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**SOCIO-ECONOMIC SPECIAL STUDY
Report No. 19**

CHISANZA (A)

**Socio-economic study of Chisanza (A) village,
Mbala District, Zambia**

**Mpulungu
February 2000**

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**Pollution control and other measures to protect biodiversity
in Lake Tanganyika (RAF/92/G32)**

**Lutte contre la pollution et autres mesures visant à protéger
la biodiversité du lac Tanganyika (RAF/92/G32)**

The Lake Tanganyika Biodiversity Project has been formulated to help the four riparian states (Burundi, Congo, Tanzania and Zambia) produce an effective and sustainable system for managing and conserving the biodiversity of Lake Tanganyika into the foreseeable future. It is funded by the Global Environmental Facility through the United Nations Development Programme.

Le Projet sur la Biodiversité du Lac Tanganyika a été formulé pour aider les quatre états riverains (Burundi, Congo, Tanzanie et Zambie) à élaborer un système efficace et durable pour gérer et conserver la diversité biologique du lac Tanganyika dans un avenir prévisible. Il est financé par le FEM (Fonds pour l'Environnement Mondial) par le biais du Programme des Nations Unies pour le Développement (PNUD)

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Lake Tanganyika Biodiversity Project Socio-Economic Special Study Report Series

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1 INTRODUCTION

1.1 Lake Tanganyika

Lake Tanganyika is the second deepest lake in the world and is most probably of the order of ten million years old.

Lake Tanganyika is the largest of the rift valley lakes of east Africa and the world second largest fresh water body .It occupies the narrow trough of the west branch of the rift system between Tanzania and Zambia. The summarised parameters and their values by Edmond et al, 1995 and Hutchson, 1975;

Maximum depth	1.470m
Mean depth	572m
Surface area	32,000km ²
Volume	18940km ³
Length	650km
Width	50km
Shore line length	1900km
Elevation	773m above sea level

Among the major groups contributing to high levels of diversity which perhaps have received the most attention are the fishes of the lake Fishes are considered as bread earners of the population along the lake shores therefore need to find measures to protect them from extinction.

The lake has four adjacent to terrestrial conservation areas: Ruzizi National Park in Burundi. Mahale and Gombe national parks in Tanzania and Nsumbu national park in Zambia. National park areas are fully designated and protected.

In the lake there are three groups of fisheries namely:

- **Subsistence Fishery**—Often under taken as part time to generate cash or supplement diets. The Fishers in this category operate close to the shore from small canoes, and they exploit mostly immature stocks of fish. Fishing is done at night using light to attract fish. They also operate hand lines, Bottom set gillnets and beach seine nets. Beach seine nets are the most important. Intensity of beach seining along parts of the coast has caused concern about its effect on juvenile (Cichlid) fish stocks and (Clupeidea) Mainly *Limnothrissa miodon* (Chilwe) and *Stolothrissa tanganyicae* (Chisamba)
- **Artisanal Fishery**—Full-time fishery, with the aim of generating income. Undertaken as small business ventures, distributing fish through small local trading operations. Fishers use canoes-Catamaran that they deploy lift nets to catch light-attracted schools of fish (clupeidea). The main catch is *Limnothrissa miodon*, *Stolothrissa Tanganyicae* and *Lates stappersii*. The Artisanal fishery has been supported by development projects in all riparian countries, because they operate off shore there by catching mature fish than the beach seine nets.
- **The Industrial Fishery**—The Fishery initially used large mesh sizes to target Lates species, but now uses small mesh to catch mixed clupeids and Lates. The fishery is capital intensive Mechanised Fisheries, generally using purse seines and distributing fish through large markets internally and externally

1.2 The Lake Tanganyika Biodiversity Project

Lake Tanganyika Biodiversity Project which started in 1995 is expected to end in the year 2000 is funded by Global Environmental Facility through UNDP. It is implemented by Natural Research Institutes in collaboration with two other British organisations MRAG. Ltd and Institute for Fresh Water Ecology and national stakeholder institutions.

The project has five multi-disciplinary special studies aimed at improving understanding of the complex scientific, Technical, Legal and Socio Economical issues related to conservation and management of the lake and its immediate environment and these are:

- Biodiversity: To find out exactly what species and combinations of species and habitats are under particular threat.
- Pollution: To identify the source, evaluate the consequences and find preventive measures
- Sedimentation: To monitor the movement and impact of soil entering the lake.
- Fishing Practices
- Socio Economics and Environmental Education—The two interlined special studies are intended to raise awareness of critical issues among user groups

The aim of the Project is to help the four riparian countries produce an effective and sustainable system for management and conservation of the biodiversity of the lake.

- By involving local communities in its design, the strategy that will embrace the dual needs of developments in order to conserve
- To protect livelihoods of local people into a foreseeable future.

The major objective is to establish a sustainable regional management plan to be founded by a series of multidisciplinary studies in Pollution control, Sedimentation, Biodiversity, Socio Economic. The studies aimed at improving understanding the complex, scientific, legal and Socio economic issues related to conservation of the lake Tanganyika's biodiversity in its catchment area.

1.3 The Socio Economic Special Study

To fulfil the major projects objective of establishing a sustainable regional management plan for pollution control, conservation and maintenance of the biodiversity in lake Tanganyika, which will be founded upon the results of the special study aimed at improving understanding of socio economic issues related to conservation of the lake and its immediate environment.

The component aims at searching the social and economical aspects of life and through out the catchment area to facilitate an understanding of::

- Past and current livelihood strategies and behaviours
- The impact of those on biodiversity of the lake
- Ways in which these behaviours can change to reduce impact on the lake's biodiversity.

From this, specific proposal action can be developed for implementation by appropriate local, national or international institutions and organisations. Also Socio Economic and Environmental Education special studies inter-linked because of their intent to raise awareness of critical issues among user groups and facilitate the scientific studies into locally acceptable policies in which local people are able to play a greater roll in conservation and development and the data collected can form a baseline against which their impacts can be measured.

1.4 Study area

1.4.1 Physical characteristics

The coastal plain is very narrow. Maximum width is 3/4 of a kilometre. Along the shore it is all Sandy. Alluvial soils are found along the Kalo stream and on the outer coastal plain. Settlement is on these fertile areas. Only small patches are left for farming on the alluvial soils. Most of the people are therefore left with no choice but to farm on the slopes and on the plateau above the slopes. They walk long distances to the fields for farming and harvesting.

There are three seasons, the warm wet season from mid November to mid April, the cool dry season from mid April to August, and the hot dry season from September to mid November.

1.4.2 Human characteristics

The Zambian portion of the lakeshore falls within the Northern Province. Within this there are two Districts bordering the lake: Kaputa District in the north-west from the border with Congo to the Lufubu River, and Mpulungu District in the south and east from the Lufubu River to the border with Tanzania. The largest centres are Mpulungu and Nsumbu. Chisanza (A) is situated along the lakeshore about 5 kilometres from Tanzania Zambia border and 18 kilometres from Mpulungu port. The village is in senior chief Tafuna.

It is a typical village with an estimated population between 200 and 250 households. Many VDCs have been formed. Many public meetings have been conducted in the village organised by the project on creating awareness on critical issues related with pollution, sedimentation, bad fishing practices, bad farming practices etc. A committee of about ten people elected by all villagers has been formed and supported by the project the committee's terms of reference are to supplement conservation organs to conserve biodiversity and bring development in the area of origin.

1.5 Previous studies

IFIP study: This was concentrated on characteristics of gear and equipment kits, fishing unit operations, and personal backgrounds of sample gear owners and captains of fishing units. Produced a considerable body of data on boat and gear types, engines, replacement and maintenance costs, details of fishing operations, as well biodata on the fishermen sampled.

LTR study: Basic intention to use biodata for fishermen and processors and traders to set out context for respondents opinions and views on sector problems and prospects; total population for Chisanza A and B together 1,434 in 357 households.

2 METHODS

2.1 Choice of study sites

Using his existing knowledge, the lakeshore based Survey Co-ordinator, in conjunction with the SESS Facilitator selected four study sites along the Zambian portion of the lakeshore and within the wider catchment. The choice of study sites was subjective, with the intention of covering both relatively “typical” sites, as well as those with specific features of interest in terms of conservation of the biodiversity of the lake, such as intensive agricultural practises, proximity to Protected Areas, recent influxes of refugees, etc. Because the Zambian portion of the coastline is relatively small, cross border links were also considered important.

Chisanza (A) was selected for a pilot study because it was a place in which the Project was relatively well known through the formation of the VCDCs, and was easily accessible from the Mpulungu Station. In general, it was considered to be relatively typical of lakeshore villages, although it is one of the oldest, and has stronger than average leadership, and unusually, a Headwoman, as opposed to a Headman. The village has many churches, sports teams, etc., and has undertaken community led development activities, such as constructing a covered market.

2.2 Preliminary preparations

The lakeshore based Survey Co-ordinator selected individuals from local government departments (Fisheries, Agriculture, Education) to form a team (see Appendix 1). Many of these had been involved in earlier LTBP SESS and FPSS work, or previous socio-economic studies on the lakeshore, or elsewhere. He also undertook a brief introductory/sensitisation visit to Chisanza in advance of the main fieldwork. The locally based team members met with the National Socio-Economics Co-ordinator and SESS Facilitator for a day of review and training, during which they discussed the use of Participatory Rural Appraisal (PRA) tools and agreed upon a set of guidelines for the semi-structured household interviews.

2.3 Community and group meetings

An introductory community meeting was held on the first morning to introduce the Project and the survey team, and to explain the purpose of the survey, the methods to be used, and the proposed program. This was arranged in advance, and facilitated by the Headwoman. Following this elders and long-term residents were asked to provide historical context by outlining the history of the village and describing settlement patterns, developments in economic activities, trends in the abundance of natural resources, etc. Following this, there was a participatory mapping exercise, in which maps of the local area were constructed on the ground by the villagers present.

The community meeting then broke up into smaller themed group meetings each facilitated by one or two survey team members. The groups focussed on farming, fishing, and women's and family issues; in addition, a group of elders and leaders continued with more general/background information, including defining criteria for wealth/wellbeing groups. Discussions were open-ended and respondent led, and included the use of PRA tools such as transect walks, timelines, seasonal calendars, and daily timetables to explore both spatial and temporal aspects of the subject. Using a variety of techniques allowed triangulation to check the consistency of the information provided. Further information was also obtained through informal discussions with village leaders over lunch.

On the afternoon of last day of the survey a second community meeting was held to sum up the initial findings for the community to verify. The community then ranked the issues raised, and provided ideas for possible solutions. The meeting was facilitated by the Survey Co-ordinator, who encouraged participation and questions from all sectors of the community.

2.4 Household interviews

The community and group meetings were supplemented with a program of informal semi-structured household interviews to provide more quantitative socio-economic data. These were open-ended and respondent led, and effort was taken not to ask leading questions or to prompt responses. The use of 'tell me about...' as opposed to specific interrogative questions allowed the respondent to raise issues of which, as an outsider, the interviewer might not have been aware, and allowed the conversation to flow naturally. The guidelines prepared earlier (Appendix 3) were used as to remind the interviewers of potentially interesting topics, including household composition and economy, information on specific economic activities, the use of natural resources, and health and sanitation. However each interview was different, and not all topics were covered in every interview. Discussions were directed at the head of the household or the most senior person present, although participation was sought from all members, particularly women. Respondents were encouraged to ask questions of the survey team.

Households were sampled (approximately) systematically. The village was divided in four quarters, and a pair of interviewers walked through each of these sampling every fourth household encountered. Two of the teams started at the edges of the village and moved inwards, while the other two started at the centre and moved outwards to ensure even sampling of both centrally and peripherally located homes. The spatial distribution of the households sampled was monitored by the Survey Co-ordinator during the evening review meetings to ensure even coverage.

3 RESULTS

The survey was carried out between 11 and 13 October 1999. The team travelled from Mpulungu each day by boat, arriving at approximately 08:30, and departing at approximately 15:30.

The initial community meeting was held in the centre of the village with people sitting under scattered mango trees. During the meeting the Headwoman, Mrs Margaret Tafuna, thanked the audience for attending the meeting, and urged them to co-operate with the survey team so that meaningful data could be collected in order to better understand their lives and livelihoods. The Survey Co-ordinator then introduced the aims of the survey and the team members, and called upon the NSEC to introduce the Project and its aim. Themed group meetings were held with farmers, fishermen, women, and elders and leaders.

Thirty-eight homes were sampled; however, one of these (3%) had been abandoned, thus only 37 household interviews were conducted. Data regarding the total population of the village is not available, but it is estimated to be made up of 200 to 250 households, giving a sampling intensity of approximately 16%. Interviews were carried out in Bemba (53%), Lungu (36%), or a mixture of both. They lasted between 25 and 85 minutes, with an average of approximately 40 minutes. Of the principal respondents, the majority (73%) were men, although in many cases women present also contributed, especially on topics with which they were specifically involved. In general, people were very willing to talk and welcoming of the survey team and the interest they were taking.

The final meeting was very participatory, with a good deal of debate. Men contributed most, but women were not excluded, and also contributed, particularly when they disagreed with a conclusion put forward by men.

3.1 Village history

The original founder of the village and the date of its establishment is not known. Some time before 1900 (i.e., before the construction of the church at Nyamukolo) a man called Chikoto Sinyangwe received permission from Chief Zombe to settle in the village as its first Headman. However, Chikoto is believed to have killed an elephant without informing Chief Zombe or giving him his share, which annoyed the Chief so much that he removed him as Headman. Chief Zombe then installed one of his own sons, Kakowa, as the village's second Headman. After Kakowa's death in 1931, his brother Kamata became the third Headman, but upon the death of Chief Tafuna in 1934, Kamata, became the new Chief Tafuna, and a third brother, Cheusi, became the village's fourth Headman. However, when Chief Zombe died in 1947, Cheusi became the new Chief Zombe, and appointed his son, Jackson Cheusi Sikazwe, as the fifth Headman. On 5 April 1955 the government arrested a large number of people who had gathered in the village to protest colonial rule, including the headman, Jackson, and other prominent figures of the time such as Wind Mazimba and Ostrich Peter Ngolwe. Jackson served as Headman until 1988. Several different people then acted as Headman until Margaret Tafuna, the current Headwoman, was elected in 1994.

Key dates in the development of the village include the establishment of a clinic in 1955 and a lower primary school in 1958 in the next village, about 2.5km away.

3.2 Village organisation

The village is bounded by the lake to the west, by hills to the east, and the neighbouring villages of Isanga to the north and Chisanza (B) and Sumba to the south. The settlement is strung out in a long narrow band along the lakeshore, with fields behind leading up to the hills.

3.3 Infrastructure and communications

There is a Rural Health Clinic in next village. However, it often lacks medicines and there is not a dispensary in the village. During the women's group meeting women complained about poor services at the Clinic, specifically that there is not an effective system of out of hours care, and that in the case of an out of hours emergency, staff insist on an extra payment, and are sometimes drunk. Women also prefer to have a female nurse attend them in childbirth; as there is currently only a male nurse, many prefer to use the services of Traditional Birthing Attendants.

There is a water pump, but is not working, and has not been for some time.

There is a primary school in the next village but there are not enough teachers, in part because there is no suitable accommodation for them.

Most (95%) of the homes of the households interviewed are made of unburnt (unfired) mud bricks, and most (94%) have traditional thatched roofs. There are also a small number of pole and mud houses (wattle and daub) in the village. In general, houses are well cared for, and plastered and painted decoratively, and the surroundings are clean, often with ornamental plants; interviewers described 74% of the homes they visited as "clean" or "well maintained".

Nearby villages can be reached by footpath, although there is not a bridge over the Kalo Stream and in very rainy weather it can be difficult to cross; under such circumstances children cannot get to school. There is a road which passes through the village, but it has not been passable by vehicle for many years. It is possible to walk up to the road which runs from the Kalambo Falls at the Tanzanian border to Mbala, but this takes 2 to 3 hours, and there is no regular public transport along it. Thus the principal means of transport is by boat to Mpulungu. There are daily passenger boats which leave in the morning and return in the afternoon. However, they are not popular as they are considered to be expensive, particularly for transporting goods to market, and there is widespread fear of the lake in rough weather by non-fishermen.

3.4 Household composition and economies

3.4.1 Wealth/well being groups

A small group of leaders, including the Headwoman, discussed criteria for wealth or well being in the village. The most important consideration is ownership of productive assets, specifically fishing gear such as lift nets and catamarans, or beach seine nets and boats, and outboard engines, but also other assets such as a transport boat, or a hammer mill, because such things "always give income". In Chisanza, all of the households considered to be successful own fishing gear. Gear, or other assets could be acquired through hard work and saving, or inheritance, or, in the past, through government credit schemes. However a household's fortunes also depend on the skill of its members at managing their assets.

Below the most successful group is a second group which is comprised of households headed by skilled professionals or businessmen. For example, a good boat builder can become very prosperous, as can large scale traders of fish, kapenta, and other goods. These are mostly men; female traders tend to have much smaller amounts of capital, and thus smaller revenues.

A third group of better off household own small pieces of fishing gear, such as a lampboat, which can be used by family members or hired workers.

Most households are not so well off, and their adult male members work for others as hired fishermen (catamaran crew members, beach seine net pullers, lampboat operators, etc.) for a small share of the catch. There is also some paid agricultural work, but more often people prefer to use work parties. Most households thus work their own fields and generate a small amount of cash through the sale of a surplus and other activities. In general, most households have enough to eat unless they are very unfortunate, or very lazy¹.

Female headed households, which are usually headed by widows, are among the poorest, and many struggle to survive.

The type of house a family live in is not considered to be an indicator of wealth, as almost all houses are built with freely collected natural resources, and thus the quality of a house depends more on the efforts made by the members of the household than their financial resources. However, the homes of successful households tend to include more manufactured hardware (door handles, locks, etc.). Because houses are relatively permanent, the quality of a house may reflect wealth at the time of its construction more than current wealth. During this survey the only home visited with an iron sheet roof belonged to an elderly widow who was caring for two small grandchildren, and was one of the poorest households interviewed; the house had been built by her late husband at some more prosperous time in the past.

Ownership of livestock is very limited, and few households grow cash crops or cultivate more than a small area of land for subsistence and a small surplus for sale, and thus neither of these are considered important in defining wealth.

Ownership of a kiosk is not considered important in defining wealth, as these are not very profitable, and are run, in part, as a service to the community.

3.4.2 Household composition

The households interviewed ranged in size from two to 20 members, with an average of 6.1. The smallest households are made up of young couples just starting out, who do not yet have children, or elderly couples whose children have all left home. The largest are made up of polygamous households in which both (or all) of the wives and their children live together, or multigenerational households where grown children (usually daughters) and their children are living with their parents/grandparents, or where there are simply a large number of children, or other family members (elderly parents, nephews and nieces, etc.).

The most frequently encountered type of household is comprised of a man, his one wife, and some children, usually, but necessarily, their own. However, these made up only 42% of the sample, and the composition of the majority of households is more complicated than this. Twenty-six percent of households interviewed include other adult members, and 32% are

¹ Village leaders' description.

headed by polygamous men. Most commonly (80% of polygamous households) each wife has her own house and household, which the man visits on a rotational basis. Her house is most commonly in the same compound as the other wives (60%), but there were also cases of wives having homes in separate parts of the village (20%), or in different villages (20%). In 20% of polygamous households both (or all) of the wives live together as one large household.

Sixteen percent of households are headed by women, in this sample, all widows. No households comprised of single men were encountered; young men in their late teens or early twenties tend to remain in their parents households until they marry. Only a few households (10%) do not include children; these are young couples who just starting out, who do not yet have children, or elderly couples whose children have all left home. Households with children under 15 years old have between one and 13 of them, with an average of 3.5. Those with few children are either young families with only one or two small children to date, or older couples whose older children have left home, leaving only a few of the younger ones. Those with many are large complex households, usually with more than one mother, either in the case of co-wives living together, or adult daughters returning to their parents' households with their own children, while their younger siblings are still living there.

Of married men, 39% are polygamous. They tend to have two wives (70% of polygamous men), although some have as many as five. Overall the average number of wives per married man is 1.5. Of the more obviously prosperous households encountered 60% were headed by polygamous men, but among polygamous households were included both prosperous and less well off families. Women do not like polygamy, but feel they have no choice, as there are more women than men in the village. Sixty percent of the more obviously prosperous households include members outside the immediate nuclear family. They also tend to be larger in size, with an average of 8.6 members. Of the most obviously poor households, 60% are headed by widows.

A dependency ratio indicates the number of dependants (children, in this case under 16, the disabled, the elderly, etc.) supported by each economically active adult. On average, each adult supports 1.3 other people in the household (however, this does not include dependants not part of the household, e.g. elderly parents living on their own but dependant on others for food, medical care, etc.). This varies from 0.0, in the case of young couples with no children, to 4.0 in the case of a widow, herself quite elderly, raising four young grandchildren on her own. In the most obviously poor households, the average is 2.3.

All of the households encountered describe their ethnic origin as Lungu, even when they include members (wives) who were born in Tanzania. Of the adults about whom data were collected, 64% were born in Chisanza. Of those born elsewhere, most (60%) are (or were) married to a native of the village, and have been settled for many years (typically at least 15). Their places of origin are generally within the immediate area; other nearby lakeshore villages, Mpulungu, Mbala, or villages up on the interior plateau, or across the border in Tanzania. The heads of all of the more wealthy households are native to Chisanza. One prominent businessman expressed an intention (or desire) to move to Mpulungu where he believes business opportunities are better, but generally people seem relatively content to stay in the village.

All of the households sampled described themselves as Christian, of the denominations shown below

Christian denominations represented in Chisanza (A)

Denomination	% of households
African Methodist Episcopacy	48
United Church of Zambia	17
Morovian	10
Watch Tower	10
Catholic	7
Seventh Day Adventist	7

Educational attainment is not high. Of the adults about whom data were collected, men had between zero and 12 years of school, with an average of five years; half had completed primary school. Women had between zero and nine years, with an average of 3.5 years; only 23% had completed primary school, although younger women were more educated than older women. Better educated women tend to be married to better educated men, and vice versa, but a higher level of education does not necessarily correspond with a higher standard of living. The male heads of the more prosperous households encountered had from zero to 12 years of school, and the more educated women were distributed in both poor and prosperous households. Women are interested in the idea of adult literacy classes.

Most households claim ownership of their homes, having either built them themselves, or, more rarely, inherited them. The only case of a rented house was one which had been rented for a second wife which was very near to the house of the first wife. Most households (72%) have only one home. Where another home was reported, it was usually (89% of cases) the home of another wife of a polygamous male household head as opposed to another home of that household itself. In only one case was this in another village, the man's home village, although interestingly, the wife was not a native of Chisanza, and he did not participate in fishing. One household which co-owned a lift net and a beach seine net reported that they sometimes move to temporary fishing camps.

3.4.3 Household economies and livelihood strategies

Cassava is the staple food in every household. It is soaked in water to remove toxins, dried, pounded into flour, and prepared as a stiff porridge, *nchima*. In some households, some of the time, maize flour (mealie) is mixed in with the cassava flour, but cassava remains the principal carbohydrate base of the diet. Every farm grows cassava for subsistence, and most households also grow a small surplus for sale. Women are more often involved in cassava farming than men, although not exclusively. However, they are exclusively involved in processing and preparing it.

Fish (including kapenta) is widely eaten, although the quantities and frequencies vary. For households whose members are involved in fishing, it is consumed almost daily, although during the period of the full moon each month light attraction methods of fishing (lift nets and beach seine nets) are suspended, and some fishing activities are seasonal (see below). All fishing is done by men. All types of fishing households trade widely with others, most commonly for cassava or firewood from poorer non-fishing households with little access to cash. The more prosperous non-fishing families also buy fish from fishermen, but in the poorest households generally very little is eaten. Interviewers noted signs of protein deficiency in many young children from both fishing and non-fishing families, indicating that even where there is sufficient fish, it is not necessarily evenly distributed within households.

There are few livestock animals or even chickens in the village and meat and chicken are hardly ever eaten by most households; even the most prosperous might only enjoy this luxury once a month. Beans are not grown in the village, but are occasionally purchased from or traded for fish with people living in the interior. The poorest households survive on cassava *nchima*, with cassava leaves as relish.

Except for one household comprised of an elderly couple who are almost entirely dependant on their grown children, every household also sought to gain at least a little cash income. The most important source of income for the village as a whole is from fishing, although this actually affects relatively few households. Prosperous households which own gear such as lift nets or beach seine nets pay their hired workers in kind, but usually keep approximately half of the catch. Fish tend to be sold fresh in Mpulungu, either to the commercial companies, or at the market, while kapenta are sold fresh either in Mpulungu or in the village, or processed by members of the household or hired workers and then sold later. Such households have relatively high incomes. Lampboat owners have the next highest incomes from the sale of kapenta and fish, as their shares are generally large enough to provide for the household, with a significant surplus (e.g., three quarters) for sale. One respondent cited revenues as being on the order of 20,000 Kw (approximately \$8) per day except for the week of the full moon (giving a figure in the region of \$170 per month). From this, though, the lampboat owners need to cover the costs of paraffin and parts for their lamps. Lampboat operators however, receive relatively small shares, which are mostly consumed within the household with only occasional sales. Beach seine net pullers receive the smallest shares, which are almost always consumed within the household or traded, and thus their households tend to depend on other activities for income. Gill net fishermen usually sell a small surplus - one interviewee cited approximately one third of his catch, or five fish per day - but line fishermen tend to consume all of their catch, with only occasional sales, particularly if they are just young boys.

The most common income generating activity, undertaken by 77% of households is the sale of cassava, either dried, or ground into flour. Sale of other agricultural products is much less common, and is limited to a few specialised households. Dried cassava is sold in small quantities in piles in the village to other villagers by women, and in 90kg bags² in Mpulungu, more often by men. An energetic household sells about 30% of the crop, which is about ten bags per year, although many sell much less. Cassava flour is sold in the village for 6,000 to 8,000 Kw (approximately \$3) for a standard sized bowl by women. An industrious woman might sell four or five bowls per week (giving a figure in the region of \$55 per month), although again many sell much less. The cassava is most efficiently ground by a pair of women working together, and the survey team observed women working both with other women from within their own households, and with friends and neighbours. Women from households which grow only small surpluses are sometimes involved in trade in cassava, buying it from others and then either grinding it themselves for resale in the village, accumulating a sufficient quantity to make it worth taking to Mpulungu.

Women in several households (30%) (illegally) brew various types of traditional beer, mostly for sale within the village. Some households grow crops such as millet specifically for this purpose, while others undertake it on a more *ad hoc* basis, using either surplus food crops, or even buying the starches and sugars to be fermented. Beer brewing is slightly more common in the wet season, when other opportunities for income generation such as processing kapenta

² A 90kg bag is of a standard size. When filled with dried cassava it actually weighs much less; the cassava is effectively sold by volume.

or baking are not available, despite the heavier agricultural workload at that time of year. Some recipes require boiling, and thus additional fuelwood; this tends to be collected by the women involved, as opposed to purchased. Profits from a relatively serious enterprise are in the range of 30,000 to 50,000 Kw per month (approximately \$16), although some batches do not turn well out, and there is the risk of being apprehended by the police.

Kapenta processing was not common among the households sampled, although it is undertaken in the village, if not to a large degree. One lift net and catamaran owner interviewed brings his catch back to the village where it is processed by hired workers, but most processing is done on a small scale by women, either the wives or other members of the families of gear or lampboat owners, or by women from non-fishing families who obtain fresh kapenta from fishermen in exchange for other goods or cash, and then sun dry and resell them. Some fishermen's wives prefer to keep their moneys separate from their husbands, and actually buy the fresh kapenta from them. Processing of kapenta is more commonly undertaken in the dry season, when catches are higher and losses due to poor weather less likely. Women are often assisted by their children. Small scale processors tend to sell to traders who transport the product to Mpulungu and beyond, and who are mostly men. No traders of this type were encountered during this survey, but one very prosperous couple who owned a large transport boat and outboard engine made their living entirely from purchasing fish and kapenta in the more remote areas of southern Tanzania and transporting them to Mpulungu for resale, and then purchasing petrol and paraffin in Mpulungu and transporting it back to the Tanzanian villages for sale there.

The proximity of the village to Mpulungu means that most fish not consumed fresh are sold there rather than smoked in the village, so this activity is not widely undertaken. However, one beach seine net owner who fishes in Tanzanian waters pays people there to smoke fish for him, particularly during the wet season, when catches are highest.

Women from 23% of households also sell firewood to others in the village to gain a little income, although for many this is only an occasional activity; it is more important to poorer households with few other sources of income. One headload sells for 1,000 Kw (approximately \$0.40).

Other less common income generating activities include salaried employment, e.g. as a chef at a nearby tourist lodge, or other types of paid employment, either full time, e.g. as a boat builder or bricklayer, or part time, e.g., repairing outboard engines, all undertaken by men. Smaller numbers of women also engage in baking buns or scones or making fritters for sale in the village; this tends to stop during the mango season, when people collect these for free instead of buying snack foods. Some also embroider or knit items for sale, usually on an occasional basis. Both of these tend not to be undertaken by women from the poorest households as they require an outlay of capital. The poorest households or those experiencing unusually hard times also depend on help from their relatives and loans to make ends meet. Other than fishing there are few opportunities to undertake paid work.

Most households undertake more than one of these activities, either in parallel, or on a seasonal basis, but often also in a somewhat *ad hoc* fashion whenever a need for cash arises, and thus their economies are complex and dynamic, and proved difficult to describe to the interviewers. Members of the household, particularly women, but also men and even quite young children are also involved in a range of household chores.

Although trade and bartering are common, particularly amongst those households with less access to cash, cash is required for school fees and to cover medical expenses, as well as household expenses such as clothing, soap, and food or relish.

Many respondents, particularly women, struggle to make ends meet, and have little to fall back upon in times of sickness or hardship. Furthermore they are unable to invest in new income generating activities, and women in particular were interested in obtaining small loans. In contrast, the more prosperous households had savings in banks in Mpulungu.

3.5 Economic activities

3.5.1 Farming

Except for an elderly couple who are dependent on their children, and the household of a prosperous cross border trader which buys all of its food, every household is involved in farming, which provides the village's staple food, as well as being the most common source of income. The principal crop is cassava, which is grown on every farm, primarily for subsistence, but also for sale. Other crops grown on a much more minor scale, and again, primarily for consumption by within the household include those listed below

Secondary crops grown in Chisanza (A)

Crop	% of households
Maize	68
Sweet potatoes and potatoes	26
Rice	21
Millet	18

Sorghum, okra, groundnuts, and pumpkins were also mentioned, but each in case only in a single interview. Beans and vegetables were not grown by the households sampled. There are, however, many mango trees in the village, and around most homes there are a few papaw trees. The survey team also noted the presence of a few oil palms, coconut palms, *mankangala* fruit trees, and orange trees in the village.

Labour comes primarily from within the household, although some prosperous households which also own fishing gear use hired labour (10% of households). Within households arrangements are varied, complex, and dynamic, but in general both men and women, as well as older children are involved in farming, even if they are also involved in other activities as well, particularly as much agricultural activity is highly seasonal. Within individual households specific crops or tasks are assigned to different members, but there are no clear patterns overall, e.g. in some households women are responsible for cassava production and men for maize, while in others, the reverse is true.

Soils in the village along the lakeshore are mainly sandy, except along the Kalo stream, where they are more loamy. Up towards the hills they become less sandy, and redder, with patches of stony ground.

The fields are up in the hills to the east of the village. Walking there takes between 40 minutes and three hours, with an average of one hour and 40 minutes. Women tend to depart well before dawn in order to get to the fields, complete three or four hours of work, and return home before the day gets too hot. In the wet season they may also return to the fields

in the late afternoon. The cassava fields are generally small³, ranging from 0.25 to 2.5ha, except in the case of a prosperous fishing gear owner who uses hired labour to work a 12 acre (nearly 5ha) farm on a mostly commercial basis. Excluding him, the average is approximately 1.2ha. For the most part, the fields have been cleared by the male members of the household in this generation, although 30% of households inherited them. One household (3%) acquired their fields from the Forest Department which degazetted protected forest land in response to demands for more land for farming. All fields are claimed to be owned, and no cases of rental of land were encountered. In the past, farms were located much closer to the village, but as population increased and the original fields lost their fertility, people have been forced to clear further and further into the hills. Inherited fields are not noticeably closer to the village, although they may be slightly smaller than average. The majority of respondents (73%) reported no problems with soil fertility or soil erosion, perhaps because of the relative newness of the fields. Those who did complain tended to conjoin the two terms. Thirty-eight percent of them dealt with the problem by using contour ridges and/or extending the fallow period; the rest had no solution. Although there are not many data, two thirds of those who registered concern about declining fertility farm inherited (older) fields, and half of these are widows with no access to male labour to clear new land. One of these specifically complained of this, stating that the land was no longer able to produce enough to support her and her four dependent grandchildren.

As well as the cassava fields in the hills, a small amount of rice is grown in the damp low-lying areas just behind the beach, and a small amount of groundnuts are grown along the banks of the Kalo Stream. Cassava is soaked near the lake. There is a special place to the south of the village on the lakeshore with many large flat rocks which is good for spreading it out to dry, but as it is a bit far, many women chose to dry it around the home.

No use of artificial fertilisers, pesticides, or other agrochemicals was reported, and there is no extension service or contact with the Department of Agriculture or other institutions or organisations concerned with agricultural development. One respondent indicated that the most recent visit of DoA extension workers was in 1985! Major constraints to diversification are felt to be related to the distance of the fields, in that there is a lot of theft of valuable crops such as maize and groundnuts, but also cassava, as well as damage by monkeys in the unattended fields. Both contribute to a reluctance to plant more valuable or attractive crops such as maize in greater quantities. In the past, particularly before the forest reserve was degazetted, bush pigs used to destroy a lot of the cassava, but these have now been exterminated.

Few households (23%) keep any animals. Seventeen percent keep a few chickens, 10% keep three or four goats, and one household (3%) keeps a single pig. Other households have tried to keep chickens and/or ducks in the past, but without success, as they all died. However, chickens were one of the things that women from poorer households said that they would be interested in investing in if they had a little money.

³ These figures should be used as a guideline only as both interviewers and interviewees alike may not have been that familiar with units of area, and it seems that "hectares" and "acres" have been used interchangeably. The conclusion that fields are relatively small is, however, quite likely to be correct.

3.5.2 Fishing

Individuals from 56% of households are involved in fishing in some way. Of these, most are adult men, although some are the sons of household heads who have not yet set up homes of their own, as opposed to the older household heads themselves. Small boys are also involved in line fishing, and can make a significant contribution to their households in this way, particularly to poorer households with little access to fish otherwise. All fishers are male.

Different individuals are involved in fishing in different ways. Some are owners of gear such as lift nets or beach seine nets; of those interviewed all of these were actually involved in the fishing themselves, along with other male family members and hired crew/net pullers, although arrangements vary; e.g., one individual works with two of his brothers on gear in which the three are co-owners, although not in equal parts, while another frequently sends his gear up to fish in Tanzanian waters, and does not always accompany it on these trips, while a third very prosperous individual who has many sons owns and operates two lift nets and catamarans with their help.

Others are owners of the lamps and lampboats which work with the beach seine nets. They tend to be older, mature men, some of whom go out on the lake themselves, while others send their adult sons, or hire operators to do the work for them. Hired hands also work as crew on catamarans (typically four men) or as beach seine net pullers (ten or more men).

The crew of a particular gear appears to be relatively well-defined and permanent, although is a slight tendency for numbers to shrink in the off-season (see below for info on seasonality). It is assumed that this is as a result of decisions made within the crew, as shares drop to a level where some individuals find it more lucrative to engage other activities.

A small percentage of the households sampled (6%) own gillnets, which are used by the owner, usually by himself with just one other person. The most commonly employed method encountered (33% of fishermen) is line fishing; this is often undertaken in conjunction with some other type of fishing, or during the dry season when there is less farming work to do, but there are also full time line fishermen, and a number of boys as young as ten who line fish regularly, if not full time, either with their fathers, or, especially in female (widow) headed households, by themselves. They are generally not attending school.

Historically, most fishing took place in the dry season, primarily because men helped with farming in the wet season, but also because this is when the kapenta is most abundant. However, in recent times, some fishermen, particularly lift net fishermen, have begun fishing year round. Kapenta is more abundant in the dry season, and *migebuka* in the wet. Fishermen at the group meeting produced the following general seasonal calendar, starting in May, with the end of the wet season and beginning of the dry⁴.

	M	J	J	A	S	O	N	D	J	F	M	A
Beach seine net for kapenta												
Beach seine net for <i>inonge</i>												
Gillnets for <i>mpande</i>												
Gillnets for <i>inkunguka</i>												
Line fishing for <i>lupapa</i> and <i>namyele</i>												

⁴ Fishermen who use lines as their only gear operate either year round or in the dry season, depending on their household's demand for male labour. During April many fishermen who usually fish in other ways turn to line fishing as a supplement to low catches from other gears at this time.

The owners of the lift nets and beach seine nets sell the kapenta they catch at the market in Mpulungu, and the fish to the "companies"⁵ there or at the market depending on prices, or bring it all back to Chisanza for processing. This is done either by the female members of the household, or, in one case, by hired workers. The exact arrangements on how the catch is shared vary, but tend to follow the following pattern. First the running expenses of the boat (fuel and oil for the outboard motor, etc.) are taken out. The remaining catch is then divided in half, one for the gear owner, and the other for everyone else. In the case of a lift net, in which the gear owner is responsible for the lamps, the remaining half is divided amongst the four or so crew, who thus each receive a little under one eighth. In the case of a beach seine net, the remaining half is divided in half again, with one going to the lampboat owner, who thus receives a little under a quarter, and the other divided among the ten or so net pullers, who thus receive something on the order of one fortieth each. Beach seine net catches tend to be smaller than lift net catches, although one beach seine net typically works with several lampboats per night.

Crew members decide whether to take their share of the catch home, or sell it, which they do individually, or as a group. In general, beach seine net pullers tend to take their shares home for consumption or trade rather than sell them, as they are small. Lampboat owners must sell a portion of their shares (which are generally more than are required for household consumption anyway) or use cash generated in other ways to purchase more paraffin and spare parts for their lamps for the next night's fishing. Of the households sampled, all of those which owned lampboats brought their shares home to be processed, rather than selling them fresh. This is usually more profitable, but requires more solvency, as the returns are delayed. Lampboat operators are paid from the owner's share. Generally this is very little, which is consumed by the household.

Gillnet fishermen, who catch large fish, aim to sell a portion of their catch; one estimated it as about a third, or five fish per day. Gillnet fishermen fish throughout the month, independently of the phase of the moon. Line fishermen are a varied group; some fish for home consumption and only occasionally sell a surplus, while others aim to catch enough for regular sale, usually fresh, but sometimes smoked.

Historically fishermen used a gear called *ntamba*, a beach seine net made locally from natural fibres, to catch kapenta, although without lights to attract the fish. Later, the *lusenga*, which used lights, was introduced by the Tumba people from Tanzania. Catches and local people's perception of catch per unit effort (CPUE) were high, although they are perceived to have declined considerably in recent times despite the advent of new gears and technologies. Fishermen specifically blame human population growth, and the growth in the number of fishermen, as well as the number of methods, some of which are thought to be particularly damaging. They also feel that there are too many commercial fishing vessels in Zambian waters, to the detriment of artisanal and traditional fishermen. Some fishermen also cited the lack of a formal closed season for fish to breed as contributing to the decline.

Declining fishing revenues are causing more people to depend more on farming, as well as other activities such as timber extraction, but they are also blamed for increased poverty. This leads to lower school attendances as fees become unmanageable, poor health, as medical care become unaffordable, and even a perceived increase in petty crime. As well as declining fish catches, fishermen complained of the difficulty and expense of taking both fresh and

⁵ Commercial/industrial fishing and fish freezing and marketing companies.

processed fish to the market in Mpulungu (except for the prosperous gear owners who own outboard engines) where prices are higher. They also commented that it was difficult to purchase new gear locally. Only two households (5%) indicated that they had any interaction with Department of Fisheries staff, which was a surprise and disappointment to the DoF staff on the survey team.

Despite these issues, however, there is a general interest in investing in fishing gear, if possible, except for the rather striking case of one interview with a prosperous household head who revealed that he had recently sold all of the families fishing assets, including an outboard engine, and invested the proceeds in farming, specifically in purchasing a large piece of good land up on the plateau in the area around the Kalambo Falls. This is worked by hired hands, under the supervision of his adult children, while he continues to live in Chisanza because he likes it.

3.6 Use of natural resources

The people of Chisanza use a variety of natural resources as listed below, almost all of which are collected from the bush surrounding the village and in the hills around the fields.

Natural resources used by the residents of Chisanza (A)

Resource	% of households
Firewood	100
Thatching grass	100
Poles	73
Mushrooms	42
Wild collected fruits	31
Fibre	15
Medicinal herbs	3
Reeds	3
Timber	3

Poles are exclusively collected by men, who also do more of the harvesting of thatching grass. Firewood is more often, but not exclusively collected by women. Mushrooms and wild fruits are often collected by children. Women from 23% of households collect firewood for sale at least on an occasional basis, and one man occasionally collects poles for sale. Only one woman, the wife of a prosperous fishing gear owner, uses charcoal, which is purchased in Mpulungu.

3.7 Health and sanitation

The health problems most commonly cited are listed below.

Health problems cited in Chisanza (A)

Complaint	% of households
Malaria (includes "fever")	84
Intestinal/stomach problems (diarrhoea, cholera, vomiting, stomach pains, etc.)	32
Respiratory tract infections ("coughing")	29
Headache	19
Eye diseases	10
Measles	6

Women at the women's group meeting also complained of a high incidence of miscarriages, which they attributed primarily to witchcraft. According to them, the most common cause of deaths in adults is malaria, while in children it is measles; one household interviewed had lost three small children to measles, although this was over ten years ago. Every household reported that their children's immunisations up to date. However, that measles is still felt to be a problem indicates that either that this is not true, or that there is problem with the immunisation program; it is probable that some children are not immunised, but that male respondents, perhaps not familiar with this aspect of child care, may have answered positively so as not to appear to be negligent, or get into trouble.

In household interviews it was recorded that all ill people are taken to the Rural Health Clinic in the next village, although some households also buy medicines in Mpulungu, and one man reported that he sometimes collects medicinal herbs and prepares traditional remedies. The high cost of medicines is a problem for some. In response to a direct question during an informal interview over lunch, one informant also indicated that traditional healers and herbalists are very popular, and are also frequently used. Almost all households reported that they had had some interaction with the Department of Health.

At least fourteen households (39%) reported that they have lost children; this figure is probably higher, as the topic was not raised at every interview, but it is not clear where a negative response was received as opposed to no data. In most cases this is just one (but see the above mentioned case of three).⁶

Most households (85%) collect their drinking water from "springs" near the lakeshore where water seeps to the surface in dug out areas. At the time of the survey, at the end of the dry season, these flowed very slowly, and it took approximately ten minutes to fill a 20l container. The springs are not protected, and can be fouled by goats, dogs, etc. Households which are far from the springs collect drinking water from the lake (12%), or dig their own shallow holes to reveal the high water table (4%). Very few households (12%) claim to treat their drinking water, which they do by boiling. All of these are relatively prosperous households (one of which actually buys charcoal for cooking), whose members are better educated than average. However, they still suffer from intestinal/stomach problems. Water for washing clothes, dishes, etc. and for bathing come from the lake.

Most (89%) of households have a pit latrine toilet; of those that do not, all are poorer households. Only 35% have a rubbish pit; the rest just make a pile, or scatter their refuse, but the village is generally very clean.

⁶ An elderly couple in their eighties reported having lost ten or more of their children, but it was not clear that all of these were in childhood; if they were, they would probably have been at least 30 years ago, and thus are not included in the analysis.

3.8 Ranking of issues

At the final community meeting, villagers ranked the issues and problems facing them in terms of the overall seriousness to community well being and development as follows:

- 1) Access to clean drinking water: water from the existing water holes is not clean, and not sufficient for the village's growing population. The broken pump needs parts in order to be repaired. A donor is supposed to be paid for these, but the money has not reached them in the village.
- 2) Land access to markets for agricultural products: this is currently non-existent, and thus limits agricultural production, as water transport is considered expensive and unsafe. If there was good access to markets, villagers believe that they could raise sufficient funds from the sale of agricultural products to cover many other development needs.
- 3) Accommodation for teachers at the school: lack of proper accommodation means that there are too few teachers posted to the school. The materials are already in their possession, and they can mobilise labour, but are lacking money, which is supposedly "stuck" at the district headquarters in Mpulungu (ranked by men).
- 3) Better services at the health clinic: these are not satisfactory to women, particularly with respect to gynaecology and obstetrics (ranked by women).

Other issues which were raised during the survey, but which are of lesser importance include the need for a police post to reduce the incidence of crop theft, and more outreach from the Department of Health, especially with respect to the importance of boiling drinking water.

There was a general agreement that there was a need to work co-operatively, either in formal groups, or informally. Furthermore, it was agreed that there was a sufficient labour resource within the village; what was lacking was money for materials for construction and other development projects

APPENDIX 1: TEAM

Name	Institution	Position
Mr George Munshimbwe Chitalu	LTBP/Environment Council of Zambia	National Socio-Economics Co-ordinator
Mr Frighton Ng'andu	MAFF Dept of Field Services Fisheries Sub Programme (Mpulungu)	Fisheries Training Instructor
Mr Joseph Chimanga	Department of Fisheries (Mpulungu)	
Mr Whiteford Chomba	Department of Fisheries (Mpulungu)	
Mr Elias Chipulu	Department of Fisheries (Kasama)	
Ms Odineya Chisala	Dept of Agriculture (Mpulungu)	District Agricultural Co-ordinator
Mr Aliani Mulagala	Dept of Education (Mpulungu)	
Ms D. Mlutula	Dept of Education (Mpulungu)	
Ms Karen Zwick	LTBP	SESS Facilitator

APPENDIX 2: TIMETABLE

Friday 8 October 1999	Arrival of KZ and GMC in Mpulungu Planning meeting
Saturday 9 October 1999	Review/training workshop
Sunday 10 October 1999	Preparation of materials
Monday 11 October 1999	Data collection • Community meeting • Introduction of project/survey team, explanation of aims and program • General history of the village (timeline) • General introduction to the village (map) • Issue/group meetings • Elders/leaders (definition of wealth/well being groups) • Fishers/fishing • Farmers/farming • Women/women's and family issues
Tuesday 12 October 1999	• Household interviews Departure of GMC Data collection
Wednesday 13 October 1999	• Household interviews Data collection • Household interviews • Community meeting • Initial findings • Problem ranking, ideas for solutions • Thank yous
Thursday 14 October 1999	Review and data analysis
Friday 15 October 1999	Review and data analysis Departure of KZ

APPENDIX 3: HOUSEHOLD INTERVIEW GUIDELINES

Start by introducing yourself, and asking the people if they are willing to participate under conditions of strict anonymity. They need not answer anything they don't want to, but we hope that if they provide us with good information, we can help them to solve some of their problems appropriately. But, until we do a survey, we can't do anything. We are outsiders, who know little or nothing about their lives; they are the experts, and we would like the opportunity to learn from them.

Date

Start time

Your name and the name of any other team members with you

A OBSERVATION (just look!)

- Describe the house: the walls, the roof, the floor, the door, the windows, the furnishings. How many rooms can you see?
- What other buildings can you see (latrines, food stores, animal shelters)?
- Can you see where they do the cooking?
- Is the area clean, well looked after? Can you see a rubbish pit?
- Is there electricity, or a generator, or a car battery?
- Are there any luxury consumer items (radio, cassette player, television)?
- Who is there? How are they dressed? What's going on?

B THE HOUSEHOLD

- Who lives there? For each person try to find out how they are related to the head of the household, their age (approx.), their sex, their level of education, their main occupation (include all children and babies too). For each adult man, how many wives does he have?
- How does each person contribute to the well being of the household? Do they bring in food, or money, or provide some form of domestic or other labour? Are there seasonal variations?
- Who is the head of the household? Who is the main interview respondent? Who is responsible for bringing in the largest part of the food the household eats? Who brings in most of the money? Who make decisions about how the household is managed? Who makes decisions about household expenditure?
- Is there anyone else there (during the interview)? Who? What are they doing?
- For the members of the household, try to find out their ethnic background.
- Are they religious?
- Is this the only home, or is there another (or more than one)? If so, where? Who lives there? Why? Why do the rest live here? Which is the primary one? DO they move seasonally, or do they live here full time?
- Is the house owned, or rented, or what?
- Where was the respondent born? If not here, when did he/she come here? Why? Does he/she think he/she will stay in the future?

C THE HOUSEHOLD ECONOMY

- What is the staple food? Who is responsible for bringing it in?
- What other foods do they eat? Who is responsible for bringing these in?
- How often do they eat fish? Who is responsible for bringing it in?
- How often do they eat meat? Who is responsible for bringing it in?
- Are there seasonal variations?
- Do members of the household exchange goods with others (e.g., fish, other foods, wood, etc.) or provide services (do work) for which they are paid in kind (i.e., not money)? Who does what? What do they gain from it? Are there seasonal variations?
- What are the main income (money) generating activities undertaken by the members of the household? Who does what? What do they gain from it (approx.)? Are there seasonal variations?
- What are the main household expenses? How much are they (approx.)? Are there seasonal variations?
- Is there enough to manage? If yes, what do they do with any surplus? If no, how do they survive?
- If they had little more money, what would they do with it?
- Do they own any productive assets (fishing gear, farm land, means of transport (bicycle/car/lorry/passenger boat), small businesses (kiosk/shop/bar/restaurant/hotel), land for rent, rooms for rent, grinding mill, sewing machine, etc.)? Who owns them?

D FARMING & ANIMAL HUSBANDRY

- What subsistence crops do they grow? What cash crops? For each crop, who is involved? Are they helped by anyone else? When is the busy season? How much time do they spend working during the different seasons? Where are the fields? What area is cultivated (approx.)? How much is produced (approx.)? Does the crop need treating or processing? If the crop (or a part of it) is sold, how much does it bring in (approx.)? Where is it sold? By whom? To whom? How is it transported? What are the problems? What are possible solutions?
- Are the fields owned? By whom (male or female)? How were they acquired? Or rented? From whom? How much does this cost?
- Is the soil fertile? Is it managed in any way?
- Is erosion a problem? If so, are any measures taken to combat it?

- What kinds of animals do they keep? For each type of animal, who is involved? Are they helped by anyone else? Is there a busy season? How much time do they spend working during the different seasons? Where are the animals kept/grazed/watered? How many are there? What is their production (approx.) (include milk, eggs, etc. too)? If some are sold, how much does this bring in (approx.)? When are they sold? Where? By whom? To whom? How are they transported? What are the problems? What are possible solutions?

- Do they have any interaction with the Department of Agriculture, or any other institution or organisation?

E FISHING

- What methods of fishing are undertaken by the members of the household? For each method, who is involved? Who do they fish with? Do they own any of the gear? If so, how was it acquired? What is the arrangement between the gear owner(s) and the crew? Is there a busy season? How much time do they spend working during the different seasons? From where, and where do they fish? What types of fish do they catch? What do they gain from it (fish/money) (approx.)? What do they do with the fish when they are landed? What are the arrangements between the fishermen and the people to whom they sell their fish?
- What are the problems? What are possible solutions?

- Do they have any interaction with the Department of Fisheries, or any other institution or organisation?

F FISH PROCESSING & TRADING

- What types of fish are processed? How? For each type of processing, who is involved? Is there a busy season? How much time do they spend working during the different seasons? How do they obtain the fish? What are the expenses (purchase of fresh fish, purchase of salt, rental of drying grounds, purchase of wood for smoking, construction of ovens for smoking, etc.) (approx.)? How much do they process? What do they gain (approx.)? What is the arrangement with regard to drying grounds? What do they do with the fish once they are processed? What are the arrangements between the processors and the people to whom they sell the fish?
- What is the arrangement with regard to wood for smoking? How much is used (approx.)? Where does it come from?
- What are the problems? What are possible solutions?

- What types of fish are traded? For each type, who is involved? Is there a busy season? How much time do they spend working during the different seasons? How do they obtain the fish? What are the expenses (purchase of fish, transport, etc.) (approx.)? Where do they sell the fish? To whom? What is the arrangement with regard to transport? What is the final destination of the fish? How much do they trade? What do they gain (approx.)?
- What are the problems? What are possible solutions?

G OTHER ECONOMIC ACTIVITIES (be flexible!)

- For each activity, who is involved? Do they work with others? Is there a busy season? How much time do they spend working during the different seasons? What raw materials are needed? Where do these come from? What are the expenses (approx.)? How much do they sell? What do they gain (approx.)? Who buys the goods or services? What are the problems? What are possible solutions?

(this might include formal sector salaried employment, informal sector paid employment (e.g., as a hired farm labourer, domestic servant (housegirl/boy, askari)) a waiter or waitress in a restaurant or bar, a shop assistant, etc.), casual labour (fish porter, messenger, etc.), collection and sale of a natural resource (fuelwood, timber, thatching grass, traditional/herbal medicines, honey, etc.), fabrication and sale (or repair) of locally manufactured items (boats, nets, furniture, charcoal, clothes, baskets, etc.), trade, shopkeeping, kiosk "keeping", production and sale of local beers or spirits, preparation and sale of cooked food, laundry, rental of farm land, fish drying grounds, houses, rooms, etc., provision of transport services, grinding of maize, sale of services (mechanic, hairdresser), etc.)

H USE OF NATURAL RESOURCES

- For each type of resource, who is involved in collecting it? Who is involved in processing or transforming it? Who consumes it? How much is collected? From where? How much time does this take? Are there seasonal variations? If it is sold or traded, what do they gain? If it is bought, how much does this cost? What are the problems? What are possible solutions?
(resources to think about include: fuelwood (how do they cook?), timber/poles for house construction, thatching grass, grass for making baskets, etc., traditional/herbal medicines, wild food plants, mushrooms, honey, wild animals or birds, insects, etc.)
- Have they planted any trees? Why/why not? Who is involved? What types? How many? How are they doing? What are the problems? What are possible solutions?
- Do they have any interaction with the Department of Forestry, or any other institution or organisation?

I HEALTH & SANITATION

- What are the main health problems? What do they do when someone falls sick?
- Have the children been vaccinated?
- Have there been any deaths in the family? Who? When? How? How old were they?
- For each adult woman, how many (living) children does she have? Were there others who died? Has she had any miscarriages or still births?
- Where does their drinking water come from? Who is involved in collecting it? How long does this take? Do they treat it?
- Is there a pit latrine? Who is responsible for maintenance and hygiene?
- What happens to rubbish?
- Do they have any interaction with the Department of Health, or any other institution or organisation?

Do they have any questions of you? Are there other topics they consider important which you haven't covered?

End time

Length of interview

Language used

Was the respondent interested, talkative, open, friendly, or not?

Remember

- These are just guidelines. Feel free to talk about whatever your respondent is most interested in (make up questions as you go along), and skip over what he/she is not interested in; if it's not interesting to your respondent, it's not important.
- Keep in mind your five helpers: Who? When? Where? How? Why?
- Try to get a conversational flow going; don't rush. Fewer high quality, in-depth interviews are better than many inaccurate or superficial ones.
- Be polite; use positive body language (eye contact, smiles) to show that you're interested and encourage your respondent.
- Look: record your own observations, but remember to note them as such.
- Listen: don't interrupt, and never argue. Don't put your own words into your respondent's mouth; ask open questions ("Tell me about..."), and always record your respondent's ideas (even if you think they're mistaken).
- Write it down: make a note of everything at the time. Paper is one of the cheapest parts of the survey, and information can always be discarded later, but only if you've got it.