

A STUDY ON THE SOCIO –ECONOMIC
POTENTIAL OF NGARAMBE VILLAGE,
RUFJI DISTRICT

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and Rufiji District Council

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ABBREVIATIONS

AA	-Authorized Association
ABB	
CBC	- Community Based Conservation
CBO	-Community-Based Conservation
GTZ	-German Technical ---
MEM	-Mpango wa Maendeleo ya Elimu ya Msingi
MKUKUTA	-Mkakati wa Kukuza Uchumi na Kuondoa Umasikini Tanzania
MUNGATA	-Muungano wa Ngarambe na Tapika
NGO	-Non Governmental Organisation
NSGRP	-Monitoring System Through the National Strategy for Growth and Reduction of Poverty
PSI	-
RMZP	-Resource use Management Zone Plan
SACCOS	-
SCP	-Selous Conservation Programme
SME	-Small Micro finance Enterprises
SRG	- Selous Game Reserve
URT	-United Republic of Tanzania
WD	-Wildlife Division
WMAs	- Wildlife Management Areas
WPT	-Wildlife Policy of Tanzania
WWF	-World Wide Fund For Nature

A STUDY ON THE SOCIO –ECONOMIC POTENTIAL OF NGARAMBE VILLAGE, RUFJI DISTRICT

1.0. Introduction

A healthy environment and accountability for natural resources and equitable access and distribution of benefits from these resources are of critical importance for reduction of poverty and economic development in Tanzania. Thus if, the environmental and natural resources base is managed well, the prospects for growth, development, poverty reductions and improvement of livelihoods can be significantly increased. ABB, the global electrical engineering group, and WWF, the global conservation organization teamed up to ensure the sustainable development of a “model” village in Africa. The remote and poor village of Ngarambe in southern Tanzania has just received electricity under a scheme designed to ensure sustainable economic, environmental and social development. The project comes under the umbrella of ABB’s *Access to Electricity Programme* – its response to the United Nations Global Compact, which urged companies and organizations to do more to assist least developed countries. The program foresees companies, aid agencies, non-governmental organizations and local civil society groups working together to ensure long-term sustainable development. On the other hand, WWF has been facilitating improved management of natural resources and sustainable development in Ngarambe village, Rufiji District, Coast Region. The global conservation organization is working with local communities bordering the eastern sector of the Selous Game Reserve and adjacent villages - particularly in Ngarambe and Tapika - to help improve livelihoods and to reduce pressure on the protected area. Through this support, Ngarambe in collaboration with Tapika villagers have started and are in the final stages of registering their communal land as Wildlife Management Area (WMA) where they will be deriving direct benefits from wildlife resources occurring in their village. Similarly, in recognition of this progressive step, ABB in collaboration with WWF has provided the villagers with a generator to produce electricity for various economic and social development activities in the village. Provision of electricity and establishment of a WMA are critical economic and social initiatives that are bound to stimulate major changes in the villages. This report looks at the socio-economic potential of Ngarambe

village in the light of the provision for electricity and highlight areas that need further focus to foster development to the villagers.

1.1. Objective of the study on Social-Economic Potential of Ngarambe village Community

The main objective of the study was to provide information on the social economic characteristics of the Ngarambe village community with the view to establish the socio-economic potential of the village following the recent changes of having electricity in the village. Specific terms of reference are presented as *Appendix 1. Ngarambe village* considered as a model village whereby through provision of electricity, it is envisaged that there will be good opportunities for education, employment and improved livelihood. It is also anticipated that electricity will act as a catalyst to the development of small enterprises and thereby increasing incomes, improving living conditions and, contributing to the breaking of poverty cycle. Environmentally access to electricity will reduce forests destruction hitherto relied upon as a source of energy in terms of firewood collection and charcoal burning.

2.0. Data Collection Technique

The study made use of a structured questionnaire aiming at obtaining information such as demographic characteristics, economic activities housing living condition, communication and envisaged economic activities (*see Appendix 2*). The questionnaire targeted the Ngarambe village specifically household in two hamlets that have benefited from the electricity project. Due to time constraints only 22% of the household were interviewed.

The study also focused in targeted focus group discussions. This was held mainly with mainly the village government leaders leaders, some of the MUNGATA environment committee and a woman group. All discussions ensured a good representation of both gender and age. The discussions aimed at ascertaining a general picture of the social economic condition of Ngarambe village and more importantly comments and proposition of how best to deal with matters arising. A special visit to the village school

and health centre was also undertaken aiming at obtaining more information regarding the education and health status respectively

In order to reduce the level of biasness in sampling the team ensured that there was a good representation of both households with and those without electricity, household that are business oriented and those that are purely for farmers/peasants. The sample also included houses whose heads are female.

2.1 Data analysis techniques

Both quantitative and qualitative techniques of data analysis have been used. Presentation of the data is through descriptive statistics. In highlighting some of the views and opinions from the Ngarambe community, these two approaches complement each other very much.

2.2.Data Sources:

The report consists of mainly two types of data i.e. the primary and secondary data. Most of the primary data was collected through the survey methods described above where as the secondary data was obtained through literature review and records held at the village office, the village health centre, the village school and the conservation office.

2.3.Sample Sites and Sample Sizes

The study was conducted in two hamlets (vitongoji) of Ngarambe village namely the Ngarambe west and Ngarambe east hamlets. The study left out the Namkono hamlet, which does not have electricity and Kingupira hamlet that has been provided electricity by the government [arm – the Wildlife Division](#). The sample targeted a household rather than an individual since the main focus of the study was to examine the socio-economic characteristic of [both](#) households that have [and those that have not](#) been connected to electricity. The total number of hamlets in the two areas is 270. A total of sixty households or 22 % of all the households in the two hamlets were involved in the sample.

The sample selection ensured that all stakeholders were represented. The team held discussions with the village government to identify areas of sampling. These include

households that were headed by women and those ones with and without electricity those headed by men and/or women, and household that were identified as owned by businessmen or simply farmers. In this case a purposeful sampling procedure was followed, where the team targeted those specific groups. Also, additional information was obtained through focus group discussions involving village government leaders; schools Head teacher, and women group and health officer in the village. The village government provided assistance to the team in identifying households that the team described and wanted to consult.

3.0. Description of the Study Area

Ngarambe village is located in Rufiji district, coast region. The village is located south of the district at the southeast edge of the Selous Game Reserve. The village has a gradual variation in altitude, rising from the flood plains of Lungonya, which are deposited with alluvial soils which makes the Ngarambe communities to farm and inter-crop all year round. The vegetation of the village is predominantly Miombo (*Brachystegia*) woodland. The Miombo woodlands are interspersed with forest thicket and grassland especially along the Lungonya floodplains. Ngarambe village is also rich in wildlife such as [buffalo](#), lions, zebras, monkey, and elephants, to mention but a few.

3.1. Conservation efforts

The process of creating Selous Game Reserve as a protected area started between 1905 [through](#) 1945. [This process](#) involved the resettlement of local communities outside the reserve. Traditionally these communities were farmers and hunters. They co-habited with wildlife through their traditions and taboos that made the wildlife utilization in the area sustainable. The creation of the protected area and enactment of wildlife legislation hampered communities access to the resources they used to enjoy. The current Wildlife Policy of Tanzania (WPT) 1998 recognises the importance of local communities in the protection of wildlife and other natural resources occurring in their areas (URT. 1998). The Policy strives among others at

- ◆ Promoting the conservation of wildlife and its habitats outside core protected areas by establishing Wildlife Management Areas (WMAs)

- ◆ Creating an environment which will ensure that legal and sustainable wildlife schemes directly benefit local communities

WWF is working in partnership with the government of Tanzania (Wildlife Division and District Council) to implement these new initiatives in villages around the Eastern Zone of the Selous Game Reserve. Ngarambe and Tapika villages are among the 16 pilot sites where the Government is testing the implementation of WMAs. Among the activities taken by WWF to increase the effectiveness of the community operations to manage the resources include infrastructure development, provision of field equipments/gear and capacity building.

Community based conservation activities in Ngarambe village were initiated in January 1995 by [the Wildlife Division in collaboration with GTZ/Selous Conservation Programme \(SCP\)](#). WWF has been assisting the Tanzanian Wildlife Division to strengthen management effectiveness of the Selous Game Reserve which Ngarambe village is a stakeholder since then. Community Based Conservation in Ngarambe village were initiated after [GTZ/SCP](#) conducted sensitisation consultation with local communities. Villagers accepted the innovation and the project was officially launched by selecting 12 villages, Natural Resource Conservation Committee (VNRCC) and 10 village game scouts. The Director of Wildlife then gave the village hunting quota so that they could realize direct tangible benefits of conservation. [All along the village has been retaining funds accrued from wildlife use from the village land.](#)

In 2003 the Government of Tanzania launched the Wildlife Management Areas (WMA) Regulations and Guidelines. Following the launching, Ngarambe and Tapika village [were selected as one of the 16 pilot WMAs where these regulations are tested for a period of three years \(2003 – 2005\). In turn the two villages formed a Community Based Organisation \(CBO\) known as MUNGATA \(Muungano wa Ngarambe na Tapika\). The two villages have now applied to the Director of Wildlife to gazette part of their land to become a fully-fledged WMA. Parallel to this the two villages have also applied to](#)

register MUNGATA CBO as an Authorized Association (AA) to get mandate of managing the resources within the WMA.

The overall objective of WWF's project is to foster sustainable development to the Eastern Zone of the Selous Game reserve. ABB is working in partnership with WWF under ABBs programme "Access to Electricity" to achieve its overall objective by installing electricity to Ngarambe Village. The WWF-ABB agreement is to focus on communities living adjacent to Selous Game where WWF has been working in partnerships with the Government Institutions and local Communities to promote conservation and sustainable development.

4.0. The Study results

4.1 Age and sex of heads of households

The average age of the head of household in the village is about 40 years old. However, there are heads of households whose age range between 25- 50 years and those whose age is above 50 years old. The heads of households whose age range between 25-50 years constitute 38 out of the 60 interviewed, while those with 50 years and above make about 12 of the interviewed, 3 are above 70 while 7 are below 25 years of age. Most of the people whose age is between 25 – 50 years are related to those whose age is above 50 years. In some of the households, it was not easy to get heads of households to mention their ages because of lack information or not knowing when they were born.

Out of the 60 heads of households interviewed there were only six households that were headed by females. This shows that the number of female heading their households is small. Most of them are divorcees, or widows. However out of the six female heading their households, four were divorced and most of those divorced were formerly married to outsiders/partial immigrants who came to the village to do logging business. The other two females heading households were widows.

The culture of the area also affected the proportion of the sex sample in the households since if a man is there then a woman cannot speak on his behalf. Since we provided prior

notification of our arrival, we were received by men in most of the households and the women of the house did not take an active part in the discussions, leaving most of the talking to their husbands.

On average the size of household is 7 people per household. However, there are various differences. For example, about 10% of the households have more than 10 people living in the same house while, about 45% of the households have 6-9 people and the same proportion of households have 2 to 5 people in the households. Also, the data shows that households headed by people above 60 years old have fewer members of the household, which is 4-6 while those headed by relatively younger people of between 25-50 years old have more household members. One of the very conspicuous things in the village is the case of having step child/children in some households. This may be attributed to the issue of early pregnancies among girls in the village such that by the time one gets married, she already has a child or more.

Also, households that have more than 10 people per household happen to be also households where polygamous marriages are common. Some households also have orphans. The number of children and extended families increase in such condition.

4.2.Dependency Ratio

Data shows that the ratio of dependency people to those who are active and productive is high, primarily because of the fact that the age structure is skewed downwards in favour of younger people. On average for those families which a larger number of people the dependency ratio is 1:9 while for those families with a low dependency ratio is 1:4. In most of the household it is only the head of household and the spouse who generate income through various economic activities that include agriculture and petty trading. The rest of the members of the households are children of either school going age or below or they are elders who are above 70 therefore dependants too.

The number of people who live permanently in the same household as an indicator of the ratio of dependency shows that over 95% of the sample live in the same households with all the dependants, except only 5% of the sample households that have some members living outside the households. These 5% households have some children schooling outside the village.

The range of age for the children is between 0-9 years for those that do not go to school and 10- 18 years for those that are in schools. School going age is 7 years but is common in rural areas for the children to be registered as soon as they reach seven years old. On average 30% of total household population are still in school, most of the 18 years and below are fully dependent to their parents and guardians.

4.3.Migration

Generally the Ngarambe inhabitants were born in the village. This was evidenced by most of the interviewed people indicated that they were born in Ngarambe especially those of 45 years and below. Others moved in the area due to various reasons. These reasons include, having been transferred there due to villagization, while others moved into the village in search of farmland for agriculture. The land in the area is considered to be fertile. Most of the migrants that came to the village in search of land for farming came from Kilwa villages. The other categories of migrants are those that came to the village because of logging business. Harvesting of timber in Ngarambe has been going on for a long time and few companies established themselves there to do logging. Commercial logging on a high scale came to an end in the second half of 2000 however; small-scale logging is still going on.

Currently, information from the village leaders regarding migration shows that this is increasing. More people are moving into Ngarambe from other parts of the district specifically for business reasons. Data from the village government shows that up to 7 families have already registered to move into the village since last year alone. This is mainly due the village having a milling machine, electricity and also due to the increase in number of tourists, which ensures business opportunities. The village is at the edges of

the Selous Game Reserve, an outstanding wildlife rich area that is common for tourist hunting. The number of people going to the village during tourist hunting is high. The establishment of electricity in the villages will have an impact in terms of attracting more people to move into the village. For example, people who left the village in 10-20 years ago in search of better place are now returning back having realized that prospects for a better life in foreign areas was slim and unreliable.

School going children who are transferred from other villages to Ngarambe School causes a small but equally important level of migration. More school going children are transferred to Ngarambe due to having a better school and having performed so well in the previous grade seven examinations. Also the number of teacher's has increased from 2 in 2000 to 5 in 2005. Movements outside the village have not been reported.

4.4.Education Level

Overall, the level of the education for most of the people in Ngarambe village is relatively low. The highest level of education achieved by most villagers is primary education. There are various factors that lead to this problem. This include cultural background of the people, which does not support initiatives such as sending children to school, early marriages, lack of facilities such as having a secondary school that is located in Utete, about 65 km from Ngarambe. Transport was also mentioned to be another problem, which affect not only movement of the people but also transportation of goods from the village to outside areas. Poor transport limits the chances of children going to school, as most parents cannot afford sending their children too far off places such as Utete. In addition to paying for school fees, and other basic necessities, parents will be required to pay for transport as well, something that is regarded as expensive. . This was also revealed from a discussion with the village government. For instance last year i.e. 2004, 11 students out of 18 were selected to join government secondary schools but only 5 managed to join the secondary education. The parents who failed to send their children to school blamed poverty to have been the main cause.

The education level of household heads is also relatively low. For instance, for the heads of household with the age above 50, only 27 % have at least primary or adult education. The others, i.e. 73% have no education at all. About 85% of the heads of households with ages ranging from 25 to 50 have attained primary education. Likewise, about 73% of their spouses also have attained primary education. The percentage of spouse is slightly low mainly because of factors such as cultural barriers and dropouts.

Discussions with the Head teacher at the village school however revealed that there are changes in attitude toward education For instance attendance is now at 85% and it is increasing compared to five years ago when the attendance was as low as 60%. However the enrolment of primary school children has remained fairly stable in this village (table x1) though it was low in the year 2004. of all school going children in the villages. Enrolment for girls is also increasing, indicating even a greater change of attitude in recent years. There are now about 143 girls in the village primary school, representing about 46% of all pupils in the school. There are also 164 boys in the village school.

Table x1: Children enrolled to join Primary education in Ngarambe village

Year	Enrolment target	Number enrolled	Percentage
2000	38	32	84%
2001	60	54	90%
2002	72	68	94%
2003	60	54	90%
2004	40	31	77.5%
2005	50	46	92%

The Head teacher acknowledges that attitude towards education in the village is very closely related to increased awareness on conservation matters, indicating that alongside, increased awareness in the importance of education, there is also raising level of awareness in conservation. Through conservation activities, such as a process to establish the WMA and tourist hunting have enabled local communities get the opportunity for employment. The staffs from Selous Game Reserve (SGR) also frequently, are in touch

and interact with the villagers thus, raising their level of understanding and awareness on conservation issues.

Because of good conservation efforts, including having started the process to establishing a WMA, the villagers have received support to obtain a generator that is supplying electricity to the villages. The Head teacher admits that for the first time in 2004, about 81% of students in the school village were selected to join secondary school (table x2). He is attributing this to having electricity at home that has enabled pupils to read even during nighttime. Before the electricity project started in 2003, only 2 pupils out of 12 were selected to join secondary schools. This excellent performance has motivated parents to send their children to school and also students to work even harder.

Table x2: Students selected to join Secondary education from Ngarambe Primary School

Year	Candidates (# of pupils sat for Std VII Exam)	Number selected to join Secondary Education	Percentage
2000	16	2	12.5%
2001	17	4	23.5%
2002	15	6	40%
2003	12	2	17%
2004	16	13	81%

All the teachers at the school have houses and the school buildings have also been renovated. Apart from funds from the district council, the school also gets subvention from the village government through funds accrued from the sale of annual hunting quotas provided by the Director of Wildlife. These funds have contributed to improve education in the villages.

The Head teacher also mentioned some on going government policies, programmes and funds that are directed towards improvement of education such as Mpango wa Maendeleo ya Elimu ya Msingi (MEM) (Primary Education Development Programme) which is aimed at improving of schools and provision of basic textbooks to primary schools. There are also other donations and contributions that have contributed to improving the schools.

These include, donations from WWF, ABB, GTZ and Tourist Hunting Companies. Such organizations have contributed items such as computers, video for education purposes to the school as well as school building renovation materials.



Picture 1: Improved school buildings, Ngarambe village

4.4.1. Problems

With an exception of natural calamities, the Head teacher mentioned some general problems that affect the school and the community at large. These include: inadequate teaching staff, at present there are 5 teachers while the school has 8 classrooms and over 200 pupils; early marriages among girls; inadequate funding and inadequate teaching facilities such as books. Such problems as mentioned by the Head teacher and other village community are those that most rural primary schools in the country face.

Natural calamities such as floods during rain season prevent school pupils from regularly attending school, especially, for children coming from areas outside the village. The Head teacher pointed out that, due to improvement in the school, there have been an increased number of transfers of pupils from neighbouring villages to the Ngarambe village school. This has further increased pressure on the teachers who are now teaching

relatively large classes. School children also face problems from wild animals that are found in the village especially in the early morning hours.

5.0.ECONOMIC ACTIVITIES IN NGARAMBE VILLAGE

The study looked at the socio-economic activities that are practiced in Ngarambe village. The activities were assessed on the basis of the temporal dimension, namely looking at the activity over time, taking a time frame of 5 years and looking at the current status – i.e. 2005. The information compares parameters such as proportion of people engaged in the economic activity over time and looks at the principle and secondary activity to determine if there is any change or shift in terms of priority economic activities.

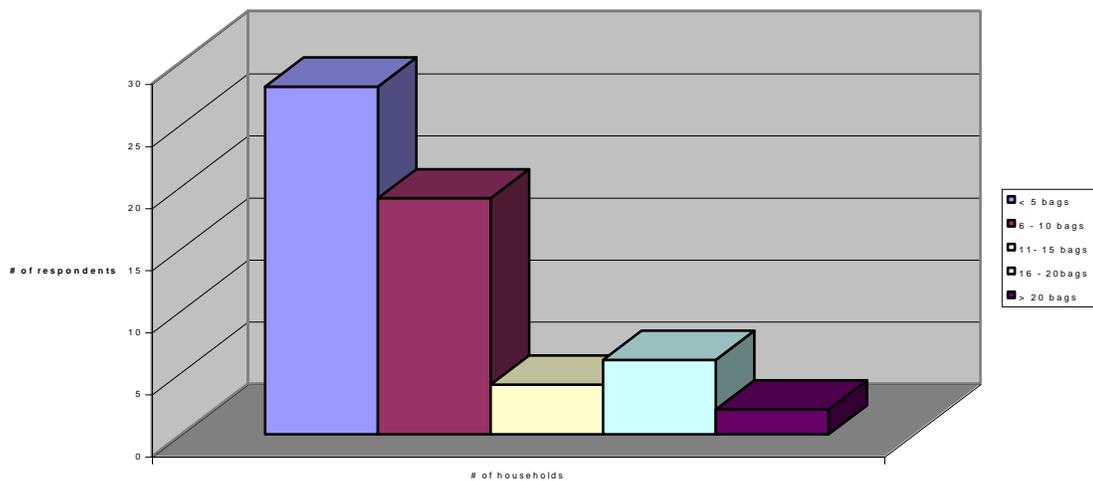
5.1 Agriculture

Agriculture is the principal economic activity for most of the people in Ngarambe villages. About 85 % of the heads of households consulted are engaged in agriculture now in 2005 and, almost the same level of households was engaged in agriculture in 2000 (five years ago). This indicates the importance of agriculture among the people of Ngarambe and the strong dependency of the people on agriculture as a means of livelihood.

Two major food crops are grown in the village, which are maize and millet. These have always been the main food crops over the years however; some farmers use millet as a cash crop too. Simsim is a major cash crop that has also remained so over the years. Paddy is grown in the village by about 78% of the households. Over the years, paddy has been one of the important food crops in Ngarambe. Few people however, do not cultivate paddy due to inability to cope with the intensive nature of the crop. Small-scale paddy cultivation is labour intensive – in cultivation, weeding and guarding against birds and wild animals. Some people cannot set aside labour for this work. Banana, which was last cultivated five years ago, is no longer planted due to an increase in the number of crop marauding elephants in the village.

Overall, the amount of yields from food crops i.e. maize, millet and paddy that most farmers get from their farms ranges between 5-20 bags of 100 kgs each (see figure below). Farm sizes are also small, ranging from 1-4 acres. Farmers get from 1 bag to 4 bags of 100 kg for simsim, which is the main cash crop per farming season. This level of harvest, although not measured per area, has remained almost constant for all the crops over the years. Farmers harvest small quantities due to poor agricultural practices.

Fig. -- Crops produced per household



5.1.1. Income from Agriculture

As mentioned earlier simsim is the major cash crop in the area. A bag of 100 kg fetches about Tshs. 50,000 to Tsh. 60,000 (about US\$ 50 to 60). Only 12% of the household harvested more than 5 bags of simsim thus getting an income that o exceed Tsh. 200,000 (US\$ 200). Farmers also get income from the sale of other crops such as maize, millet and paddy but since this is done in an ad hock manner as such there is no reliable data that exists in the sale of these crops.

5.1.2. Farm Size

Generally farms are relatively small in Ngarambe. The highest size of a farm that a farmer in Ngarambe has is 5 acres. About 16 farmers or 26.6% of the farmers have up to 5 acres of land for farming but the majority of the farmers have between 1-4 acres, a size

that is generally small. Farms are small due to lack of improved farm implements. Hand hoe is the major farm tool used by all the farmers in Ngarambe. Similarly none of the farmers use farm inputs such as fertilizer, improved seeds or pesticides. The main reason for not using these inputs is lack of money to buy them. Most farmers are interested and want to improve their farming practice by adopting best practices such as intensive and mechanised farming, use of fertilizers and improved seeds, however most of them note that such inputs are rarely available in their village and that the soil is still fertile. This argument may be correct in the short-term basis, but in the long run, and over time, soil fertility will be depleted and farmers will be required to nourish it with inputs.

5.1.3. Location of farms

Most farms are located outside the village residential areas. The distance to the farms from the residential area is between 1 and 2 kilometres. 6 villagers out the 60 interviewed have farms outside their village because of a practice that is common there, namely “block farming” (Kilimo cha bega kwa bega), where farmers work together to help each other in cultivating the farms. After completing one farm, farmers move to another farm and finish it before moving yet to another. In this way, farmers pull together their labour to cultivate one farm in fewer days than otherwise would take if one farmer was to cultivate her/his farm all alone.

Also, it was noted that each household has a garden/small farm outside their houses where they grow crops such as vegetables, and peas. Also a small amount of maize, millet and simsim are grown and usually used domestically by the members of households.

5.1.4. Farmers perception on agriculture income

Indicating farmers income based on agriculture is a complex process especially in a situation where farmers do not keep records of what they produce or sale and the fact that, there is no well-coordinated and known marketing outlets. Therefore, what the farmers have indicated, are simply indications of what is generally the case as far as farm incomes are concerned. Also, farmers do not give the actual value of all the crops that

they cultivate and harvest even if they do not sale such crops. Farmers usually harvest and store some crops and sale part of that when they are in need of money. When the farmers are asked about the income they have received from agriculture, they only refer to crops that they have sold and do not say anything about crops that are not sold. Farmers do not keep financial records of their farming business and translate all the yields into money to get the market value of the harvest. Thus the information provided above, about income from farming does not depict a complete picture of all the monetary value from agriculture.

5.2. Other economic activities

Business, such as shop retailing is another major economic activity that is done in Ngarambe. There are 8 shops in Ngarambe now. Some of the shops are relatively small while others are relatively big and stocked with several items. Most of the shops are closely located and they are also located along the village main road making the areas the village central business area. Most of the shops sell groceries and several small items, including food and others while the larger shops sell goods such as clothing and hard drinks. The owners of the shops are young men of between 25 - 40 years of age.



Picture 2: One of the shops in Ngarambe village

Net income (after deducting the costs of the items and transportation) from the shops is relatively high ranging from Tshs. 50,000 to Tshs. 90,000 for the small shops and Tsh.

150,000 – Tsh. 600,000 per month for the bigger shops. Although data over a longer period of time is unavailable, and what is presented is only anecdotal, a comparison of what these traders get from the businesses they run with what they get from agriculture shows that more income is obtained from trading. However, there are also fewer traders (4) who have indicated that trading is their major economic activity.

With the introduction of electricity, the number of shops is likely going to increase. Before electricity was introduced in the village in 2003, there were only 2 large shops and 4 small ones. Now, in 2005, there are 4 large shops and 4 small ones. Shop keepers allege that net profits from shopping have gone up because; now the shops can open up to very late hours (10.30 pm) in the evening since there is electricity that provides lights.

Another common business, which is actually petty trading in the village, is local brewing, which is mostly done by women. Major inputs for the local brew are obtained from agricultural produce such as maize and millet. The brewers described the business as seasonal, and flourish in June to December. This is also the time of high tourism season in the area, when the rains have stopped and the roads are passable. Tour guides, drivers and also tourists' supporting staff provide market for the local brew. *Estimates of gross income from local beer making and sale range between Tshs. 2,000 to 6,000 per day making a net annual gross income that ranges between Tshs. 360,000 during the low season to Tshs. 1,080,000 during high season.* These sales are for the days beer is sold, women who are engaged in this business are also doing other activities; therefore, beer selling is not a daily business while incomes are on average basis.

Other non-farming sources of income include carpentry, tailoring, bicycle repairing, and honey collection. However, respondents were unable to provide sufficient data on income from these activities, but they are considered to constitute a small proportion of the total income, and the activities are often done well after farming hours. Relatively income from these activities is as low as 400Tshs a day to about 1500 Tshs a day.



Picture 3: A woman vendor selling local beer in soft drink bottles.

5.3. Employment Opportunity

Apart from working as casual labourers within the village farms or building of village houses, Ngarambe villagers do not have any other employment opportunities. Jobs such as teaching are done by people from outside the village. The village government identified only the medical staff of the village dispensary as a resident of the village; others in other social services are posted from outside the village.

The village borders with the Selous Game Reserve (SGR) however, in discussions with members of the village government, it was noted that non- of the villagers is working at the Selous Game Reserve as permanent employee. This was a major complaint from the village government that the SGR management does not give priority to villagers for employment opportunities even to work as casual labourers but instead, the SGR bring these casual labourers from as far as Dar es Salaam. This point however, is contested by others who argue that, to the contrary, employment opportunities from SGR are extended to the villagers of Ngarambe in areas such as road construction; boundary demarcation; setting up of tourist camps; construction of staff houses for SGR; construction of an airstrip and others work as cooks and guards. All these are short term, semi-skilled jobs.

However, it is very likely that when the WMA become operational, more opportunities will be created especially in hotel, tour guide, game scouting, and related services. Such opportunities however will demand certain levels of skills that must be available.

5.4. Household Income Consumption

Due to poor or lack of record keeping, it was difficult to get accurate figures on expenditure however, on average; villagers in Ngarambe spend between Tshs. 15,000 – 60,000 per month depending on household size and income level on various expenses. The amount is considered to be increasing in recent years due to changes in life style, availability of more goods in the shops, low harvest and also increase in the price of goods. The irony is that although the number of goods in the market has increased, the price for such goods has equally increased, thus raising the monthly expenditures for most of the households. Most of the expenses are on food supplements, school requirements including uniforms, books, exercise books and fees for secondary school children, clothes and medicine. Also, expenses are on energy and groceries. Most of the expenses on energy are for buying kerosene. On average, prior to the introduction of electricity in 2003, a household was spending between Tshs. 3000 to Tshs. 6,000/ per month on kerosene alone. With the introduction of electricity the amount has dropped for those who are connected to electricity to an average of Tshs. 1,500 per month. Other expenses are on items such as soap, sugar, cooking oil and spices that constitute most of the daily needs for most households.

5.5.Livestock

Livestock such as cattle, goats and sheep keeping in Ngarambe village has been hindered by presence of tes-tse fly. In view of this, Ngarambe villagers keep chicken as a source of protein. However, the number of chicken kept per household is relatively low. The highest amongst interviewed heads of households was 20 chickens. Primarily, chicken is kept and used for household consumption although; some are being sold to visitors and staff from Kingupira wildlife staff. Chicken cost an average of Tshs. 2,500 per chicken in Ngarambe, a price that is almost the same as in Dar es Salaam

6.0.Social services and economic infrastructure

Social services such as schools, health facilities, water, shops, and roads are available in the village. The status of the services is discussed below.

6.1. Water

The main source of water is from rivers, streams and temporary shallow well, which most dry out during dry season. Distance from the houses to the water sources ranges between 500 metres to 1.5 km depending on the location of the villagers' house. The water is clean but not safe, as most of it is from running rivers, which have their source far from the village. During dry season water becomes a problem and it can take up to two hours for one to bring back a bucket of water. Another problem with the village water is wild animals, which are a threat to people's life as animals too; go to the same sources for water.

Currently in the village there is a water project supported by the World Bank to bring tap water to the village. The village was required to contribute 5% of the total cost. With money from conservation they were able to pay their contribution, which was Tshs. 4.8 million. Therefore the status of water supply in the village will soon change although; the quality and status of water remained almost the same for past years.

6.2.Health Facilities

There is one dispensary in Ngarambe village that provide services to people from Ngarambe, Namakono and Tapika hamlets. Outpatients are offered medical services by this dispensary. Complicated diseases or cases are either referred to Kingupira or Utete District Hospital. These centres are located 8 km ad 65 km respectively from the Ngarambe village. Malaria, stomachache, diarrhoea and eye diseases are the most common diseases experienced in Ngarambe village. Most villagers do not use mosquito nets since they claim the nets are expensive and cannot buy nets for all the members of the family. The on-going campaign of promoting mosquito nets that are treated with special medicine to kill mosquito has not reached Ngarambe as extensively as it is urban areas. As noted above, drinking water is not safe therefore, villagers are susceptible to

diseases such as diarrhoea, stomachache and several water borne related diseases (table x3). The village acknowledges the SGR for support, in health issues, i.e. use of its dispensary and even providing transport to take patients to the district hospital. Following supply of electricity to the village, some medical services are now performed even during the night

Discussion with the village health medical staff Mr. Yusuf Shamba identified malaria stomach/diarrhoea and eye disease as the common diseases in the village. Despite having poor social services and unsafe water, the rate of deaths in the village is relatively low compared to other places. For example, it was reported that there was no reported death since December 2004 to March 2005 in the village, and that those that die are mostly the elderly people who die due to old age. This is a positive sign of relatively health environment.

Table x3: Cases of diseases reported and addressed in Ngarambe village

Disease type	2000	2001	2002	2003	2004
Malaria	782	362	236	782	806
Diarrhoea	419	633	104	419	281
Sexual Transmitted	120	-	15	-	127
Eye infection	261	634	359	781	179
Birth	-	-	-	431	-
HIV/AIDS	-	-	-	-	2
others	-	102	156	-	72

Within and at Selous GR which is close to Ngarambe village, currently there are various development projects going which include water installation, electricity project and construction of SGR houses. These projects bring along several labourers and construction staffs. In such cases, incidences of sexually transmitted diseases (STDs) are increasing in an area where such diseases were not common (see table x3 above). Most of the villagers are complaining about this and the medical officer has reported the raising trends in these STDs and the concern that such incidences may also come with the spread of HIV/AIDS. The villagers are concerned that without adequate awareness campaigns, the HIV/AIDS pandemic will cause serious negative impacts to the villagers. Lack of

water supply to the health facility is still a problem and villagers have expressed this concern.

Problems Ngarambe villagers face with regard to health services include:

- (i) Understaffing. The dispensary has only one medical personnel who is a Rural Medical Aid. Apart from acting as a doctor, he also performs other functions such as pharmacy and nursing. His qualification does not allow him to handle complicated cases.
- (ii) Lack of transport for referral cases to Utete and Kingupira. At times, the district hospital provides transport to ferry patients but this facility often comes too late. Occasionally, SGR provides transport; again, this is not always reliable, since SGR may be having their vehicles engaged in other activities.
- (iii) Lack of appropriate equipment including furniture and
- (iv) Unsafe water.

6.2. Education/schools

Ngarambe village has one primary school with standard 1 to VII. One main school building has been renovated recently with the assistance from WWF, ABB and GTZ and funds accrued from the use of wildlife occurring on the village land. The other building was constructed in 2003 under the MEM programme. The village lacks a nursery school as well as a Secondary School. The villagers noted the status of education has improved especially now with electricity facility in the village. The teachers have more time to prepare their lessons and children have more time to read at home. Performance has relatively improved compared to the period prior to the electrification of the village.

Year	# of pupils sat for Std VII Exam	# selected to join Secondary School	Percentage
2000			
2001			
2002			
2003		2	

2004	18	11	61
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6.3.Transport/Roads and Communications

The Utete –Kingupira road, connects Ngarambe village to the Rufiji district headquarters. This is a permanent gravel road although it is impassable during rain season. The village is also connected to nearby villages in Kilwa and Rufiji district via feeder roads and footways.

6.3.1.Road transportation

Currently, there is no single public transport to and from the village to any destination. Villagers rely on trucks that pass by the village. However the villager appreciate the contribution from the SGR for helping them with transport when need arises. Poor road communication has the following negative effects to the villagers:

- ◆ Untimely delivery of services and goods or materials especially during the wet season. These include school teaching materials and equipment and consumable items for the shops.
- ◆ Delay in delivering important messages/letters. As a result the village experiences delays in responding to important issues.
- ◆ Unreliable market for agricultural products since it is difficult to transport these products during the rain season. As a consequence, few buyers that manage to come to the village dictate prices for the farm products. This in the end, results to farmers getting low pays, which affect their overall income and motivation to expand agricultural production.

Inadequate transport has seriously affected the running of the primary school. According to the Head teacher, Mr. Shaabani Kilangai, due to poor transport, it is not easy to transport school materials in time and some teachers are reluctant to be transferred to Ngarambe village to take up teaching posts due to poor transport. The Head teacher noted also, that it can take up to five days of waiting at Utete to get transport back to the village, time which could otherwise be used for teaching.

6.3.2. Radio communications

The only means of communication in the village is a radio that the village government obtained from GTZ, which enables them to communicate with SGR Kingupira Headquarters and Tapika village, a neighbouring village that is part of the proposed WMA. Therefore if one needs to have contact with the district for instance, one makes a radio call to SGR who will then send a radio message to the district. This is a long process, which sometimes, can lead to breakdown of communication.

6.4. Other Social Services

Services such as shops, markets, bars, guesthouses and milling machines are also available in the village. The numbers of shops as earlier mentioned have increased from 6 in 2003 to 8 in 2005, with the introduction of electricity in the village. There is only one guesthouse, which is of very low standard. A milling machine that uses diesel is also available in the village. The machine was given to the village by the central government under the Ministry of Tourism and Natural Resource as recognition of the villages' contribution to the conservation. The machine also serves people from outside Ngarambe village.

7.0. Income from Natural Resources

Ngarambe village is located close to Selous Game Reserve and Lungonya Forest Reserve, which are both rich in natural resources. Like the Selous Game Reserve, Ngarambe village land vegetation typically comprises of Miombo (*Brachystegia*) woodland with pockets of riverine forests, Terminalia woodlands and grassland plains, species that are good sources of bee products and timber. The village land is a host of many types of wildlife. These include elephants, buffalo, warthog, zebra, wildebeest, impala, waterbucks antelopes just to mention a few. In view of this households were asked to identify products and income they obtain from natural produce such as honey, meat, vegetables, and wood.

Members of the households obtain honey and timber from the forest that is within the village land. Incomes from honey range between Tshs10, 000 to Tshs75, 000 per annum in 2000 as compared to Tshs.10, 000 toTshs.50, 000 the year 2004 and Tshs.250, 000 toTshs.600, 000 for timber in 2004. Income from natural resources has dropped in the recent years. For instance villager's engaged in timber/logging used to get up to 2 million shillings or more five years back. Licenses and regulations that define logging are the major reasons for this. At the level of the village, income from natural resources has been the major source of revenue obtained through licensing for logging and residential hunting. Village gets about Tshs. 400,000 per year from licensing for logging and up to Tshs. 5million from resident hunting.

None of the villagers is making charcoal though charcoal is one of the energy sources commonly used in the village. The charcoal that is used in the village is obtained from neighbouring villages in Kilwa district.

8.0.Housing

All households interviewed own one to three houses depending on the size of the household. The make of the houses range from walls built of poles and mud and roofed with palm leaves to those houses whose walls are made of bricks and roofed with corrugated iron sheets. The palm-roofed houses featured predominately compared to those with corrugated roofs. The latter have recently been constructed (2003-2004) after the idea of electricity was forwarded to the community. Such houses are found at the village centre and are mainly used as houses for business such as retail shops, bars and tailoring and residential houses for the owners. However, most houses have at least 3 bedrooms, and the source of lighting is kerosene and firewood as energy for cooking.



Picture 3: Common houses in the village

9.0. Electricity

Ngarambe village is one of the few villages in remote areas to have obtained this important service. Electricity first began to flow in the village in March 2004. Up to now, 65 private households, village government offices, the school, teacher's houses, dispensary and the mosque have been connected to electricity. Ngarambe got electricity through a WWF initiative that has involved ABB of Sweden. The main objective of this initiative was to ensure that people's livelihoods are improved alongside conservation efforts.

9.1 Installation process

The electricity installation is in phases where by during the first phase covered 45 households and a total of 12 facilities belonging to village government. These include the village school, village offices, the health centre, teachers' houses and the mosque. The second installation covered 16 households. More houses will be connected to electricity

during this financial year (2004/05). Diesel is used to power the generator that produces electricity. In 2004 WWF and ABB supplied and paid for all the diesel costs to run the generator at the village. In the subsequent years, costs will be met as follows: in 2005 75% will be paid by WWF and ABB and 25% by the village. In 2006, 50% of the costs will be met by WWF and the village will meet the other 50% of the costs. In 2007, WWF and ABB will meet 25% of the costs and the village will meet 75% of the costs. In 2008, the village will meet all the costs fully. For the time being, WWF is supplying diesel to the village to run the generators.

Villages were required to contribute labour by digging trenches to their houses for the pipes and wires. Houses that are located along the main road were among the first to benefit. The criteria for connecting electricity was purely simple in that connection started from the centre of the village where the generator is located and extend electricity to houses on either side of the line – west and east. The generator operates from 6 .30pm to 10.30 at night when it is switched off.

The electricity is mainly used for lightening. For those household that do not have electricity now, most have expressed interest to having the service and their willingness to pay for the costs. However, out of the 60 households we interviewed, only one household has a television set, two households have electric irons and 13 households have radios that use electricity.

9.2.Billing System

During the first year, WWF and ABB met all the costs for the running of the generator and installation costs. Immediately, after installation processes, villages who were connected to the power supply started making contributions of Tshs. 1,000 per household, which was later raised to Tsh. 1, 500 per household per month. This money is for time being banked and will be used later to meet the costs as explained above

As far as the village government is concerned, people are willing to pay for electricity, as they need the services, however, concerns were raised as to having flat rates for all users

– i.e. between those that use electricity for domestic purposes and those that use for businesses. The village government is intending to introduce differentiated rates where businessmen will be required to pay Tsh. 3,000 per month, while domestic users will continue to pay Tshs. 1,500 per month. However, it must be noted that Ngarambe is a village in the rural setting and the sources of income for most of the farmers are limited.

10.0. Local groups/organizations and credit facilities

Within the village there are various small groups and organizations. The village government also has working committees that work hand in hand with the villagers. These include committee on Education, Social welfare, defence and security, environment, and finance. There is a good representative in all committees and the village government in general for both gender and age. For instance during the discussion with the village government a total of seven members were present out of which 3 were women and 4 men. Information regarding meeting was on a very short notice but the village government was ready to give us all the assistance. Other active groups in the village include the women group, beekeepers group, bicycle repair group and MUNGATA group (Muungano wa Ngarambe na Tapika).

10.1. Women Group

Jitegemee Women group is an organization of women from Ngarambe village. 5 founding members established the group in January 2004. The membership has remained the same up to now. The main aim of the group is to generate income so as to improve their life standard. The group has a hotel, which is the main activity that they conduct. Business is not very good for the time being as there are not many customers in the village. The group was formed after extensive consultation with WWF who are supporting the village, by encouraging the women to establish such a group. .

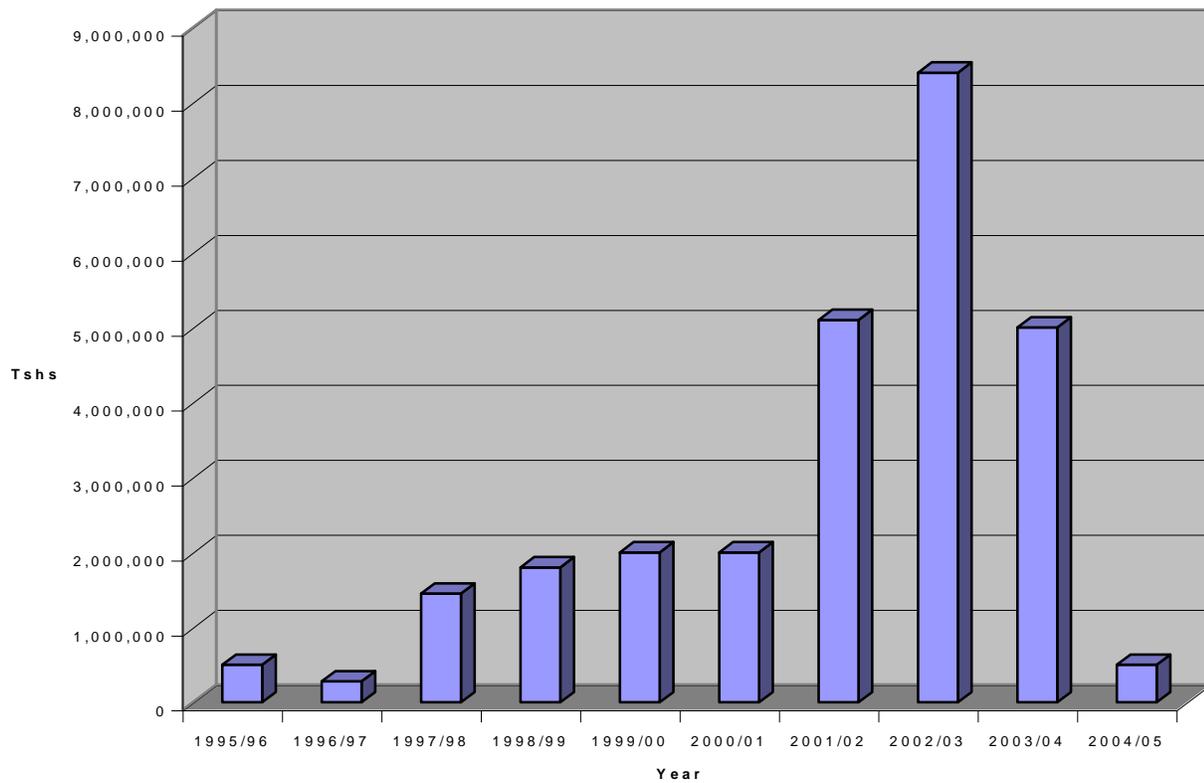
The group is grateful to WWF that has enabled them to obtain a loan of Tshs. 400,000 as a revolving fund to the village. They also got an additional loan of Tshs. 100,000 from the village government. They used the money to build a small structure that serves as a hotel at the village. The members are not full time workers in the hotel, but continue with

work that helps them to supplement income they get from the hotel. Some of the money they get from the hotel is used to finance education of their children and the rest of the money is being paid to the village government and it will be made available to other groups. The main concern from the women group is inadequate knowledge in business skills and resource mobilization, including, how and where getting additional funds to expand their project.

10.2.MUNGATA

The Muungano wa Ngarambe and Tapika (the Union of Ngarambe and Tapika villages) (MUNGATA) was formed in 2003. Prior to its formation, Ngarambe had a Natural Resource committee that was established in 1995. Ngarambe and Tapika villages are found in an area that is rich in wildlife and are now implementing WMA regulations for three years. When both villages were sensitised to establish a wildlife management area (WMA), the villagers agreed to form a union that would represent the two villages in this

Fig. Revenue earned from Wildlife use in Ngarambe village



activity. The decision to form a union was important because WMAs can only be viable and established over a large spatial area that would provide abundant grass and pasture for the animals and allow free movement of animals in a big area. There are complaints that having MUNGATA has reduced the amount of revenue derived from the sale of wild meat. Prior to having MUNGATA in place, villagers were allowed through resident hunting quotas to hunt and get money out of it. The following table shows the amount of money that villagers got from resident hunting prior to establishment of MUNGATA.

At present MUNGATA has not been fully registered as AA since there are still some processes that have to be completed before the Director of Wildlife in the Ministry of Natural Resources and Tourism grants them the user rights. Once this is done, the village or the Authorized Association, in this case MUNGATA can enter into business agreements with investors who may decide to run tourism related activities in the area. From such activities, the village can be deriving benefits from conservation and use the money to improve social welfare of the people in Ngarambe and Tapika. The mechanism for benefit sharing has not been established yet, so it is not known how much benefits will communities get as opposed to others who are supporting the initiatives, including the district council and the central government.

The main purpose of establishing WMAs in wildlife rich areas outside protected areas is to enhance conservation and to increase benefits that communities derived from conservation. These efforts started in the late 1990 with several community based conservation activities that were scattered in various parts of the country. By 2002, the Government issued the Wildlife Conservation (Wildlife Management Areas) Regulations, which defines the processes, steps and legal obligations for various players in the implementation of the WMAs. Also, the Government announced 16 pilot areas that would implement WMAs over a period of three years. Ngarambe – Tapika are part of the pilot areas.

Revenues obtained from the wildlife resources have been the major source of income to the village. For example the Tshs. 4.8 million was used as the village contribution to the water project came from wildlife revenues. Money for the construction of the primary school, teachers' houses as well as paying the village game scouts and buying anti poaching equipments also comes from the same source.

The main concern regarding operations of MUNGATA are about the lack of working gears such as transport, communication facilities, tents and guns. Poaching by outsiders occasionally occurs in the area and the village game scouts do not have adequate equipment to guard against the poachers.

The other concern is about the delay to register their association and to get full WMA status. This delay is caused by the cumbersome and bureaucratic procedure of setting up a WMA as defined in the WMA Regulations (URT, 2002). The delay has not only affected the motivation of the villagers towards establishment of WMA and conservation in general, but also has affected availability of revenue from the wildlife. Other groups in the village include beekeepers, bicycle repairs and tailors however; these groups are not very active because they have not obtained enough funds to run their activities.

10.3.Credit Unions

Ngarambe villages are aware of credit union such as SACCOS. However there is no such union operating in the village. All villagers we have interviewed are interest in obtaining such services. The village government informed us that they had consulted the authorities that are running such services with the view to have the villagers also taking part I credit schemes but the conditions were slightly complicated. For instance, villagers are required to open a bank account, and deposit a minimum of Tshs. 80,000, which to most villagers is way too high for them.

The only group that has ever received a loan as mentioned earlier is the women group with the assistance of WWF. The group got Tshs. 400,000 from WWF, and has used the money to build a hotel.

11.0. Conservation efforts in Ngarambe

Tanzania is one of the richest countries in the world; rich in natural resources and biodiversity. Also, Tanzania has set aside almost 28% of her land for conservation. Several protected areas have been established, including National Parks, Game Reserves, Ngorongoro Conservation Area and several forest reserves. One of these protected areas is the Selous Game Reserve, which is surrounded with several villages. Among the villages surrounding the Selous Game Reserve is in Ngarambe.

Under the WMA initiatives, the village has accomplished several major steps towards attaining a user right. For example, they do have a land use plan, their CBO is registered and they also have a Resource use Management Zone Plan (RMZP).

WWF has facilitated capacity building and raised the awareness to the villages on the importance of conservation. For instance, when a villager were asked if he keeps livestock, he answered by saying “*ndiyo si hao tembo, viboko unaowaona*” meaning yes – the elephants and hippos you see. Villagers look at these wild animals as their own and are proud of having such animals roaming their village in tranquillity.

As a result of increased awareness, villagers are fighting the poachers because they have realized the benefit of conserving the animals and also, that, in the end, they see that the individual poachers that benefit instead of the all the villagers when all the community owns the resource in question. With increased benefits, such as electricity, revenue from wildlife, villagers are willing to put more land under conservation since they are confident that such investment will eventually benefit all of them and above all improve their welfare. Despite some positive changes in the conservation of natural resources, Ngarambe still faces some challenges in management of natural resources. These challenges are summarized in Box 1 below:

Box 1: Some conservation challenges in Ngarambe village

- ◆ Inadequate field gears e.g. tents, uniforms, boots
- ◆ Commercial and subsistence poaching from neighbouring communities
- ◆ Fires that destroy animal habitats
- ◆ Illegal logging and timber lumbering

11.1. Conservation and Poverty

Understanding the poverty – environment linkages is one of the critical issues that conservationists and policy makers have for a long time tried to do. In Tanzania, the Poverty – Monitoring System through the National Strategy for Growth and Reduction of

Poverty (NSGRP) – or *Mkakati wa Kukuza Uchumi na Kupunguza Umasikini Tanzania* (MKUKUTA) is focusing in the understanding of this linkage. In Tanzania, efforts to reduce poverty will exclusively depend on how natural resources are used. In many areas, villagers are using these resources to address poverty problems.

Ngarambe villagers are among those that use natural resources to address poverty. Indications show that villagers have began to address non-income poverty issues by using resources obtained through conservation. In this way poverty is also reduced by improving accessibility of local people to basic social service. However, since these initiatives are only beginning in Ngarambe, it is too early to make any concrete conclusions.

12.0.CONCLUSION

Ngarambe village is mainly an agriculture community having simsim as their major cash crop. Other crops grown in the area include millet, maize, and paddy. With the increase in the number of crop raiding animals including elephants. Bananas are no longer grown in the area. However yields from individual farmers are very low, because farmers do not use improved agriculture inputs.

The level of education among villagers is very low, to most of the villagers primary education is the highest level of education that they have acquired. With conservation the trend reveals positive change towards education by villagers. Number of children going to secondary school and enrolment has increased.

The villagers and specifically the village government acknowledge the various efforts done by WWF that has enabled the village to understand the importance of conservation. With conservation, the village, through WWF has managed to obtain electricity. Electricity has been installed in some of the village houses. To some extent electricity has changed the life style of the village. The number of shops/small enterprises has increased, teaching and learning time has also increased and there are incidences of people

migrating to the village. This is because; with electricity there are more potentials for development. Conservation has also enabled the village to obtain a milling machine from the Ministry of Natural Resources and Tourism. Currently the village has a water project supported by the World Bank, The village was required to contribute 5% of the total cost, and they were able to obtain the money through conservation.

Generally villager's income is very low. As indicated in the above sections, the major economic activity in the village is agriculture though there are other villagers that practice other economic activities such as retailing and local brewing. Income obtained from these activities is basically for household consumption especially for groceries and energy.

Most houses are built with mud and poles; with very few of them having concrete and corrugated iron sheets. Also, most of the villagers do not own items such as bicycles, radios, and irons, most villagers own none of the goods; thus indicating a level of poverty that can be termed as high. At the village level income generated from conservation has enabled the village to implement various development activities such as improving the school and health centre buildings and even contributing to the water project.

The status of most social services in the village is relatively inadequate or completely poor. For instance the health centre lacks staff and facilities to deal with major basic diseases; the school lacks teaching and learning materials and enough teacher. Transport and communication are poor and constitute major problems mentioned by most villages. The village lacks public transport to and from the village as well as reliable communication facilities such as telephone in the village. This has been a hindrance to some development activities in the village.

Human/animal conflicts are also another concerned in Ngarambe village. With the increase in the number of animals in the reserve due to conservation efforts, many animals now cross to residential areas and the farms, thus eating and destroying crops and

also threatening people especially school children in the morning hours. Villagers have acclaimed that they are forced to share their farm products with wild animals.



Picture 4: Human/animal conflict- crops damaged by elephants

13.0. RECOMMENDATIONS

A range of recommendations are provided covering main areas addressed in the report as follows:

1. Recognising that agriculture is the major activity and the backbone of the economy of Ngarambe community it is recommend that
 - Farmers should move from hand hoe type of farming to a mechanised farming that will involve use of tractors or ploughs. This will enable them to cultivate large tract of land as compared to the current ones.
 - Farmers should be encouraged to start using fertilisers and improved seeds so as to increase yields per hectare cultivated. This may be hampered by low purchasing power of the Ngarambe community but interested stakeholders such as District Authority, WWF, ABB, PSI, SACCOS, WD, etc can assist in finding

solutions by extending credits through saving and credit societies for purchasing agricultural inputs to small farmers.

- Rufiji District Authority through the Agriculture Department conducts a feasibility study on possibility initiating irrigation farming in the area.
 - Encourage rainwater harvesting for crop production that can be a promising and appropriate way of upgrading rain fed agriculture in Ngarambe village. This method offers techniques on how to integrate rainwater harvesting for agriculture, domestic use, rangelands development, wildlife, forestry, land conservation and control of flooding. Observed erratic and unreliable rains especially in lowlands results into frequent dry spells that results in serious reductions in crop yields.
 - There is a need to find a reliable marketing system especially through co-operative union owned by farmers themselves, otherwise the middlemen would take advantage of overpowering farmers in price bargaining. This will cater for low price of produce during the peak production.
2. Since it has been established that there is poor communication system that contributes to a big problem in the transportation of agricultural crops. This has affected markets for agricultural produce and other services in those villages it is recommended that the Government in particular the Rufiji District Council take all concerted efforts to ensure that the Utete –Kingupira road is passable the year round. The move will enable farmers and businessmen to interact.
 3. Considering that electricity can positively contribute to the socio-economic development of the Ngarambe community and that provision of electricity has to be sustainable, it is recommended that
 - More houses need to be connected to electricity so as to increase the number of customers and therefore raise the amount of money that will be used to run the generator once WWF and ABB project comes to an end.

- Rufiji District Council collaborates with Ngarambe Government to encourage potential investors to come and make use of electricity in the village. The envisaged areas of investment include fruit processing factory, wood workshop/factory that will enable them to sell semi or finished wood products, construction of modern hotels and guest houses, etc.
 - Villagers connected to electricity should start keeping poultry
4. Recognising that Ngarambe village is located in a prime wildlife area and that where human beings interface with wildlife, there are always some conflicts including crop destruction by marauding animals. Therefore in order to mitigate or reduce these human wildlife conflicts it is recommended that the Ngarambe village should be assisted or facilitated to implement the existing Landuse Plan and Resource use Management Plan.
 5. Since income generated from wildlife and other natural resources use in the village land targets at community level whereby these funds carters for village development projects such as water project, renovation of village government buildings, construction of teachers' houses, etc and that households per se benefits very little. Therefore in order to raise the incomes of households so that they can be able to pay for school fees, health services, etc. it is recommended to build capacity to the villagers to take active roles in forming small income generating groups and come up with activities such as beekeeping, carpentry, masonry, fishery, tailoring, welding, etc.
 6. Considering that Ngarambe village land is endowed by having abundant and other natural resources and also taking advantage of the provisions given in the Village Land Act and other legislations such as Wildlife Conservation (Wildlife Management Areas) Regulations, it is recommended that Ngarambe community

- should be assisted in finding potential tourism business investors who are willing to establish tourism business ventures (infrastructure and services), that are willing to enter into joint venture with the local people.
7. Although it has been noted that tsetse fly is a hindrance to livestock (cattle, goats, sheep) keeping in Ngarambe village, it is advised to start/initiate zero grazing that probably could help farmers to diversify risk i.e. if there is crop failure then they can rely selling the animals or their products i.e. milk or meat
 8. Whenever opportunity arises, every effort should be taken to engage villagers in temporary labour work in the Game Reserve and tourism industry instead of hiring people from far.
 9. Recognising that health services are poor in the village, it is recommended that some concerted efforts should be taken by the Rufiji District Council to improve health services especially by posting well-qualified medical personnel in the village.
 10. Bearing in mind that the rate of school children enrolment increases annually, there is a need of increasing the number of teaching staff at Ngarambe primary School.

REFERENCES

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APPENDIX 1: TERMS OF REFERENCE FOR THE STUDY

The study addressed the following Terms of Reference:

1. To collect information on household characteristics that will include number of persons living permanently in a household and share the same expenses. The head of the household – age and sex of all members of the household, level of education – number of children going to school.
2. Collect data on crops, crop income and other income from various natural produce. Show if there has been a change of crops grown over the past five years in Ngarambe village. Indicate if there is any other source that may be tapped to increase income in the village or per household?
3. Collect data on the type of farming carried out by households: do they use improved agriculture, improved seeds, pesticides or herbicides, irrigation, etc. Also show if the households keep livestock and their respective numbers per household.
4. Collect information of the type of work, employment and labour that exist in Ngarambe village community.
5. Collect information on the number of shops, bars private clinics, etc that have been operating for the past four years.
6. Nature of the existing houses. How many houses are built using common bricks, burned bricks, un-burned bricks, mud (and poles/tree branches/bamboo), banana fibre or grass, old tins, timber, etc. Also indicated materials used for roofing.
7. Collect information on local groups, organization and credit in the village.
8. Collect data on health pattern in Ngarambe village.

9. Provide information on communication facilities that exist in Ngarambe village.
10. Propose (*if possible*) different alternatives of commercial oriented and any other local development activities in Ngarambe that could accelerate economic and social development on a sustainable basis.

Appendix 2: Questionnaires

Table 2: Income from sale of hunting/wild meat

Year	Amount (Tshs)
1995/96	500,000
1996/97	280,000
1997/98	1,450,000
1998/99	1,800,000
1999/00	2,000,000
2000/01	2,700,000
2001/02	5,100,00
2002/03	8,400,000
2003/04	5,000,000
2004/05	500,000

Table 1: Average harvested bags per household

Number of bags	Number of H/holds
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1-5	28
6-10	19
11-15	4
16-20	6
>20	2
Total	59