal Work	1	7
Logging	0	0
	<b>273</b>	<b>416</b>

Multiple Responses Allowed

Agriculture, animal husbandry and small business are the top three livelihood activities bringing food to the communities.

**Table 25: “Livelihood Activity Brings Food Directly to Us”**

Livelihood Type	Sample	Percentage
Agriculture	177	98.3%
Animal Husbandry	67	37.2%
Small Business	25	13.9%
Piecemeal Labour	0	0.0%
Beekeeping	0	0.0%
Fishing	3	1.7%
Artisanal Work	1	0.6%
Logging	0	0.0%
	<b>273</b>	<b>151.7%</b>

Multiple Responses Allowed

Since the land in the area supports a diverse agriculture produce, agriculture is the priority livelihood activity that generates income – for 96.7% of respondents. Small business is also key, with 77.2% of respondents gaining financially from this livelihood. Animal husbandry brings income for 47.2% of respondents.

**Table 26: “Livelihood Activity Brings Money Directly to Us”**

Livelihood Type	Sample	Percentage
Agriculture	174	96.7%
Animal Husbandry	85	47.2%
Small Business	139	77.2%
Piecemeal Labour	5	2.8%
Beekeeping	0	0.0%
Fishing	6	3.3%
Artisanal Work	7	3.9%
Logging	0	0.0%
	<b>416</b>	<b>231.1%</b>

Multiple Responses Allowed

The overwhelming importance of agriculture to the livelihoods of the Vidunda communities is also made clear by the number of people per household involved in it. The average number of people engaged in agriculture is 3.3 compared to livestock keeping and small business which utilise an average per household of 1.8 and 0.9 people respectively.

**Table 27: Average No per Household engaged in Specific Activities**

Livelihood	Average No
Agriculture	3.3
Livestock	1.8
Small Business	0.9
Fishing	0.0
Forest Medicines	0.1
Carpenters	0.1
Beekeepers	0.0
Forest Product Crafts	0.3
Piecemeal Employment	0.2
Hunting	0.0
Logging	0.0

## 8.1 Favourite Livelihood Activities

Agriculture is prioritised as the *most important* activity by 90% of respondents. In line with observations made that the community rely on secondary activities to diversify and gain additional income, small business and animal husbandry are seen as the favoured *second most important* activities.

**Table 28: Favourite Livelihood Activity – In Order of Priority**

Livelihood Activity	1st	2nd	3rd	4th
Agriculture	90.0%	7.8%	1.1%	0.0%
Animal Husbandry	6.7%	36.1%	9.4%	1.1%
Small Business	7.8%	43.3%	31.1%	2.2%
Piecemeal Labour	0.6%	0.0%	2.2%	0.0%
Beekeeping	0.0%	0.0%	0.0%	0.0%
Fishing	0.0%	0.6%	1.1%	1.7%
Artisanal Work	1.1%	0.6%	2.2%	0.0%
Logging	0.0%	0.0%	0.0%	0.0%

Multiple Responses Allowed

## 8.2 Importance of Different Activities

An assessment was made as to why a particular livelihood activity was most important to a group according to certain criteria, and the most typical response is given below.

**Table 29: Criteria for a livelihood activity being important**

Criteria for Livelihood being important	Livelihood Activity
Get good income from the activity	Agriculture
Does not take much time	Small Business
Lots of resources for activity	Agriculture
Access is good	Animal Husbandry
Easy to do	Small Business
We have the skills required	Agriculture
Can do year round	Agriculture
Brings additional/supplementary income	Small Business

# 9 Seasonal Activities

## 9.1 Seasonal Calendar

Discussions reveal that overall November to March is the hardest time of year, becoming easier in April and then more so after the rains when harvests come into fruit. June to October in particular are the easiest time of year when many ceremonies happen and people live relatively well. December to February is particularly tough as many run out of food and have to buy in food or borrow to buy in their food and sundries needs. In their economic activity, June to October see the greatest amount of income generation from harvests, although this is also when prices for crops and sundries are highest because of the increased levels of supply and demand respectively.

**Table 30: Seasonal Calendar (indicating easier and difficult periods)**

Month/Activity	J	F	M	A	M	J	J	A	S	O	N	D
Hard times												
Easier times												
Rainy Seasons												
Workload Increased												

Month/Activity	J	F	M	A	M	J	J	A	S	O	N	D
Income - good months												
Income - bad months												
Expenditure – highs												
Expenditure – lows												
Buying Prices – highs												
Buying Prices – lows												
Selling Prices – highs												
Selling Prices – lows												
Human Disease Highest												

## 10 Vulnerability and Shocks

### 10.1 Vulnerable Periods

This analysis began with a comparison of the difficulty of the current year compared to the previous three-year period. With the exception of Chonwe, every village reported that this year has been worse to date (October 2006) than previous years. The communities are at their most vulnerable physically during the long rains of March to May when there is greater disease, economically in January and February when there is the least income and also socially in January and February when the joyful memories of abundance, weddings and coming of age ceremonies of July and August is furthest from peoples minds.

### 10.2 Shocks

Droughts and floods are uncommon but do occur, and apparently at shorter intervals. 2006 began with a drought which resulted in an outbreak of army worms and a limited harvest. Incidence of other pests is reported, some of which are new to the communities, who worry about how to deal with them if they cannot be identified. Others worry that the incidence of new pests is being brought about either by a changing climate, or by the influence of changing agricultural practices, including the use of aerial and ground applied pesticides for those communities neighbouring the Illovo estate.

Other shocks that the community face are disease, particular water borne sicknesses. HIV AIDS is considered to be a concern by all respondents yet the vast majority say they are untested yet will not test themselves, partly because of perceived cost of testing and distance to hospital but mostly because they fear what would become of them physically and in relation to society if they were found HIV positive. The community as a whole, in all villages is in a communal state of denial.

## 11 Land Use Planning

### 11.1 Limited Space, Limited Resources

Respondents typically stated that within their individual villages there is little remaining land available for community usage, with most plots allocated. On the roadside, most villagers state that they have little room to expand because of the presence of private land on one side of village boundaries (for the most part this is Illovo, except further north) and the Vidunda mountains on the other, which are reportedly not good for agriculture in some areas because of poor, rocky soils or are too steep to farm. Up in the hills, villagers do not refer to the same land pressures but make more issue of the lack of resources (especially trees and forest products) remaining on the land.

## 11.2 Degree to which Land Use Planning Has been Carried Out

None of the nine villages studied had formal land use plans at the time of writing, although a team from Kilosa District, with the support of WWF, had begun to initiate the process.

## 11.3 Existence of Certificates, Zoning Plans, and By-Laws

No villages (except reportedly Udunghu, although it may be confused with the land registration act following *Ujamaa* villagisation), have a land certificate. None have official by-laws or zoning plans that have been passed by the district because they have not been through the land use planning process. However, most have informal agreements about where different village activities may take place. To the most part, land and land uses are divided by kinship ties.

## 11.4 Approval Process for Land Allocation

If an outsider wishes to move into any of the study villages, the current arrangement is for a request to be taken to the village government, namely the Chairman. In reality, a newcomer will usually see an unused area of land and deal directly with the owner or their kin in renting land from them.

# 12 Influential Institutions

Assessments included gaining an understanding of the institutions who have a political, social or economic influence on the communities in the study area. This exercise involved prioritisation of institutions and is useful in indicating if a particular institution or organisation has an real impact on a particular community.

Probably in part because of a lack of economic influence of a particular institution on these communities and in part because of the foundation to the moral and social fabric that they offer, schools, dispensaries and religious institutions (churches and mosques) are considered the most important to the villages studied overall. To a lesser degree, for the roadside villages, Illovo is considered an influential institution. Microcredit institutions are also considered important to those with experience of them.

Respondents were also asked questions relating to their understanding of the existence of village level and district institutions that relate specifically to management of the forests, water and land etc, including committees and associations as part of an assessment of their knowledge of their own institutions. The results are as follows.

## 12.1 Perceived Management Institutions

58.9% of respondents perceive there are no land, forest and water management committees in their village, whether or not that is a true picture of the actual situation.

**Table 31: Perceived Existence of Land, Water, or Forest Management Committees**

Land Water Forest Management Committee?	Sample	Percentages
Yes	74	41.1%
No	106	58.9%
	<b>180</b>	<b>100.0%</b>

The institutions that are perceived to oversee land, forest and water management are listed below. It was a question that many respondents had difficulty answering, indicating a lack of awareness of how the village manages its natural resources. Their answers however show the degree to which NGOs and private companies are amongst village and higher government level institutions as being perceived as influential when it comes to managing land, water or the forest locally.

**Table 32: Perceived Land, Water, or Forest Management Institutions**

<b>Institution</b>
ILLOVO
RUASCO
Sub-Village Environmental Committee
TANAPA (UMNP)
Village Environmental Committee
Village Government
Water Department
WWF
HIMA-VIKIRU
Village Water Committee
Village Land Committee

## 12.2 Perceived Land Institutions

91.7% of respondents perceived that there are no land division laws, indicating that land use planning is not well known by the majority sample of the nine villages.

**Table 33: Perceptions Towards Existence of Land Division Laws**

Land Division Laws?	Sample	Percentages
Yes	4	2.2%
No	165	91.7%
	<b>169</b>	<b>93.9%</b>

The institutions that are perceived by the community to oversee land division laws are listed below. WWF are selected because they are now seen to be assisting the district in developing land use plans. Illovo are selected because they are seen to be a powerful land owner.

**Table 34: Institutions Perceived to Have Power over Division of Land**

<b>Stated Names of Land Institutions</b>
Village Land Distribution Committee
Village Government
WWF
Illovo

## 12.3 Perceived Land Use Services

81.7% believe there are no land use services in their community, although many did not know what was meant by the question ‘what social services have an impact on land usage?’ because it is a difficult area to understand when there is no history of such services.

**Table 35: Perceived Availability of Land use Services**

Land Use Services?	Sample	Percentages
Yes	25	13.9%
No	147	81.7%
	<b>172</b>	<b>95.6%</b>

## 12.4 Perceived Land Management Services

30% believe there are no land management services in their community, although again, many did not understand the question ‘what social services have an impact on land management?’

**Table 36: Existence of Land Management Services**

Land Management Services?	Sample	Percentages
Yes	17	9.4%
No	55	30.6%
	<b>72</b>	<b>40.0%</b>

### ***13 Alternative Livelihood Programmes***

The importance of alternative livelihoods, or alternative income generating activities (AIGs) to the economic development of communities has so far taken little hold. However, where it has done, it has done so because community members accept that some of their current livelihood activities are unsustainable or because they would like to increase their incomes.

**Table 37: Have Alternative Livelihood Programmes Been Introduced?**

Alternative Livelihoods Introduced?	Sample	Percentage
Yes	38	21.1%
No	142	78.9%
	<b>180</b>	<b>100.0%</b>

Institutions that are perceived by respondents to have introduced alternative livelihood regimes, (or in the process of doing so) whether they have or not, are listed below. Many appeared to struggle with the concept of alternative livelihoods when answering and therefore had difficulty making an assessment. Therefore the listing includes all institutions that are supporting livelihood development.

**Table 38: Institutions Perceived to be Introducing Alternative Livelihoods**

Institutions
Illovo
WWF
TFCG
Village Water Committee
HIMA-VIKIRU
District Council

### ***14 Level of Environmental Awareness***

#### **14.1 Perceived Level of Environmental Awareness**

There is a reported lack of environmental awareness by respondents in all villages and a wish to be given environmental education, including in tree planting and building energy efficient stoves.

#### **14.2 Benefits of Good Forest Management**

The level of conservation awareness among community members was assessed, and included a question about what makes good environmental awareness. 90% of respondents believe good environmental management brings rainfall. Economic gains are perceived to be the next benefit from 45.6% of the respondents, Since most of the villagers depend on rainfall as a primary irrigation source, irrigation is seen as the third benefit with 40.6% of the respondents. The benefits of Tourism and Wildlife had the least responses with 29.4% and 25.0% respectively. In discussions, tourism is not seen as beneficial to the communities across the sample, nor likely to be in the future.

**Table 39: Benefits of Good Forest Management**

Perceived Benefit	Sample	Percentages
Brings Rain	162	90.0%
Economic	82	45.6%
Irrigation	73	40.6%
Wildlife	45	25.0%
Tourism	53	29.4%
	<b>415</b>	<b>230.6%</b>

Multiple Responses Allowed

### 14.3 Knowledge of Forest Management Regulations

Most participants in this study are at least broadly aware of the rules and regulations relating to what they can and can't do in their local woodland or forest environment. Despite this knowledge however, most openly admit that they are not always able to follow guidelines (such as not burning charcoal) because of the adverse effect this regulation has on their livelihoods and the lack of alternatives.

### 14.4 Awareness of Environmental Problems

In the group discussions, every village, and both male and female groups overwhelmingly believe that natural resources are decreasing. They attribute this to shifting cultivation, logging, cutting trees for firewood, charcoal extraction, population growth and high levels of poverty meaning people cannot escape a direct dependence on natural resources. People are aware of environmental problems, and aware of the human influence on causing and increasing these problems. In doing so they both blame themselves and recent generations (but not their ancestors who are seen to have more respect for the natural environment) and also their neighbours (for also cutting the forests) and the wider international community (for causing pollution and influencing climate change).

### 14.5 Knowledge of Mitigation Measures

The community under study are aware of measures that can mitigate environmental degradation such as not cutting down trees but planting, developing natural resource management committees and legal frameworks, introducing agroforestry and terracing, using alternative sources of energy and so on. However they largely recognise they are caught in a cycle whereby people know they are causing problems, but know also that they have to utilise their environment to survive which exacerbates those problems. Some are more concerned about this than others, however the vast majority would welcome support from outsiders in implementing mitigation measures.

### 14.6 Knowledge of Environmental Initiatives

There was little knowledge of environmental initiatives at the time of writing although this will change as WWF's programme takes shape. Ruaha respondents had previously heard of WWF's work and intentions. At the time of writing the team researching this report were usually considered the first group in a long period in engaging the community on environmental issues. People would like to see better management of their resources through the development of environmental committees, patrols, use of alternative sources of energy, tree planting and the enactment of village by-laws.

# Findings from Stakeholder Consultations<sup>1</sup>

## *1 Government Natural Resource Managers*

### **1.1 TANAPA – Udzungwa Mountains National Park**

A discussion was held with Chris D. Timbuka, Warden in Charge of UMNP. According to Timbuka, the Community Conservation Services, now known as Community Outreach Services (COS) is a method used by TANAPA, to involve local people living adjacent to protected areas in the conservation and management of natural resources. This method is also aimed at raising awareness on natural resources and emphasis on benefit sharing accrued from natural resources.

According to the warden, COS, in Udzungwa Mountains National Park is doing well in implementing community's projects despite the fact that there are a low number of tourists visiting the park each year. 7.5% of their annual budget is set aside for community projects. These include raising awareness, tree planting programmes and the construction of community social service infrastructure such as schools, dispensaries and so forth.

Communities have been taught through the support of COS and partners that the trees they plant in their area are belonging to them and they will be useful for them in the future for energy supply such as fuel wood and building poles. Currently they are allowed to access the forest to collect dead wood once a week (Thursday of every week). There are existing projects on renewable resources supported by COS which include: use of rice husks for bricks making; improved stoves and tree planting on village land starting from household level.

Other potential projects include beekeeping; it is considered important for the communities to produce high quality and well packaged honey so that they can get the most of the markets available to them. Fish farming at group and household level is also a potential activity for many.

Previously, communities around the area were unaware of TANAPA's duties in the conservation of natural resources but after a lot of effort in awareness raising and capacity building they are now said to realise the importance of natural resource conservation and they are now cooperating on protections by giving information to UMNP authorities on incidences of poaching, fire outbreaks, helping on patrolling activities particularly by village game scouts and supporting other activities that might protect the environment. However, there is no plan for socio-economic monitoring by TANAPA.

### **1.2 Division Leaders**

A discussion was held with Mrs Alice Libenenga, Division Extension Officer, Kidatu Division and Mr H.A. Maganga, Division Extension Officer, Mang'ula Division. In Mangula division, they aim to plant about 10,000 trees each year of which will be distributed to communities to plant on their own land, 20 trees for each household. While in Kidatu division, they plant about 30,000 trees per year, the tree nurseries established at schools and at villagers areas where the trees are then distributed to local communities free of charge.

Mangula Division is divided into four wards, 22 villages, 98 sub-villages with a population of 65,000 people. Kidatu Division is divided into two wards, 6 villages, 21 sub-villages and a population of 45,820 people.

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<sup>1</sup> It should be noted that while the analysis given attempts to give the perspectives of stakeholders, as it is a non-verbatim summary it may not represent the precise opinions of individuals. Any misinterpretation of viewpoints is unintentional.

The major problem stated for Kidatu division is that there is a lack of open or free land for tree planting or to develop a community forest reserve since the villages lie between UMNP on one side and Illovo sugar cane plantation on the other side. About 75% of villagers are sugar cane farmers who practise farming inside the division land and the 25% practice farming outside the area.

In Mangula Division, there is enough land for tree planting and each household is said to be planting trees on their own land, including the use of agroforestry practices, and others are willing to begin developing village forest reserves in each of the villages.

In order to increase community income generating activities, WWF in some of the villages have initiated a project know as *Kopa Ngombe lipa Ngombe* (Borrow a cow, pay a cow) based on the successful model pioneered with goats by RIPS in Mtwara (Adkins, 2004) where individuals from the communities are given a cow and corresponding calves are given out to other members of the community.

According to the division leaders, charcoal prices are shooting up where by in the villages one sack of charcoal costs up to 10,000/ and in Dar es Salaam goes up to 20,000/ when it is taken there to sell. This is partly related to the national energy crisis but more particularly to local energy use problems: alternative means of energy such as TANESCO-supplied electricity are very expensive and the communities are unable to afford and therefore they are forced to rely only on natural resources.

There is no any plan put in place for socio-economic monitoring, however there is plan to ensure that a third of communities will be using improved stoves in three years time, where by the communities will therefore be restricted from getting into forest for fuel firewood collection. At present women are allowed to collect fuel wood in UMNP and forest reserves once a week (on a Thursday).

### **1.3 Kilosa District Officials, including Natural Resources Dept.**

A discussion was held with six senior management level district officers including the District Natural Resources Officer, the District Land Officer and the District Community Development Officer. The main aim of the meeting was to put forward ideas on some key areas suggested by the consultant for a future socio-economic monitoring plan in Kilosa District. Their comments are summarised per key points below.

#### *Environmental Committees*

Environmental committees should follow their rules and have to be trained know their roles and empowered how to archive them. They have to known themselves and their roles as they sometimes confuse themselves as health committee, when village health issues are a matter for a different committee. Environmental committee members should receive environmental education including how to develop tree nurseries in village areas/schools and so on.

#### *Environmental Education*

Village chairmen usually receive environmental education for them to educate the communities but sometimes they don't deliver the message to villagers, whether for deliberate reasons or not. Their approach should change so that the message can reach the communities directly. Money should be put aside to strengthen some existing groups for trees planting as example in the village. Environmental education should be delivered through film to show the communities who can follow and understand film more easily than leaflets. However, any leaflets should includes photographs of the villages as it will attract the communities.

#### *Village Game Scouts*

The district officials suggest that although they support the suggestion of having young men scouting the area, that they should not be called village game scouts as the name reflects only wildlife and therefore suggested them to be called Village Environmental Scouts instead. The scouts should be

trained through district and they have to undergo through military *Mgambo* training so that they will be full empowered and recognized by the government.

#### *Awareness Raising and Tree Planting*

The district suggest the need to empower and strengthen the existing groups, including primary schools. Tree seedlings should reach the communities at the right time of the year. Groups or communities should be trained on how develop and manage the trees nurseries such as schools, individuals and groups. Education on the trees to be planted should also given to local communities/groups.

#### *Alternative Fuel/Energy Sources*

Improved stoves which will use few firewood will need to be introduced widely (the communities needs to be trained on how to use these stoves). Planting of trees that grow quickly on the village land will also be useful to provide a sustainable source of village land.

#### *Supporting Income Generating Activities*

The district would like to see more income generating activities such as fish farming, woodlots and animal husbandry (grazed at home). They encourage the establishment of income generating groups and the importance of them, getting trained on how to market and package their products.

#### *By-laws Formulation and Enforced.*

By-laws have to be enforced by village government, the village environmental committee and the VES' (Village Environmental Scouts). The follow up to village-produced by-laws by the district have to be done promptly so that as soon as they are approved by the district they come back to be implemented. When formulating the by-laws it should be a help of a local lawyer to avoid problems which will result the bylaws to be not approved at district level, although in practice this is difficult.

#### *Land Use Planning and Village Forest Reserves.*

The village land committee should be formulated at the earlier stage, working closely with partners through the processes of PLUM (Participatory Land Use Planning) and VLUM, (Village Land Use Management).

### **1.4 Kilombero District Council, Ifakara**

An WWF initiated interview was held by Harrison (2006) in Kilombero District Council Forest Office, with George Mbega, Mwaijele Elias, Lukelo Matimbwi and, Kijayo Saidi and is quoted here in part.

#### *Problem of Shifting Cultivation*

*Shifting cultivation is held up to blame for much of the deforestation across the range, particularly in the corridor area. The motivation for an individual to take agricultural land in this manner is high – no weeding or farm inputs are required for the first two years, after which the farmer is likely to clear another area of forest and start the process again, leaving the cleared area to revert to secondary growth. .(Harrison, 2006)*

#### *Future Livelihood Activities*

*Beekeeping, agroforestry, the development of woodlots (with exotic and indigenous species) and the development of village forest reserves under CBFM are all seen as being key to sustainable utilisation of village forest areas in the future. Alternative livelihood activities are also proposed, incorporating selling modern charcoal from woodlots, vegetables, mushrooms*

*and the development of fish ponds near rivers for sale to local markets. Fuel-efficient stoves will be increasing important.(Harrison, 2006)*

## **1.5 Rufiji Basin Water Office, Iringa**

A WWF initiated stakeholder meeting was held by Harrison (2006) and Willie Mwaruvanda, Basin Water Office which is quoted at length here because of its relevance:

*The region, and broader nation rely on water from the Udzungwa mountains such as for irrigation systems for plantation agriculture, for smallholder livelihoods, and, crucially, for hydroelectric power. Approximately 30% of Tanzania's total energy supply comes from hydroelectricity produced at Kihansi and Kidatu dams.*

*However, socio-economic realities dictate that limited utilisation by communities living near the forests is necessary to meet their energy needs: even if forest-adjacent villages were energised with electricity it is unlikely that they could afford it, because of the high cost of power in Tanzania.*

*The water office is therefore encouraging communities to develop their own woodlots through collaboration with district and regional government forest offices. However, this is difficult to encourage on a village level because the benefits are not immediate, because farmers prefer to prioritise land for farming and because when communities see forest next to their farms it is difficult to see a case for tree planting.*

*Catchment forests are threatened by wild fires, often linked to shifting cultivation as farmers clear using fire. Some people are said to like fires, these boast of their prowess if they have seen a forest fire they have started spread over a great distance. Environmental education is required to address this mentality.(Harrison, 2006)*

## **2 Commercial Stakeholders**

### **2.1 TANESCO – Kidatu Power Generation Plant**

A meeting was held with Joseph Lyaruu – Acting Manager and Mr Masumbi – Human Resources Manager. The major business of Kidatu is the generation of energy. They depend on water from the reservoir to do so. There are a number of rivers which feed into the dam. Human activities greatly disturb the catchment forest therefore they have afforestation activities to protect the catchment.

The small support TANESCO Kidatu are able to give to villagers is through supplying transport to market for some. They provide transport for the villages to take their agricultural products to market, 2 days a week, also they buy their agricultural products direct from villagers. They occasionally recruit casual labour from local villages as and when there is demand. There has however been little demand for some time.

TANESCO Kidatu used to offer health services at the Muungano dispensary over three years ago with only a minimum charge for the medicines and the doctor was free. However, that dispensary, with the whole Muungano staff accommodation compound has now been closed down following staff cuts when TANESCO was shaken up three years ago.

With regards to potential rural electrification, the Director of Research would apparently be the appropriate person to speak to, although it is viewed likely that he will also see it as a long process and far off. This is because before sending electricity to a village there must be a cost and benefit analysis of sending the electricity in terms of period of recovery, are there enough clients, how will they pay for it, will there be sufficient number of clients and compensation levels. Without such a survey, nothing will happen. Then there is also the question of whether there would there be a survey in the first place if it did not look like a remotely profitable/viable project from the outset.

Regarding the use of alternative sources of energy, TANESCO have no role to play at present. They only deal with the power they are producing and the customers satisfaction, however, the use of solar may have a role in the rural electrification process if it can deliver enough power for a low cost, but probably not through TANESCO.

TANESCO plan to plant 1,000 trees in a year; they are concentrating on the dam area as this area is key to their interests. A key set-back is the outbreak of fire; last year they lost two blocks of trees, old and young. It was observed that the police force is likely to take residence in the former Muungano training compound which may assist TANESCO in ensuring the forest in that area remains protected

## **2.2 Illovo – Kilombero Sugar Company**

Jones (2006, in process) has visited Illovo, and found the following from his interview with A. Sapi:

*Kilombero Sugar Company Management has been planting trees since 1989 following the advice of the District Forest Officer (DFO), with the following aims:*

- *To plant trees as fuel for the factories in sugar production*
- *To improve the environment in the company area and the surrounding villages*
- *To control soil erosion and prevent water pollution*

*According to the Company, from 1989-2006 over 1 million trees have been planted. However the majority of these are exotic tree species. The Company has no programme to educate people on tree planting, believing it is the government's responsibility. (Jones, 2006)*

# Socio-Economic Monitoring Plan

## *1 Overview*

The following socio-economic plan looks at two key areas.

- The villages of Ruaha, Msowero, Tundu, Lumango, Kifinga, Iwemba, Chonwe, Vidunda and Udunghu of the Vidunda area, Kilosa District
- The villages of Mkamba, Kidatu, Msolwa Ujamaa, Sanje, Msufini, Mkula, Sonjo, Katurukla, Sole, Mang'ula A, Mang'ula B, Mwaya, Mgudeni, Ichonde, Kisawasawa, Kanolo, Mkasu, Kiberege, Signali and Sagamaganga to the eastern side of UMNP, Kilombero District

The former are important because they rely on the Vidunda hills for their resource needs. The latter are important because they rely, although to a decreasing extent, on the resources of UMNP. A monitoring plan for all of these villages is key because both areas have issues with restricted land use (such as being on the edge of a park they cannot access or a degraded area on one side, and large areas of private land, notably the Kilombero Sugar Company, on the other). All settlements in the two bordering districts which are home to these villages can be regarded as needing to go through the same steps to ensure their development continues sustainably.

## *2 Background*

In villages to the east, a great deal has already been done. According to personal communications with WWF and TANAPA:

- A survey conducted by TANAPA's CCS extension staff in seven villages in 1998 suggested at least 80% of people in the east are aware of the importance of the Park resource protection, management and environmental conservation. Awareness levels have grown considerably since.
- Community conservation banks have been established in some villages
- Four community groups were trained to manage income generating projects such as beekeeping, baking of burnt bricks by using rice husks, cattle keeping and poultry farming and horticultural crops through intercropping.
- Environmental education has been integrated into the school curriculum to both east and west of the Park.
- A range of community groups and other associations and individuals have planted trees;
- The value of alternative fuelwood and timber sources has been made increasingly important to communities

Further, an activity plan developed by Kidatu and Mang'ula Divisions in August 2006 sets out actions for the period up to June 2011. This lists the following activities:

- Planting trees for firewood and medicinal plants
- Promotion of fuel-efficient stoves
- Use of alternative sources of energy
- Preparation of village by-laws
- Monitoring and evaluation

However, there is currently a great deal still to be done, especially in the Vidunda Mountains further from UMNP where work is only just beginning through WWF's NORAD-funded programme.

### **3 Ten Key Steps**

The following steps are recommended as key to the development of the socio-economic potential of the 29 villages listed. For varying villages, some steps will be more crucial or relevant than others. However the stages can be highlighted as follows:

- Building Capacity of Village Natural Resources Committees
- Widespread Environmental Education and Awareness
- Initiating of Village Environmental Scouts
- Village and Local Area Tree Planting
- Development of Alternative Fuel Energy Sources
- Development of Income Generating Activities
- Support of Community Initiated Projects
- Land Use Planning
- Formulation and Enforcement of Bylaws relating to NRM
- Development of Village Forest Reserves

The degree in which these can be monitored are detailed below. Monitoring activities for each key step are linked to proposed *Output Activities* that form part of the overall outputs of WWF's current programme.

#### **3.1 Building Capacity of Village Natural Resources Committees**

The first suggested step recommended by the consultant as being crucial to the development of the area that should be part of the proposed socio-economic monitoring plan is developing Village Natural Resources Committees (VNRC, also referred to as Village Environmental Committees).

Paying attention to this relates to WWF's:

- Output Activity 1.2: Establish and strengthen at least five village natural resources committees.

To achieve development in this area, a plan should facilitate the following outcomes:

- Where a village lacks a VNRC, it should be established through an electoral process with the facilitation of WWF and district staff in explaining to a village assembly what sort of calibre and experience a committee member should have and what responsibilities and accountability they will have
- VNRC members should be literate, a minimum of 12 people, and at least a third of the VNRC members must be women.
- VNRC Members given training by WWF and partners on understanding their environment, measures to mitigate environmental problems and practical solutions to improve and manage their environment
- Training to be monitored on an annual basis immediately prior to the point of re-election under the supervision of a the Village Development Committee (VDC) through a feedback session on environmental issues and the years achievements and failures as a committee.

- The VDC will in turn have been trained by WWF and partners. Monitoring by the VDC rather than the district is favoured to allow sufficient levels of village independence of decision making in management of its own local environment
- Committee members given remit to manage Village Environmental Scouts and the training to teach and monitor the scouts.
- VNRC to release a summary report prior to annual elections to district government outlining activities carried out that year, with recommendations for the following year(s). Report to be given feedback on by district staff and WWF

### 3.2 Widespread Environmental Education and Awareness

As discussed, the level of environmental awareness in the Vidunda villages is very low beyond a basic understanding. As has been seen with WWF and TANAPA's work in the eastern villages, awareness raising can be achieved relatively quickly. In line with WWF's:

- Output Activity 1.1: Organize environmental awareness and education meetings and workshops in five villages.

The following steps are recommended to monitor the awareness and education outputs:

- Workshops be inclusive of all the village assembly to disseminate information to as many people as possible and avoid the bottleneck of passing knowledge only to a limited number of people who may not always be relied on to pass it on
- Workshops be facilitated in a manner that allows feedback at the end of each session for participants to discuss what they have learnt. Monitored by assessing the level of understanding absorbed by the communities at this stage.
- Trainings and awareness meetings have a practical learning element including understanding how to plant and tend for trees, knowing different species and how to build and use energy-efficient stoves
- Environmental education be made part of the school curriculum for the Vidunda area villages if it is not already
- If viable, a programme of awareness raising activities using the medium of projected film be instigated into the villages. Examples of where this approach has been successful can be seen through the work of *Maajabu* in Arusha. Monitored through feedback sessions at the end of each showing

### 3.3 Initiating of Village Environmental Scouts

Although not a specific output in WWF's planning document, it is recommended that support be given to the initiating, training and implementation of enthusiastic young "Village Environmental Scouts" (VES), along the following lines.

- VES' should be given initial training as *Mgambo* army reserves, for which funding should be sought if not available.
- *Mgambo* training would not only give the scouts ranger training and an understanding of discipline and codes of conduct, it would also give the scouts the legal authority to make local arrests of those caught carrying out illegal activity and patrol on behalf of the wider government
- Secondary training on laws and field environmental skills and knowledge should be given by the VNRC, to whom the scouts would be accountable. Training would include being taught basic ecological information and how to maintain simple transects to monitor any illegal activity or ecological disturbance

- In order to be effective, VES should number three to four per Vidunda area village or two to three for east of UMNP villages (smaller area) and would patrol the village, specific transects and surrounding terrain, each with their own territory allocation. Those in the Vidunda catchment area would have a wider range than those near UMNP who are unlikely be allowed into the park
- The VES will be monitored by the VNRC on a monthly basis relating to what activities have been carried out and what issues have been raised

### **3.4 Village and Local Area Tree Planting**

WWF has proposed the following output activities for which the implementation of a successful continued (for the 20 eastern villages) or new (for the nine Vidunda villages) programme will be key:

- Output Activity 1.4: Establish at least five village woodlots.
- Output Activity 1.5: Restore forests in degraded sites (at least 2,000 hectares including tree planting).
- Output Activity 1.6: Develop and implement a simple ecological monitoring and research programme in Vidunda catchment.

It is recommended that the monitoring of these activities take the following forms:

- Primary schools to receive training on the management of nurseries and tree planting as well as the skills and tools to carry out the work. The level of success to be monitored monthly by schools themselves and annually by the district and should include visits to the areas where trees have been planted and presentations by pupils and teachers on what they have done and learnt
- Likewise, VNRC's to receive training and tools for nurseries and tree planting and likewise their success or otherwise to be monitored through a presentation to supporting partners at the VNRC Annual General Meeting
- For both schools and villages, the number of trees planted, the types and the areas they have been planted in, should be publicly known to encourage pride and friendly competition in the development of successful tree nurseries and healthy trees
- Monitoring the forests itself is addressed in a sister document to this report (Jones, 2006) incorporating an ecological monitoring plan. However, in short, communities (especially the VNRC and VES) will require training on species knowledge, understanding of the natural environment and how to carry out disturbance transects

### **3.5 Development of Alternative Fuel Energy Sources**

The urgent need for alternative sources of energy has been raised throughout recent research in the area including this report, and is identified in the following WWF planned activities:

- Output Activity 4.1: Develop agroforestry schemes that encourage tree-planting on farmers' land.
- Output Activity 4.2: Establish private and village nurseries.
- Output Activity 4.3: Provide agricultural extension services for farmers to implement agroforestry.
- Output Activity 4.4: Promote and support the use of fuel-efficient stoves.

In response to this need, it is recommended a monitoring plan for the development of alternative energy sources incorporate the following:

- Initiatives are also required to reduce the demand for fuelwood. Promotion of fuel-efficient stoves, made from locally available materials, and the recycling of rice husks for baking bricks. Training of the methods and materials required in developing alternatives will be key, followed by feedback sessions
- Monitoring of the success of the take-up of such technology should include annual questionnaires assessing the numbers of people using alternatives, and (regarding brick making) at what type of year. Further monitoring will be possible through assessing the degree to which firewood consumption has decreased
- Where rice husk technology is not appropriate because of distance (i.e. for the villages of Chonwe, Vidunda and Udunghu) an alternative to firewood needs to be sought urgently
- Training should be given on agroforestry and terracing practices where appropriate, noting that if done badly, these approaches may cause more harm to the environment than good. Monitoring the take-up of agroforestry can be done through annual questionnaires and random sample transects of agricultural areas
- Partnerships with District staff will be essential, especially in the provision of agricultural extension services.

### **3.6 Development of Income Generating Activities**

It is generally understood, and implicit in this report that the degree of poverty the communities in both areas are facing has a direct implication on the degree of environmental degradation. Therefore the support of sustainable income generating activities is recommended, both improvements on current livelihoods and the introduction of alternatives, such as fish farming, beekeeping and animal husbandry in order to lift the economic capacity of the area and therefore increase peoples options. WWF has suggested the following output activities:

- Output Activity 3.2: Train and support at least five extension officers to help communities use good agricultural practices.
- Output Activity 3.3: Facilitate implementation of land use income related activities.
- Output Activity 3.3.1: Implement training programmes to support income generating activities.

Monitoring the development of current and alternative income generation activities should take the following steps

- Assessment of each proposed activity for viability and sustainability in terms of expectations of land, labour, capital and enterprise requirements and the existence of markets for the product or services.
- Assessment of whether if there is to be borrowing through microcredit that the proposed activity is feasible and that the group or individual understand the risks
- Assessment of viability in terms of skills and educational levels, capacity and relation to individual and community aspirations
- Assessment of sustainability of the activity in terms of its impact on available natural resources both in the short and long term
- Implementation of chosen activities should begin with training which may be monitored through discussion groups offering feedback at the end of each training

- Implementation should be supported at all initial stages by a capacity building process and feedback to be given to facilitators

### **3.7 Support of Community Initiated Projects**

These are projects are social development, credit sharing or income generating projects in general. The emphasis is on supporting projects which are born from community inspiration and self-interest. They include self-help groups as well as environmental management projects. Where support can be found they may be monitored and regarded in the same manner as income generating projects. Their development is in line with the following WWF output activities:

- Output Activity 3.3.2: Establish at least 15 Community Conservation Groups for promoting alternative generation activities.
- Output Activity 3.3.3: Establish strategic partnerships with micro economic organisations.

### **3.8 Land Use Planning**

Clearly understood, participatory land use planning and formal village ownership of land paves the way to development on all levels and is identified in the following WWF planned activities to ensure land use plans are created and implemented:

- Output Activity 3.1: Facilitate preparation and implementation of land use plans.
- Output Activity 3.1.2: Demarcate at least ten village boundaries.
- Output Activity 3.1.3: Allocate land for different uses (zonation) in at least ten pilot villages.
- Output Activity 3.1.4: Produce land use map, verify with villages and facilitate approval by the Ministry of Land and Human Settlements Development.
- Output Activity 3.1.5: Raise awareness on land policy, natural resources and legislation.
- Output Activity 3.1.6: Facilitate preparation and implementation of village by-laws.

The following issues will be key to the successful monitoring of the land use planning process

- Village Land Use Plans should involve the VNRC drawing a map of traditional village lands to show former zonation and future zonation plans.
- Village boundaries must be agreed. It is important that neighbouring villages have properly agreed to these boundaries. Leaders should sign minutes of the meetings to show they agree on the boundary between their villages.
- A copy of the minutes of the village leaders' meetings on zonation and boundaries to be submitted to the District Land Officer to Obtain legal authority
- The village land certificate be produced with the support of the District Land Officer and Surveyor following visits and survey reports from them.
- Awareness raising be conducted throughout the process through facilitators

### **3.9 Formulation and Enforcement of By-laws relating to NRM**

By-laws are important to regulate the use of village lands and resources. They are the most significant rules set out in a village management plan. Attention to by-laws is specifically outlined by WWF:

- Output Activity 3.1.6: Facilitate preparation and implementation of village by-laws.

Monitoring by-laws is straightforward. By-laws need to be approved at several stages. At each step detailed minutes of each meeting should be recorded, and signed by the appropriate council or committee members. Each step requires an agreement, beginning with the village council, to the assembly, to the ward council and finally the district council who confirm that the by-laws do not contradict national law.

### **3.10 Establish Village Forest Reserves**

With regards to the continued development of the PFM programme, the establishment of village forest areas, particularly the Iyunji forest (whether divided into three villages or under the management of Chonwe) is of real importance to the management of the forests. WWF have outlined the following:

- Output Activity 1.3: Facilitate establishment of at least three village forest reserves (VFRs) (including identification and adjudication of VFRs, survey and mapping, resources assessment, formulation of management plans, facilitation of the formulation and enforcement of village by-laws).

Completing this process will require monitoring and the implementation of all the steps required to fulfil the successful development of a VFR, namely:

- Established and functioning VNRC
- Completed village land use plan with boundaries agreed by District Land Officer
- Completed forest use and resource assessments, incorporating an inventory
- Completed VFR Management Plan
- Compiled list of by-laws
- Approval of all the above by the Village Council, Village Assembly, Ward Council and District Council

If each step is monitored carefully and documented as it is completed, the process should otherwise be relatively straightforward providing the political will exists to carry it through and any conflicts have been resolved.

# Discussion & Recommendations

## *1 Monitoring the Future*

The following discussion reviews some of the principal themes that have arisen from carrying out this study. It does not however, seek to repeat the findings of the research nor repeat the recommendations outlined in the ten steps suggested as part of the socio-economic monitoring plan. The following themes are of interest. Where appropriate, further recommendations are given.

## *2 Summarising Livelihood Activities*

Agriculture is the priority livelihood activity that generates food and income. Agriculture brings in money for 96.7% of respondents. Small business is also important, with 77.2% of respondents gaining financially from this livelihood. Animal husbandry brings income for 47.2% of respondents. Although there are many artisans, such as builders or weavers, there appears to be little work for them and for many it is either a secondary or more likely a tertiary livelihood activity in terms of the financial benefits gained from it. Twice as many people in the average household are involved in agriculture compared to secondary activities like animal husbandry and small business. There is a marked lack of people engaged in alternative income generation activities such as beekeeping and running nurseries as a business although that looks likely to change in the future. In short, though, peoples principal activities are based on what they know well, what they can grow to can eat, and what will pay well with limited capital investment.

## *3 Capacity Building and Institutional Change*

More work will therefore be required on developing the efficiency and level of capacity in carrying out existing livelihoods, and on training where adapted of alternative income generation activities are proposed. Financial accounting skills are at best basic for the majority and many say they struggle with managing the balance of income and expenditure over extended periods, especially the men. It is recommended that specific focus be applied in developing capacity in this area, especially if there are plans to encourage microcredit. Because of low levels of education, individuals and communities often struggle to both comprehend and act upon new ideas and initiatives, and many fear development and change in general, partly out of concern about who they will react to it, with their limited educational capacity. Consequently, each new intervention will require careful explaining and discussions before attempts are made to introduce it. There is a lack of knowledge about village and district level institutions that relate to management of the environment, the forests, water and land. Work is required in both building up these institutions and the awareness of them through workshops, village assemblies and community involvement in general. Linked to this, is the importance of a system of land management. Land ownership and land use planning is a foundation issue, only beginning to be addressed at the time of writing. Having the assurance of a land use planning and the clarity of ownership and usage rights for different zones is likely to have a positive impact on both economic development and sustainable management of village based and surrounding natural resources.

## *4 High Dependency on Natural Resources*

People perceive their surrounding natural environment as being a source of natural capital. The level of direct dependency on natural assets by communities from all sample villages is highly significant, and in the view of many, not sustainable without changes in usage patterns. There is widespread

understanding that natural resources are decreasing. Communities attribute this to shifting cultivation, logging, cutting trees for firewood, charcoal extraction, population growth and high levels of poverty meaning people cannot escape a direct dependence on natural resources. The level of fuelwood dependency in the villages is usually considerable. The majority of people cook with firewood or charcoal. Only 16% of respondents have electricity, which in any case is largely used for lighting purposes rather than running electrical cookers. There is a perceived urgent need for alternative energy sources, but most lack knowledge of what this would be or how it could be applied to peoples lives, although awareness is slowly increasing.

## **5 *Environmental Awareness***

Most participants in this study are at broadly aware of the rules and regulations relating to what they can and can't do in their local woodland or forest environment. Despite this knowledge however, most openly admit that they are not always able to follow guidelines because of the adverse effect this regulation has on their livelihoods and the lack of alternative. Many recognise they are caught in a cycle whereby people know they are causing problems, but know also that they have to utilise their environment to survive which exacerbates those problems.

## **6 *Energy Options***

Putting in TANESCO electricity, or an alternative such as solar supply, into the homes of the study villages will vastly reduce the use of natural resources, particularly trees cut for firewood and charcoal. The proviso is that the electricity is sufficient and affordable and the houses of solid enough build quality to not be a safety risk for electrical installation. TANESCO is an unlikely prospect for most people, not only because of the build of their houses but because many live too far from the current lines and it would appear the company is understandably unlikely to wish to send new lines, pylons and transmission gear up into the Vidunda mountains for example when there is little sign that the company would cover their capital costs nor receive sufficient custom from an impoverished potential client base.

Solar may be a very real option for the future. It's one-off costs may be prohibitive but once established it needs only the basic of maintenance. The difficult is likely to come with the supply (there are few outlets in Tanzania, meaning costs are high) but more importantly with the amount of power that panels may generate. A relatively inexpensive panel may light a house, but could it provide power enough to cook for a family? Power enough to replace the need for firewood and charcoal? And what sort of cooking equipment would have to be bought, and would it be affordable? These are questions that it will be useful to assess in the future. Gas and biofuels are other options, also with their advantages and disadvantages. A specific market study on the availability of various energy supplies, their viability and their costs and benefits would be useful in future.

In the meantime, more work will be required on providing alternatives to the firing of bricks and to cooking equipment. Whilst the use rice husks have slowly become more common in the last ten years, many still feel that it is an inefficient means of firing bricks compared to firewood which burns hotter and therefore a trader can complete the process of making the bricks and selling them in a shorter time and minimise his/her outgoings. The amount of husks available, and their price, is also related to the success or failure of a particular rice crop and the distance of the user from the market. In the Vidunda mountains, use of rice husks is altogether unfeasible and an alternative to firewood still needs to be found.

The use of efficient stoves is less likely to be a problem intervention. There is an overwhelming positivity towards turning to these stoves because there is a real incentive to do so. They save time when collecting firewood and they reduce the amount of time spent cooking. With a careful awareness and training campaign they are likely to be used by a large percentage of households in future.

## **7 *Market Realities***

Ultimately, social and economic life, and the dependency of natural resources in the area under study is market driven. In the difficult periods prices for goods are driven low due to the lack of ability to pay. In the good times, post harvests, prices for goods are driven high as people have more money to spend and are willing to pay. Likewise, with harvests, times of plentiful harvests see a drop in prices for the particular crop recently harvested. In difficult times, prices for forest products like firewood or charcoal rise, especially when issues of scarcity are also brought into play. The impact on natural resources is accelerated when people have no income, or worse no food, and look to the forests and nature for last chance support. The basic realities of supply and demand are prominent market forces dictated by seasonal change which in turn dictate peoples response to their environment. Any future interventions, whether of alternative fuels or alternative income generating activities must therefore take into account the place they must fit into the dynamics of the marketplace as well as the influence they are likely to have on that market, positive and negative.

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# Appendix 1. Methodology

In carrying out field research that is objective, thorough and representative, it is important to keep in mind a range of factors which will influence results and limit the accuracy of the data gathered. Careful consideration was therefore taken in assuring that the viewpoints gathered were representative of different groups within the study area, particularly given the likelihood that certain groups and individuals may be less influential than others, such as women and younger men with potentially diverse and conflicting resource priorities, values and beliefs.

## *1 Criteria*

It was agreed that livelihood assessments should be carried out in nine villages to satisfy a balance of the following criteria.

- Relative locations, i.e. roadside, in the mountains
- Community being reliant on forest resources
- Villages are a fair representation of the area as a whole

The nine villages were asked in advance to prepare two groups of community members for RRA discussions over one day of livelihood assessments per village, as well as a number of prioritisation activities and semi-structured interviews:

- Women
- Men

It would have been preferable to have taken two or three days per group to carry out the livelihood assessments, and to have split the groups into younger and older participants per gender, however this was not possible due to time constraints and the methodology was adapted to take these factors into account.

## *2 Socio-Economic Baseline Study & Livelihoods Assessment*

The methodology was based, with significant changes and adaptations by the writer, on Ireland (2004) and Malleret (2004), and built on an earlier study of the Udzungwa Mountains area by the writer for WWF Tanzania (Harrison, 2006). The following factors in particular were taken into account

- Temporal and spatial constraints (one day available per village, villages occasionally difficult to access)
- The need to gather specific information and perspectives relating to community livelihoods and their management of their environment.
- The need to allocate a substantial proportion of the time available to stakeholder consultations and reporting

The key approach within the livelihoods assessment, however, namely the use of Rapid Rural Appraisal techniques, was maintained, as is discussed below. All meetings were carried out in Kiswahili.

**Sustainable Livelihood Assessments** are a method of gathering qualitative data that was chosen because it uses participatory and targeted research methods to gather objective viewpoints of different groups within a certain society. In livelihood assessments, which were divided by gender group, attention is first paid on gathering perceptions of the livelihood assets (forms of capital/resources) available to the communities, divided into five types:

**Table 40: Livelihood Assets**

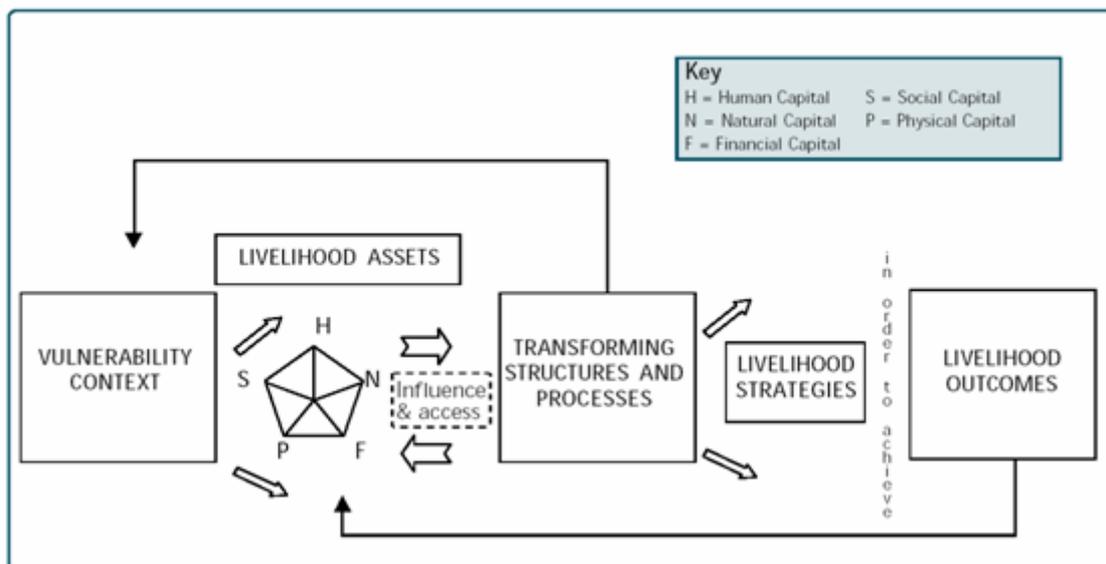
<b>Natural</b>	Land, forest, rivers, marine life, terrestrial life, biodiversity.
<b>Financial</b>	Savings in the form of cash and liquid assets such as grain, livestock etc.
<b>Human</b>	Knowledge, skills such as beehive making, good health, ability to work etc.
<b>Physical</b>	Roads and transport, buildings, communications etc.
<b>Social</b>	Networks between individuals, relationships, members of groups etc

Source: after Scoones, I. in Carney, D., (ed) (1998)

An understanding of these assets brings awareness of the opportunities and limitations facing a community or individuals in developing their livelihoods as well as the direct and indirect values gathered from these resources. People are either enabled or restricted by these assets, for example, the skills and experiences they have, the equipment available to them, the existence or otherwise of savings or the availability of natural resources for utilisation within income generating activities.

Based on this understanding, it is possible to discuss and analyse externalities and areas of vulnerability which affect livelihoods, such as climatic seasonality, institutional/political structures and processes, access to land and other resources and attitudes towards resources. After accessing this information, through a livelihood assessment, the next step is to devise sustainable livelihood strategies which are realistic and appropriate to the conditions and issues raised during assessment. The following diagram gives an overview of this framework.

**Figure 5: Sustainable Livelihoods Framework**



Source: Carney, D., (ed) (1998)

### 3 *Rapid Rural Appraisal*

It was with the understanding that different groups would have a variety of perspectives on the research topics, that following the work of Chambers (1983,1992), Rapid Rural Appraisal (RRA) techniques were chosen as the most appropriate, practical and equitable form of gathering representative qualitative data of the kind intended for this research given the context and time scale available.

RRA was chosen as opposed to PRA because of the limited time available. RRA is a more extractive process where the agenda lies more with the interviewer than PRA, but allows for a more targeted, shorter appraisal. PRA is preferable where the researcher can spend longer periods in the study area than was possible for this research.

Semi-structured interviews (SSIs) were carried out for the research. These were aimed at giving more specific and individual experiences of the issues surrounding the research. The interviews were to ascertain personal opinions and specific experience, usually on a deeper level than in discussions, and reduce the likelihood of responses being coloured by other people's views. SSIs tended to be focussed at experienced individuals or representatives interested in expressing personal views.

#### ***4 Stakeholder Consultations***

Stakeholders consulted were met face to face for SSIs. Interviews were either in Kiswahili or English. Due to time constraints some stakeholders or specialists who may have has an important input were unavailable to give input or there was insufficient opportunity to approach them.

# Appendix 2: Communities & Stakeholders Consulted

## 1 Stakeholders

A total number of 17 stakeholders were consulted, directly or indirectly.

**Table 41: List of Stakeholders**

Name	Position/Activity
A Sapi	Agriculture Admission Manager, Ilovu
Alice Libenenga	Kidatu Division Extension Officer
Chris Timbuka	Warden in Charge, Udzungwa Mountains National Park
George Mbega	Kilombero District Council
H A Maganga	Mang'ula Division Extension Officer
Joseph Lyaruu	Acting Manager, TANESCO, Kidatu Plant
Kijayo Saidi	Kilombero District Council
Kilosa District Management Staff (6 Officers)	Kilosa District Council
Luhelo Matimbwi	Kilombero District Council
Mr Masundi	Human Resources Manager, TANESCO, Kidatu Plant
Mwaijele Elias	Kilombero District Council
Willie Mwaruvanda	Rufiji Basin Water Office

## 2 Community Members

A total sample of 362 respondents, split equally by gender group were consulted during livelihood assessments in nine villages. 180 respondents took part in the quantitative household surveys, also divided equally by gender, and are listed below.

**Table 42: Respondents of Quantitative Survey**

Date	Village	Respondent
04 October 2006	Ruaha	Tatu Hassan
		Mariam Nyaparange
		Hidaya Josam
		Theresia Msahala
		Mayasa Ally
		Amina Oki
		Janeth Chalani
		Batuli Mwabelo
		Hawa Hassan
		Asha Abdalla
		Trphone Lyamuya
		Suleiman Mbilili
		Haji Bushiri
		William John
		Gonza Mpalashi
		Mathias Luambano
		Joseph Kilunga
Albin Mkimi		
Haizuru Simba		
Claud Masambati		
05 October 2006	Msowero	Venance Kityoko
		Hassan Salumchana
		Juma Chiwapanga

Date	Village	Respondent
		Shamte Mdosse Salum Ngwani Simon Kaundala Philemon Ngogo Martin Mnyandwa Omari Mzigo Lucian Matimbo Beatrice Momolo Maimuna Ramadhani Prisca Kaundula Shida Omary Zuhura Habibu Agela Anatoli Leonia Kajeza Dementia Mselemu Amina Goha Hadija Chana
06 October 2006	Tundu	Amina Waziri Emelensiana John Asteria Kinunda Fatuma Mbamba Nicolata Mgonela Asha Kitime Blandina Benjamin Amina Abdalla Asha Makuani Halima Mijinga Hamisi Tanninga Said Mpunugu Ahmed Salehe Thomas Mzuri Crispin Mchinjika Juma Kondo Celestin Chatwile Juma Mpunugu Abdalla Abad Hemedi Nziajoje
07 October 2006	Lumango	Aldo Matinya Damas Anthony Abbas Nomano Wiselm Hembulamwana Agapito Mnyako Christopher Hembulah Pascal Mbena Costa Msambala Luka Mgwale Lazaro Peter Agripina Stephano Mage Jeremia Zena Msanza Irene Mvalla Grace Rugenge Pili Christopher Joyce Lugenge

Date	Village	Respondent
		Editha Kaziga Hadija Manjoti Prisc Mwikola
08 October 2006	Kifinga	Sylvia Msami Jasmine Mkamila Desderia William Xaveria Pascal Maria Chifungalota Asiya Kamogo Fiona Daudi Thedora Kiyungu Levina James Pendo Obadia Hassan Nzigilwa Maulidi Hamidu Nassoro Kingalu Phillipo Ernest Mwichande Waziri Omary Mwalimu Anthony Gama Edward Kwalewele Luhusa Mtosa Hamissi Matajiri
09 October 2006	Iwemba	Joyce Minja Salvina Ernest Desdelia Isdory Levina Emilini Fatuma Ngapawa Tabu Omary Fataki Consolata Majani Tamasha Kondo Teopista Mkopi Febronia Kiweya Evarist Mgwale Wilfred Njovu Arnold Samato Ismail Nakanoga Jonas Adam Selemani Kipande Shomary Makuany Canute Sadick Cleophace Lyagula Salehe Nakanoga
10 October 2006	Vidunda	Kilian john Godiani Makoye John Mzowa Melkzedeck Kanuti Adrian William Thomas Churosa Octavian Laurent Octavian Mkamilo Adrian Chiligwa Edes Sylvester Dafroza Matowanya

Date	Village	Respondent
		Adella Kilawilo Heritha Simon Laura Mkumbaye Helena Mkamilo Benedicta Martin Rufina Gabriel Marieta Makseyo Olipa Mkamilo Emaculata Emmilian
12 October 2006	Chonwe	Leokardia Mzachi Leokadia Mgodia Victoria John Joyce Juvence Leopodina Hilary Rose .C. Chiweya Evalestina Simon Benedicta Petli Marcelina Matei Keresensia Michael Melkiori Mgodia Paul Katwela Yusti Mayuga Pastor Laurent Ladislaus Mponda Dionis Donald Leonard Katwela Pantaleo Joachim Anthoni Titti Charles Mgodia
13 October 2006	Udunghu	Clarence Kidanga Ezekiel Matajiri Richard Katwela Astery Mtwale Roben Manupi Musa Saidi Valence Yovin Menrad Alex Dioskoli Katwela Gaudence Merkion Getruda Mtwale Devota Mahoha Agripina Kagogoro Veridiana Mnyamani Selina Msagaya Amelina Kidanga Protasia Mtwale Leonarda Madega Kontilda Katuli Protasia Katuli

# Appendix 3: Quantitative Questionnaire

NAMBA YA DODOSO .....				
TAREHE: ___ / ___ / 2006.				
JINA LA MSAILI:	<input type="text" value="PH"/>	<input type="text" value="AN"/>	<input type="text" value="JL"/>	<input type="text"/>

## DODOSO

**TAFADHALI ANDIKA KWA MAKIINI MAJIBU NA ZUNGUSHA DUARA KATIKA SEHEMU SAHIHI**

*N = NDIYO*

*H = HAPANA*

*KE = MWANAMKE*

*ME = MWANUME*

**KIJIJI:.....**

**KITONGOJI:.....**

### **MAELEZO KWA JUMLA**

JINA LA MTAHINIWA .....

JINA LA MKUU WA KAYA .....

JINSIA YA MKUU WA KAYA?

MKUU WA KAYA ANA UMRI GANI? 16-25 26-35 36-45 46-55 56-65 65+

MKUU WA KAYA NI MWANAMKE?

*KAMA NDIYO:*

(A) HAJAOLEWA **N / H**

(B) AMEOLEWA **N / H**

(C) NI MTALAKA **N / H**

(D) NI MJANE **N / H**

WATU WANGAPI WANAISHI KWENYE KAYA YENU? .....

### **ANAPOTOKEA MKUU WA KAYA**

NI MZALIWA WA HAPA? **N / H**

KAMA HAPANA, AMETOKEA WAPI? .....

ALIKUJA MWAKA GANI? .....

KIPI KILIMVUTIA KUJA HAPA? (zungushia jibu au majibu sahihi)

*Kilimo Bora Ajira Biashara Kuo/Kuolewa Ujamaa Kujenga TAZARA Sababu Nyingine*

### **MASWALI KUHUSU NYUMBA**

**KUTA ZA NYUMBA**

**PAA LA NYUMBA**

UKUTA	WEKA ALAMA	IDADI YA NYUMBA YA....	PAA	WEKA ALAMA	IDADI YA NYUMBA YA....
NYUMBA YA MITI			HAKUNA PAA		
UDONGO			NYASI		
MATOFALI YA KUCHOMA (UDONGO)			MAKUTI		
MATOFALI YA KUCHOMA (MPUNGA)			MABATI		
MATOFALI YA BLOK			VIGAE		

**RASILIMALI MTAJI:**

**MNAYO MIFUGO?**

**MNA USAFIRI BINAFSI?**

**MNAPATA WAPI MAJI?**

AINA YA MIFUGO	IDA DI	USAFIRI	ID AD I	MAJI	ALAMA
HAKUNA		HAKUNA		MTONI /KISIMANI / KUTOKA BOMBA LA BURE LA UMMA	
KUKU/BATA		BAISKELI		MNAPATA MAJI KUTOKA MSITU WA HIFADHI	
KANGA					
MBUZI/KONDOO					
NGOMBE		PIKI PIKI		MNA KISIMA BINAFSI	
NGURUWE		GARI		MNA BOMBA NJE YA NYUMBA YENU BINAFSI	
PUNDA		TREKTA		MNA BOMBA NDANI YA NYUMBA YENU BINAFSI	
				MNA TANGI YENU BINAFSI LA KUHIFADHI MAJI NYUMBANI	

**MNAPATA WAPI MALISHO? MNAPATA WAPI KUNI?**

**MNAPATA WAPI DAWA?**

ENEEO	ALAMA	ENEEO	ALAMA	ENEEO	ALAMA
MSITU WA HIFADHI		MSITU WA HIFADHI		MSITU WA HIFADHI	
SHAMBANI MWETU		SHAMBANI		SHAMBANI	
TUNAKATA MAJANI		MSITU WA KIJJI		MSITU WA KIJJI	
MAENEO MAWAZI YA MALISHO		MITI YA NYUMBANI		MITI YA NYUMBANI	
		KUNUNUA		KUNUNUA	

**GHARAMA YA MAZAO YA MSITU (1)**

MKINUNUA KUNI MNANUNUA KWA SHILINGI NGAPI? (KWA MZIGO MOJA?)

TSH \_\_\_\_\_/=

MKINUNUA DAWA YA KIENJEYI MNANUNUA KWA SHILINGI NGAPI? (DOZI YA WASTANI?)

TSH \_\_\_\_\_/=

MKINUNUA DAWA YA KISASA MNANUNUA KWA SHILINGI NGAPI? (DOZI YA WASTANI?)

TSH \_\_\_\_\_/=

JE NI KWA KIASI GANI WANAKIJI WANATEGEMEA KUNI KWA KUPIKIA NA MATUMIZI BINAFSI?

KIDOGO  KIASI  SANA

**MNAPATA WAPI NGUZO? MNAPATA WAPI MCAA? MNAFUGIA NYUKI WAPI?**

ENE0	ALAM A	ENE0	ALAM A	ENE0	ALAM A
MSITU WA HIFADHI		MSITU WA HIFADHI		MSITU WA HIFADHI	
SHAMBANI		SHAMBANI		SHAMBANI	
MSITU WA KIJJI		MSITU WA KIJJI		MSITU WA KIJJI	
MITI YA NYUMBANI		MITI YA NYUMBANI		HATUFUGI	
KUNUNUA		KUNUNUA			

**GHARAMA YA MAZAO YA MSITU (2)**

**MKINUNUA NGUZO MNANUA KWA SHILINGI NGAPI? (KWA NGUZO MOJA?)**

TSH \_\_\_\_\_/=

**MKINUNUA MCAA MNANUA KWA SHILINGI NGAPI? (KWA GUNIA MOJA?)**

TSH \_\_\_\_\_/=

**MKIFUGA NYUKI MNAUZA LITA MOJA KWA BEI GANI?**

TSH \_\_\_\_\_/=

**MNAPATA WAPI UMEME?**

**MNAMILIKI SHAMBA?**

**MNAMILIKI NYUMBA?**

UMEME	ALAM A	SHAMBA	ALAM A	UKUB WA /EKA	NYUMBA	IDADI YA NYUMBA
HATUNA UMEME WALA TAA		HATUNA SHAMBA/ HATULIMI			TUNAKAA KWENYE NYUMBA YA NDUGU	
HATUNA UMEME TUNATUNIA TAA YA CHEMLI		TUNAAZIMA SHAMBA			TUNAKODI NYUMBA	
TUNATUMIA BETRI NA SOLAR		TUNAKODISHA SHAMBA KUTOKA MTU BINAFSI			TUNAMILI KI NYUMBA	
TUNATUMIA JENERETA		TUNAKODISHA KUTOKA KIJJINI				
TUNAYO TANESCO		TUNAMILIKI SHAMBA				
		TUNAHATI MILIKI				

**SHUGHULI ZA MAENDELEO**

TAFADHALI ORODHESHA SHUGHULI ZOTE AMBAZO WANA-KAYA WANAZIFANYA KWA AJILI YA KUJIKIMU NA KWA FAIDA NYINGINE (KWA MWAKA MZIMA).

ANDIKA KUFUATANA NA UMUHIMU: WEKA NAMBA 1 MPAKA 4. ANDIKA KWANZA ILE SHUGHULI ILIYO MUHIMU ZAIDI IKIFUATIWA NA ZILE AMBAZO ZINA UMUHIMU KIDOGO WEKA ALAMA KAMA FAIDA NI CHAKULA AU PESA, AU VYOTE.

SHUGHULI	UMUHIMU WA SHUGHULI KWA MAHITAJI YA KAYA	FAIDA NI PESA	FAIDA NI CHAKULA


**JE, NDANI YA KAYA YENU, KUNA WAFUATAO?:**

<b>SHUGHULI</b>	<b>IDADI YA WATU</b>
WAKULIMA	
WAFUGAJI MIFUGO YA NYUMBANI	
WAFANYABIASHARA	
WAVUVI	
WAAKUSANAYAJI WA MADAWA YA ASILI KWENYE MSITU WA HIFADHI	
MAFUNDI SEREMALA	
WAFUGAJI NYUKI	
WATENGENEZAJI VIFAA VITOKANAYO NA MSITU (MIKEKA, VIKAPU NA VINYAGO)	
WAFANYAKAZI AU VIBARUA KWENYE MASHAMBA MAKUBWA YA KILIMO N.K.	
WAWINDAJI WA WANYAMA PORI	
WAVUNA MBAO	

**MASWALI KUHUSU UTAWALA WA KIJIKI, ARDHI NA MALI ASILI**

KUNA SHIRIKA AMBALO LIMEANZISHA SHUGHULI MBADALA HIVI KARIBUNI HAPA KIJIKINI? **N / H**  
KAMA NDIYO, TAFADHALI ORODHESHA HAPA CHINI

1. ....
2. ....
3. ....

KUNA **TAASISI/ AU KAMATI** YEYOTE AMBAYO INASHUGHULIKIA USIMAMIZI WA ARDHI, MAJI NA MISITU HAPA KIJIKINI? **N / H**  
TAFADHALI ORODHESHA HAPA CHINI.

1. ....
2. ....
3. ....

KUNA SHERIA AU TARATIBU HAPA KIJIKINI KUHUSU **MGAWANYO WA ARDHI?** **N / H**  
KAMA IPO/ZIPO TAFADHALI ORODHESHA HAPA CHINI.

1. ....
2. ....
3. ....

KUNA HUDUMA GANI ZA KIJAMII AMBAZO ZINA MADHARA KATIKA **MATUMIZI YA ARDHI, MISITU NA MAJI HAPA KIJIKINI?** **N / H**

1. ....
2. ....
3. ....

KUNA HUDUMA GANI ZA KIJAMII AMBAZO ZINA MADHARA KATIKA **USIMAMIZI WA ARDHI, MISITU NA MAJI HAPA KIJIKINI?** **N / H**

1. ....
2. ....
3. ....

**UTUNZAJI WA MAZINGIRA UNA/MANUFAA GANI KWA KIJIKI?**

INALETA MVUA

KIUCHUMI

MAJI KWAAJILI YA UMWAGILIAJI

UONGEZEKO WA WANYAMA

VIVUTIO VYA WATALII (WANYAMA, MITO, MISITU, MAPOROMOKO YA MAJI NK)

# Appendix 4: Livelihood Assessment Checklist

A full day should be spent in each village. The activities are described below. They are based around the following framework, and are designed to gather as much information on livelihoods as possible. The main activity is the livelihood activities discussions which can be expected to take 2-3 hours, each with two per day. Their use is as a guide only. These are complemented by a quantitative data questionnaire (separate) and transect walks and semi-structured interviews.

## PRIOR TO DISCUSSIONS – SELECTED COMMUNITY MEMBERS

### 1. TRANSECT WALK

**Purpose:** To observe and discuss what resources and facilities (natural & physical assets) are there in the village, how people are living day to day (human & social assets) and what livelihood activities are undertaken.

**Steps:**

1. Ask the village chairperson if three representatives (ideally male, female and youth) can accompany the team on a walk through the village so that we can build a better understanding of how the village works.
2. Agree a start and end point with the representatives and time to be taken (max. 30 mins)
3. Take note of the following on the walk:
  - Natural assets (i.e. crops, forest, pastures, rivers etc.)
  - Access to these natural assets by different members of the community (wealth & gender)
  - Agriculture (rice, maize, vegetables etc.)
  - Physical assets (shops, market, roads, schools, government buildings)
  - Access to these physical assets by different members of the community (wealth & gender)
  - Livelihood activities undertaken at different points
  - Problems
  - Opportunities
4. Keep your eye out for unplanned discoveries. Stop from time to time at particular points and take relevant notes or make diagrams. Take photographs if possible.
5. After the walk share your findings and relate these to the overall objectives of the study.

### 2. SEMI-STRUCTURED INTERVIEWS

Semi-structured interviews with key informants and village leaders. The discussions just touch on assets, seasonality, vulnerability and history of the village, as described in more detail below.

The discussion may then move on to the conservation activities carried out by the village, how these are managed, and where and how the individual sees the village developing its conservation activities.

History of the village may be combined with a geographical view by either updating an existing village map or by drawing a new map with several key informants.

## LIVELIHOOD DISCUSSIONS (RRA)

In separate groups (grown men, grown women)

### 1. IDENTIFYING ASSETS

*Remember In this context assets refers to the following:*

<b>Natural</b>	Land, pastures, forest, rivers, terrestrial life, marine life, biodiversity.
<b>Financial</b>	Savings in the form of cash and liquid assets such as grain, livestock etc.
<b>Human</b>	Knowledge, skills such as beadwork, animal husbandry, good health, ability to work etc.
<b>Physical</b>	Roads and transport, buildings, communications etc.
<b>Social</b>	Networks between individuals, relationships, members of groups etc

#### WHAT NATURAL ASSETS?

Land, trees, forest products, crops, what crops? Is there intercropping? Agroforestry?

What food crops do you farm?

What cash crops do you farm?

Livestock what amount? Which kinds?

Forest and forest products (timber, building materials, medicines, charcoal, fuelwood, carpentry/carving materials)

River, lake life. What types of fish?

Where do the assets come from?

What are the indigenous trees and animal species do you know exist in the forest?

### Value of Natural Assets

What value do each of these assets have for you?  
Do they have a monetary value? Give some examples?  
Through direct sale of the asset, or through utilisation as a livelihood?  
List the livelihoods that use natural assets  
Do they have a cultural or religious value? Which? In what sense?

### WHAT HUMAN ASSETS?

What skills do you have?  
What capacities do you have?  
What Education?  
What small businesses are there? How many are involved in these?

### WHAT SOCIAL ASSETS?

(Perceived): community institutions and networks  
sense of community?  
women's self-help groups, men's self help groups?  
What cultural assets and practices?  
How do cultural assets relate to or depend on natural assets?

### WHAT FINANCIAL ASSETS?

Do you have savings?  
Do you have investments?  
Do you have access to credit?

### WHAT PHYSICAL ASSETS?

What kind of infrastructure do you have?  
What kinds of technology/equipment/machines/tools do they have?  
What are the basic social services in the village?  
What is the relation of these Social services to their impact on the use/management of land, forest, water etc?

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## 2. LAND TENURE

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### Land Tenure & Planning:

Has Land use planning has been done in your village?  
If yes can you describe the zones and boundaries of your village?  
What are the economic activities done in each zone?  
Do you have bylaws to monitor activities done in the zoned areas?  
Does your village possess the land certificate?  
Who is responsible in allocating land in your village?  
What is the approval process?  
Does the village have land use plans, by-laws, management plans, resources management agreements etc?  
What is the level of implementation/enforcement of these land use plans, by-laws, management plans, resources management agreements?  
How much land is available for livelihood activities?  
Is there any land not being used? Why not?

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## 3. VULNERABILITY AND SHOCKS

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**Purpose:** To build an understanding of what the external trends, shocks and seasonality are over which people have relatively little control but which affect/influence their livelihood strategies. The *vulnerability context* has a direct bearing on the hardships that poor people face. The fragility of poor peoples' livelihoods leaves them less able to cope with trends and shocks

### Steps:

1. This session should take the form of an open discussion.
2. Ask the group the following questions:
  - Is the community happy with its current way of life? Why/why not?
  - Is this a good year or a bad year? Why?
  - Is this year better or worse than 3 years?
  - What is the most difficult time of year for you and why?
  - How do you manage during those months?
  - Have there been any shocks affecting the community i.e. drought, HIV/Aids, floods?
  - How did the community cope?
  - Are natural assets reducing? What is causing a loss of biodiversity?
  - How does the community cope? Where do you go if there is a loss of assets?
3. Feedback to the community what you have learned to ensure you have correctly interpreted their views.

---

## 4. TIME AVAILABLE & SEASONAL CALENDAR

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### HOW MUCH TIME IS AVAILABLE PER GENDER GROUP

Group should list their average daily activities, dawn until dusk, showing rest time as well as work time. What is the combined available time for a household to engage in market based activities?

### SEASONAL CALENDAR – TIME & ACTIVITIES

Group should draw a calendar by filling in a table, showing activities by season, and who carries them out, how long it takes and what crops are growing at that time.

Month/Season	J	F	M	A	M	J	J	A	S	O	N	D
Season/rains												
Men's/women's workload												
Income generating activities												
Income - good months, bad months												
Expenditure – highs and lows												
Prices – highs and lows												
Markets – good months, bad months												
Human Disease												
Hard times												
What crops grow at this time												
Seasonal opportunities												

4. Ask how they cope during the particularly hard times and when household expenditures are highest? Do they have family and friends they can drawn from (social assets)? Do others cope the same way? Who doesn't cope during these times in the village? Why?
5. What do they do when they have particularly good times? How do they use additional incomes that may be generated at different times during the year?

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## 5. INSTITUTIONS

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Venn diagrams can be used to show the key institutions and individuals in a community and their relationships and importance for decision-making. Different circles indicate the institutions and individuals. When they touch, information passes between them. If they overlap a little there is some cooperation in decision-making. If they overlap a lot there is considerable cooperation in decision-making.

**Purpose:** To build an understanding of what the key institutions and individuals are in a community are and their relationships and importance for decision-making around livelihoods.

**Steps:**

1. Find out from the group "Which organizations, in and outside the community are involved that particular livelihood activity.
2. Establish which of these are "more important" or "less important" organizations and why.
3. Explain that a circle will represent each organization they have mentioned. The more important the organization, the larger the circle should be.
4. Ask a community member to draw a large circle on the ground and label it with the name of the most important organization and go on from there.
5. Are there village level and district institutions that relate to management of the forests, water land etc (VEC, Resources user groups, associations etc)?

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## 6. LIVELIHOOD DISCUSSIONS

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**Questions:**

LIVELIHOOD ACTIVITIES

**What livelihood activities?**

1. From their comments pull together a list of the different livelihoods that the participants are engaged in. If more than 6 ask them to identify the 6 most important to them as a group.
2. Identify a list of criteria from each of the group members as to what is good about the livelihood activities/why they undertake a livelihood activity, for example:
  - get good income from the activity
  - does not take much time
  - lots of resources for activity
  - access is good
  - easy to do
  - we have the skills required
  - can do year round
  - brings additional/supplementary income
1. Ask the group to rank the criteria by importance.
2. Discuss the findings with the group i.e. which activity is the most important, which is the next most important and so on.
3. Ask the group whether this is actually happening in the village or is it a desired preference that they aspire to.
4. Do they have any other livelihood preferences/aspirations? What are these?

**Additional questions:**

- How much income do you get per month?
- How much do you spend as a household per month?
- What livelihood activities do you get income from?
- Which livelihood activity brings you the most money?
- How much do you have left over each month per household?

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## 7. FUTURE/ALTERNATIVE LIVELIHOOD ACTIVITIES/AIGs

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Are there any economic activities that are being implemented in the area by house holds, groups, e.g. environmentally friendly income generating activities (IGAs)?

If yes, how were these activities initiated and supported?

Moving forward: the future

1. How do you propose to move forward?
2. Which livelihoods will be appropriate to the future?
3. Which alternative livelihoods would reduce pressure on resources but boost incomes?
4. What are the logistical requirements?
5. What costs and benefits and limitations are perceived?
6. What land requirements?
7. What labour requirements? Which community members would be involved?
8. What capital requirements?
9. What kind of entrepreneurial or enterprise requirements?
10. What support requirements from other institutions?

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## 8. VIEWS TOWARDS FOREST CONSERVATION & RESPONSIBILITIES

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Start with a series of short answer questions to understand the level of awareness of natural resources and the importance of conservation practices. The list is not exhaustive, nor is it essential that every question is asked. If they don't know the answer, make sure that their lack of awareness is noted.

These are:

- Do you know the regulations that govern the protection of these forests?
- Do you know any natural resources policies? Mention them
- What activities are allowed in the forest?
- What activities are not allowed in the forest? Which areas?
- Why the above activities are not allowed?
- What are the environmental problems facing the forest if any?
- What are the mitigation measures to the above problems?
- What are the important factors for successful forest conservation?
- What are the benefits of the forests to the adjacent villages?
- What are the costs of the forests to the adjacent villages?
- What are your roles and responsibilities in conserving these forests?
- What are the usages of the rivers and springs?
- How would they cope without that supply?
- How can they protect the source of water?

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## 9. ENVIRONMENTAL EDUCATION & INITIATIVES

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- Is/Are there any development and conservation initiatives being implemented by different organizations in the village?
- Have you got any environmental education? What did you learn?
- Who gave you environmental education? Which community members have it?
- What is the existing capacity of both the district and villages in carrying out conservation activities as well as planning and implementation of good land husbandry.
- Identifying capacity needs in terms of training, provision of extension services and monitoring of different community programmes

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## 10. RESOURCE USAGE

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*Particular questions:*

- What is the level of dependency on natural resources (forests, wildlife, water) and options for alternatives in the village?
- What is the level of fuelwood dependency in the villages (time used in collecting fuelwood and the amount consumed by the household)
- What is the viewpoint towards using energy saving stoves?
- Is there any use of rice husk burned bricks technology for houses construction?
- Is this seen as a viable alternative as to reduce the use of firewood in brick burning
- Assess whether there is encroachment into forests areas and incidences of illegal logging, farming etc in areas adjacent to the park

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## 11. VIEWS TOWARDS TOURISM

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- Are there any tourism activities done in the forest or in your village?
- What are the tourism attractions present in the forest
- How do you think you would benefit from tourism activities?
- Have you benefited so far? How? If not, why not

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## 12. AWARENESS RAISING

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Refer back to the discussion on views towards conservation, the park and the forests and return to the issues that participants were less aware of. For example, point towards the roles and responsibilities that communities have towards conserving the forest and the benefits this will bring to them.

Continue to develop a discussion framed around the importance of maintaining the forests, of whatever type.

Close the discussion with many thanks all around and encouragement for the future.

SOURCE: AFTER IRELAND, (2004) WITH CONSIDERABLE ADDITIONS AND ADAPTATIONS BY PAUL HARRISON (2006)