

PN-ACB-175

**The Njombe-Makete Road:**  
**An Impact Assessment**  
**of an ATAP Funded Road Improvement Project**

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September 1995

Dar es Salaam, Tanzania

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## Executive Summary

The Agricultural Transport Assistance Program (ATAP) of USAID/Tanzania has since 1988 provided funding through the Tanzania Ministry of Works for improvement of agricultural feeder roads, bridge construction, and rural road routine and spot maintenance. The regional offices of the Ministry of Works recruit local, private contractors to carry out these road works. Iringa Region currently has several road works being supported by ATAP funds. Work began on the road linking up the district headquarters of both Njombe and Makete Districts in March of 1994 and the principal work is now complete. The Program Office of USAID/Tanzania in cooperation with the Tanzanian Ministry of Works has created a standardized impact assessment package and this has now been used for the first time and in conjunction with data collected in the 1993 baseline study in order to gauge the impact of the Njombe-Makete ATAP rehabilitated road (see Appendix 3-Maps 1 and 2).

The objectives of this assessment are to document the economic impact of the improvement of the Njombe-Makete road at all levels in both a quantitative and qualitative manner, to document the impact of these road improvements on community services in the affected area, and to document the impact of road improvement on the cost, availability, and reliability of transport. The impact assessment that follows was conducted in 10 villages of Imalinyi Division, Njombe District and in five villages of Makete District. All villages abut the newly improved road. In three of these villages, two in Njombe and one in Makete, indepth household surveys were completed: 40 surveys for each of the three villages. Traffic

censuses were conducted at two points along the road, one in Njombe at Makoga village (seven days) and one in Makete at the village of Kisinga (two days).

The improvement of the Njombe-Makete road was implemented as part of a strategy for the improvement of agricultural production and marketing in Tanzania. Despite the fact that the road has only been completed recently, it is clear that such improvement has taken place. However, before restating the specifics of this impact it is necessary that two points be made. A key aspect to the improvement of agricultural production in the Njombe-Makete area is the potential for enhanced access to fertilizer by farmers. However, the ability of the rehabilitated road to serve in this capacity has been greatly diminished by the dramatic rise these past few months in the price of fertilizers. As noted, last year a 50 kg bag of TSP fertilizer sold for Tshs 7000. This August that price jumped to Tshs 13,500 (exclusive of transport costs) in Njombe and to Tshs 15,000 in Mbeya. There is no doubt that this difficulty will decrease the potential for immediate positive impact to agriculture from the road rehabilitation.

Health is the second aspect of the current situation in the Njombe-Makete target area that will mitigate against higher levels of positive impact to agriculture from the roadworks. Njombe and Makete currently have the two highest rates of HIV/AIDS in Iringa Region. As noted earlier, a recent study found among randomly tested women at a Makete maternal and child health clinic an HIV rate of 25%. Given this and the noted figure of 80% found to be HIV positive among blood donors at Ikonda Mission Hospital, even if grossly inflated, indicates that illness is likely playing a major role in the lives of farmers in Njombe-Makete. Illness is therefore likely to be a) decreasing the amount of time devoted to agriculture and b)

decreasing the amount of money available to purchase what are now, ever increasingly expensive fertilizers.

Given these caveats however, it is clear that the road rehabilitation has been a success in improving conditions of agricultural production, transport and marketing in the target area. It has, as well had a positive impact on the health and potential well being of area residents. Specifically and in summation, the major findings of this study are as follows:

- \* Donor organizations such as FAO, UNICEF, DANIDA, and IFAD report significant increases in attendance at seminars and extension meetings; decreased operating costs and an increased ability to meet their individual development goals in the agriculture and health sectors.
- \* Private (mission) hospitals report as much as 30% increase attendance (and have obtained additional funding to cover this increase). Government hospitals report a 70% decline in patients from the target area who are now able to travel to better equipped private hospitals.
- \* There is significant increase in access to family planning and preventive health care for residents of the target area.
- \* Participation of women in District government. Women cite one day round trip travel as key to their current participation as District Councilors. Women now comprise 20% of the District Council. Prior to this year, there were none.
- \* There has been a 70% increase in daily vehicle traffic. This includes a 50% increase in bicycle traffic and ownership, a 60% increase in buses (>25 seats), 120% increase in cargo vehicle traffic, and a 64% increase in passenger volume.
- \* There has been a 47.5% decrease in vehicle operating costs.
- \* There has been a 40% decrease in fares in constant 1993 T. Shillings and general travel costs have declined owing to one day round trip travel and therefore, no overnight costs.

- \* Local monthly markets have been enhanced with participation of vendors from several regions who sell a greater variety of consumer goods and agricultural inputs at more competitive prices.
  
- \* Markets for agricultural produce have been enhanced with up to 89% of all buyers coming direct to the farmer to purchase produce. Buyers come from as far away as Dar es Salaam, Iringa and Mbeya to purchase at the farmgate.
  
- \* There has been an increase in sales of agricultural inputs from TFA in Njombe to farmers from the target area. This, despite price increases.
  
- \* There has been a dramatic increase in the sale of all types agricultural produce from the target area. Marketed volumes of wheat, maize, potatoes, lumber, vegetables, and fruits such as peaches, plums and apples are all reported by district officials to have increased significantly since the road rehabilitation was completed.

## **I. Introduction**

The Agricultural Transport Assistance Program (ATAP) of USAID/Tanzania has since 1988 provided funding through the Tanzania Ministry of Works for improvement of agricultural feeder roads, bridge construction, and rural road routine and spot maintenance. The regional offices of the Ministry of Works recruit local, private contractors to carry out these road works. Iringa Region currently has several road works being supported by ATAP funds. Work began on the road linking up the district headquarters of both Njombe and Makete Districts in March of 1994, the contract having been awarded to Badr East Africa Enterprises, Ltd. Badr was established as a Tanzanian company in 1991 after fleeing the civil war in Somalia and was originally founded in Yemen before moving to Somalia. The principal work on this road is now complete. The Program Office of USAID in cooperation with the Ministry of Works has created a standardized set of objectives, methods and data collection instruments to be utilized in the impact assessment of this and other ATAP funded road works. A baseline study of one area of the Njombe-Makete road was conducted in 1993 (see Strauss et al. 1993). In this report, the data collected utilizing the new USAID standardized package will be examined in comparison with the earlier findings in order that some measure of the impact of the improved Njombe-Makete road can be taken. This is the first road for which this standardized package has been used for impact assessment purposes (see Appendix 2-Survey Forms).

The objectives of this assessment are to document the economic impact of the improvement of the Njombe-Makete road at all levels using both quantitative and qualitative measures, to document the impact of these road improvements on community services in the

affected area, and to document the impact of road improvement on the cost, availability, and reliability of transport.

Further, this study expands beyond the area studied in the 1993 baseline assessment to include Makete District as it was felt that the physical, economic and social differences between Njombe and Makete Districts warranted a broader examination than was completed in the 1993 baseline. It should be noted that this expansion was made possible by the improvement of the road. The logistics of interdistrict travel before the improvement would not have allowed the work given the time frame advanced for this impact assessment. The impact assessment that follows was conducted in 10 villages of Imalinyi Division, Njombe District and in five villages of Makete District. All villages abut the newly improved road. In three of these villages, two in Njombe and one in Makete, indepth household surveys were completed: 40 surveys for each of the three villages. Traffic censuses were conducted at two points along the road, one in Njombe at Makoga village (seven days) and one in Makete at the village of Kisinga (two days).

This report details current physical, social, and economic conditions in the studied communities and finally uses the 1993 data to draw some conclusions as to the impact of the ATAP funded Njombe-Makete road improvement in the social, economic and agricultural transport sectors of the Districts.

The impact assessment team was recruited from the University of Kentucky (applied anthropologist), Sokoine University of Agriculture (agricultural education and extension specialist) and the Tanzanian Ministry of Works (transport economist). Traffic enumerators and assistants for village, household, and business surveys were obtained through the

assistance of District officials in both Njombe and Makete. The core of three researchers spent two weeks in the field (ten days in Njombe District and four days in Makete).

Literature reviews, interviews with local, district and regional personnel; one 7-day and one 2-day traffic censuses; 120 household surveys in three villages; 15 general village surveys, and interviews with storekeepers in three villages were carried out in these first two weeks of August 1995.

Data tabulation and analysis was completed jointly by all three team members and this report then drafted by the team leader. Total level of effort required 15 field days and 15 days for data analysis and report completion.

## **II. The Njombe-Makete Area**

The Njombe-Makete road connects the two district headquarters of Njombe and Makete, a distance of 104 km (see Maps 1 and 2). Improvement is late in coming for this regional road as Makete town only became the headquarters of the newly formed Makete District in 1979. Until this time the Makete area had been simply a far flung and remote portion of Njombe District. Makete is a high mountainous district of approximately 4,800 sq km located at an altitude between 1,700 and 2,600 meters. The area of Makete currently opened up by the Njombe-Makete road is noted by District officials to be of moderate potential for agriculture (comparatively speaking in terms of the rest of Njombe-Makete). Relatively poor soil quality and frequent killing frosts make production of coffee or vegetables problematic and crops grown for food such as maize, wheat and beans have often produced low yields in recent years due to unavailability of fertilizer. The area does have a

high potential for agricultural production however. The area now incorporated as Makete District historically was one of the first areas of Tanzania to grow wheat successfully in abundance as a cash crop after it was introduced in the early part of this century by the Berliner Missions (Koponen 1994: 439-40).

Pyrethrum has been successfully grown in the past in some villages along the road and though production was markedly down in the last few years, the improvement of the road has encouraged a number of farmers to plan returning to production this coming season. Lumber is a major growth crop, tree farming of pines, eucalyptus, and wattle having been widely accepted in Makete. The Njombe-Makete-Ludewa Districts cooperative "Njoluma" has been on the verge of collapse for several years now but note that rental of their trucks for purposes of lumber transport from Makete has helped in a small part keep them afloat<sup>1</sup>. Temperate fruit trees such as peaches, plums, pears and apples are also grown by many people in both districts, the fruit being eaten locally and nowadays being sold outside the area.

Njombe Town, at the easternmost end of the road, has been a long term District headquarters and is the principal clearing house for crops moving out of the entire Njombe-Makete area. Njombe town is located on the only north-south tarmac road linking Songea with Makambako and the Tanzam Highway to Mbeya, Iringa and Dar es Salaam. Along the Njombe portion of the ATAP road, farms are located on gentle slopes and valley bottoms, markedly different from the rugged hillsides of Makete. Njombe is quite fertile and produces large quantities of maize, wheat, potatoes, beans, peas, cabbages, temperate fruits

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<sup>1</sup>These comments were unofficial in nature and are in conflict with Njoluma's record of truck rental at uneconomic rates.

and lumber. The total area of Njombe is approximately 10,000 sq km with altitudes of 1860 to 2300 meters found in the region of the ATAP road.

Electricity is available only in the first two villages out from Njombe along the road. However, the District Commissioners of Njombe and Makete have recently been informed by Tanesco that due to the rehabilitation of the road they will now be able to begin the work necessary to extend electrical services all the way to Makete Town.

Previous to the improvement of the road it was noted that "the pavement material is essentially silt clay type characterized by expanding and shrinking when wet and dry respectively. This has made the road surface crack (in alligator formation) eventually leading to uneven vehicle load distribution causing failure [of] the surface as can be seen by the existence of deep ruts and potholes" (1993: Annex 1). The road is noted as having been often impassable during the rainy season of November to April, even for tractors. Currently however, vehicle speeds on this road average 60-80 km/hr on the Njombe portion and 50-60 km/hr on the more mountainous Makete portion. Previous speeds noted by Strauss were 30-35 km/hr and 25-30 km/hr respectively. Travel time between the two district headquarters has been reduced from between 4-6 hours to approximately 1.5 hours only each way.

### **III. Social Background**

Along the Njombe-Makete road there are found two predominant ethnic groups, the Bena and the Kinga. These groups are linguistically and culturally distinct, though relations between the two are good with a good deal of intermarriage taking place. Both groups speak

Bantu languages, the Bena often being grouped with their eastern neighbors, the Hehe in the academic and historical literature (See Winans 1965, Mumford 1934).

Both the Bena and the Kinga areas were used as labor reserves first by the Germans and later by the British colonial powers, a circumstance which has led to the current situation -- found in the extreme in Makete District -- of high rates of temporary male wage labor migration (see Graham 1968, 1970). The Kinga especially are widely recognized in Tanzania for their entrepreneurial skills and business acumen.

The domestic economy of both groups is based in large part on agricultural production both for home consumption and sales. Cash crops found to be produced here are pyrethrum and lumber as well as food cash crops such as maize, wheat, peas, and potatoes. Land availability is still not a serious problem in the area though rent for choice pieces of government land has quadrupled since the road was improved. One acre renting at 5000 /- last year now goes for upwards of 20,000/- per year (DALDO, 1995).

The farming system used by the Bena, and the Kinga as well, involves the use of scattered, multiple farm fields -- this disaggregation an effective technique (especially in highland areas) for spreading the risk of losses due to pests or weather damage. A variety of staples are grown by each family, most all farming a combination of wheat, maize, and potatoes on sloping hillside, upland farms. Beans, greens and early maize are grown in narrow valley bottom fields. Especially in Makete, small fields of trees are planted with an eye towards cash earnings in the long term (15 years to maturity) and firewood provision in the short term. Most households also cultivate a small malawa field adjacent to the home in which a variety of home use vegetables, fruits and staples are grown. Traditionally more

important than they are today, many farmers still cultivate one or two mayao fields, one or two ridges in long strips laid out horizontally along the sides of hills in which sweet potatoes or a local tuber known as numbu are planted. Most households also keep extensive groves of bamboo for the production of bamboo juice or ulanzi, a kind of quickly fermented alcohol tapped daily from new shoots of bamboo. This drink is consumed in the household and sold locally or, nowadays, in Njombe.

The Kinga and the Bena obtain their living from a combination of income generating strategies and subsistence farming. Most households do not rely solely on one source of cash income or solely on subsistence agriculture. Farmers in Njombe-Makete earn cash locally from skilled trades such as carpentry, tailoring, masonry, and pit-sawing. Many have worked outside of the Districts periodically for a number of years. For example, many Bena and Kinga men have migrated temporarily to work in the sisal plantations of Tanga and throughout the Southern Highlands in the lumber industry (in large part controlled by Kinga families). Most households sell some of their production of home brewed beers, ulanzi, woven mats, baskets, maize, wheat, potatoes, peas and/or fruit. The Njombe District Crops Officer noted that since the road was completed farmers are no longer clamoring for a fruit processing facility as they now have easy access to buyers who come in from Mbeya, Makambako and Njombe to buy as much fruit as farmers are willing to sell.

Direct and indirect donor activity in Njombe and Makete is important to examine given the high levels of support pouring into the area from groups such as the Catholic and Lutheran Churches, DANIDA, ILO, Swiss Development Corporation, NORAD, Danish Volunteer Services, German Volunteers, UNICEF, and IFAD. The activities of several of

these actors on the scene in Njombe-Makete generated a considerable volume of the traffic in the censuses conducted in Makoga and Kisinga villages. It is clear from these counts and from the comments of donor groups themselves that the roadworks have greatly facilitated their work in the region. Some of the specific projects in place currently are reviewed below.

DANIDA (Danish International Development Agency) has two large scale projects in place in Njombe-Makete, HIMA/DANIDA and Maji/DANIDA. The HIMA project (Hifadhi ya Mazingira) targets natural resources management, among a host of other things, supporting the creation and/or protection of water catchment areas, the adoption of soil conservation techniques and the encouragement of appropriate methods for smallholder horticultural production. The project is slated as a long term activity between 15 and 25 years, depending on who is asked. DANIDA funding of this project is at a level to allow the construction of high quality office and training facilities as well as staff and guest housing in Njombe Town, Lupembe, Makoga, Tandala, Bulongwa, and Makete Town. All HIMA subcenters are provided with solar and/or generator power, radio call and staff vehicles. HIMA personnel noted that their ability to conduct seminars and the general day to day business of running HIMA has been greatly facilitated by the road improvement.

Maji/DANIDA has been in place for a much longer period than HIMA, beginning in 1980 to provide hand pumps for water in specific villages in Njombe and Makete Districts. This project is based in Iringa in the offices of the Regional water engineer. Several of the villages along the improved road have benefitted from Maji/DANIDA's work. In selected villages, water committees are set up in order to coordinate maintenance, funding (through nominal local taxes and use fees) and local regulation of the water systems.

In addition to the two larger programs of HIMA and Maji/DANIDA, DANIDA also supports some maintenance and construction for secondary school facilities in Njombe and Makete. Some primary schools in the two districts also receive some assistance from the World Bank for rehabilitation of classrooms and staff housing.

In Makete District, the Swiss Development Corporation funded the Makete Integrated Rural Transport Project focusing on the remote areas to the west of Makete town. The project was implemented by the ILO in mid-1985 and direct funding and provision of expertise was concluded in March 1993. The follow-up phase continued until March 1995. The SDC/ILO project covered several components related to rural transport. Local foremen were trained to supervise road improvements and maintenance of roadworks, especially labor-based maintenance. This component is noted by Makete District officials as having been successfully absorbed by the District government. Secondly, several means of low-cost transport were promoted, specifically the provision of donkeys for use as pack animals and the training of craftsmen in the building of wooden wheelbarrows. The donkeys were sold on a revolving fund basis and the 250 initially purchased through the project have now increased to over 400. Their value has also risen dramatically going from 10,000/- to over 60,000/- currently. They can be seen each Sunday at the Makete market ferrying produce from the more remote areas of the District (see photos, Appendix 1). The wheelbarrows were not successful as they were ill-suited for the rough terrain of the District. The ILO also successfully improved the Makete District workshop for District vehicle maintenance and has provided training in revenue management and machine maintenance for milling machine

operators. The fuelwood lot planting scheme was dropped as the HIMA/DANIDA project has planned a similar scheme.

The ILO has found that there is a high level of acceptance by villagers for use of their own labor for maintenance of paths and roads if given some technical assistance. Further positive indications for continued maintenance of the ATAP road was the acceptance by villagers of the creation of road funds in order that laborers may be hired to conduct rapid spot repairs of paths and roads. The Makete model has been successful enough that ILO will be expanding it to 10 other areas of Tanzania. ILO has a long term impact assessment scheduled for 1997.

The Swiss Development Corporation has also funded in both Njombe and Makete the Small Scale Dairy Development Project (SSDDP). Their aim is to assist in the provision of grade dairy cattle, training and advice to smallholder farmers of target areas. For a relatively small fee of 25,000/- farmers who are accepted into the program are provided with an in-calf grade heifer. When born, calves are sold in benefit of SSDDP if male and if female are eventually bred in order to be provided as an in-calf heifer to another SSDDP participating farmer. The project is still in its early stages but already eagerly awaited in villages it has not reached. Makoga has at least one SSDDP farmer and Kipengere and others are anticipating participation. Again, SSDDP noted that the roadworks have especially enhanced their extension advice capacity.

The Lutheran church is collaborating in the efforts of the SSDDP with their HIT program, "Heifers In Trust", through which up to 30 farmers in the Igosi ward have been provided with grade dairy cows. The Lutheran Church with funding from Bread For the

World and others is also working to improve the availability of water to villages such as Moronga and Kipengere and is also completing some work on establishing tree nurseries.

The Roman Catholic Church has a strong presence in the entire study area. The Church continues to run the Igosi Youth Carpentry Training Centre supporting 22 students. In January, the mission at Kipengere will open a domestic science training school for admission of 24 students the first year and 12 new students each year there after. The Kipengere mission also plans on starting a course for teaching basic veterinary techniques useful in raising the standards in local dairying (e.g. such as techniques for A.I.). The Mission at Kipengere also has a large fleet of tractors and harvesters that it rents out to villagers for farm work and transportation needs. They also sell agricultural inputs such as chemical fertilizers and insecticides. In Kisinga, the Church runs a sewing school for 34 student tailors. Ikonda Mission Hospital, in addition to being a major health care provider for the Districts and the Region as a whole, also has a large school for the training of nurses, medical assistants and lab technicians.

The Southern Highlands Extension and Rural Financial Services Project has been funded by the World Bank and is being implemented by the International Fund for Agricultural Development (IFAD). The Project plans to begin in the near future (no one could give us a specific date) to provide small loans for fertilizer, improved seed and other inputs to small farmers in Njombe and Makete Districts. Currently, they are conducting seminars and extension work in the area. The Global 2000/Sasakawa program is also providing some soft loans to farmers in Njombe and Makete for improvement of wheat and maize production. Though only one farmer in Makoga participated in this program the

DALDO noted that upwards of 70 farmers along the ATAP road were assisted. However, there were some problems with repayment of these loans.

It was noted by the Community Development office in Njombe that the roadworks have greatly facilitated this aspect of IFAD's work in the area, increasing the participation of women not only in IFAD seminars but in other Community Development seminars as well. Women especially they noted can afford a day away from home but no more. The shortened travel time and the increased number of vehicles means that women can attend seminars and return home in the same day. They noted a dramatic increase in the numbers of women participating in local government and the various seminars taking place in Njombe or Makete (IFAD, UNICEF-Child survival and protection project, etc). For example, previously there were no women among the 35 District Councilors. Now for the first time women are participating in significant numbers. Eight councilors are women, comprising 20% of the Council compared to none last year. The Community Development Office cites the road as key to this change.

#### **IV. General Village Characteristics**

The Njombe-Makete road passes through a number of divisions and wards of Njombe and Makete Districts. Initially, the road starts as part of Njombe Mjini (Town) Ward and goes on to pass through the length of Imalinyi Division. The road then joins Makete District at Mang'oto Ward, and winds up and on to Lupalilo and Iwawa Wards. In the general village surveys the 10 villages bordering the road in Njombe's Imalinyi Division had a total

population of 21,870. The total population of four of the five villages chosen for general survey in Makete had a total reported population of 3901. For the studied villages in Makete with available population data there is an average of 975 people per village. In Njombe-Imalinyi we found an average village size of 2,187. It should be noted that all figures came from local village officials but are not entirely reliable. Figures often do not conform in any way to figures obtained in 1993. Village officials also noted that recent changes in local government structure due to the separation of CCM and government offices and several consequent personnel shifts as factors in their difficulty coming up with current, accurate village population figures. The same reasons were also given for a lack of detailed village agricultural data. (cont. next page).

**TABLE 1. Village Populations**

DISTRICT	VILLAGE	POPULATION	HOUSEHOLDS	HOUSEHOLD MEAN SIZE
Njombe	Igagala	2249	572	3.9
	Ulembwe	3566	na	na
	Usalule	1774	345	5.1
	Ng'anda	1010	231	4.4
	Makoga	2820	564	5.0
	Mdasi	1452	244	5.9
	Igosi	2730	570	4.8
	Mafinga	632	175	3.6
	Kipengere	2787	547	6.1
	Morongu	2850	620	4.6
Makete	Mang'oto	981	211	4.7
	Usungilo	871	191	4.6
	Lupalilo	1088	270	4.0
	Kisinga	961	218	4.4
	Iwawa <sup>2</sup>	na	na	na

(Source: Village Executive Officers)

Large numbers of households, especially in Makete are female headed predominantly through spousal death or male wage labor out-migration. The only specific figures available

~~for this are from the household surveys conducted in Makoga, Kipengere, and Kisinga.~~

Female headed households account for 20% of all households in Makoga and 18% of all

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<sup>2</sup>Iwawa not available from either village officers or district officials who note that Iwawa has been partially absorbed as a suburb of Makete town.

households in Kipengere. However, in Kisinga (Makete District), the rate is 47.5% with over 40% of all households in Kisinga being headed by widows.

About one fourth of all households studied in the two districts are polygynous with roughly the same percentages prevailing in each village. As noted in previous studies, this figure is found despite the fact that the vast majority of households are Roman Catholic.

Since the completion of the road the availability of public transportation has increased dramatically (see Section V). Multiple buses, large and small, pick-ups, lorries, etc. ply the road now and most are eager and competitive for passengers. Electricity is available from generators in a few places such as the HIMA subcenter in Makete and Ikonda and Kipengere Missions. Telephone services are available only in Makete and Njombe towns, though several of the missions are served by radio call facilities. Most of the villages have no official postal station. If there is a local mission, their post box in Njombe or Makete is used by the whole village. Other services such as legal (police and courts) and financial (banking and credit) are found only at either end of the road at Njombe or Makete.

All surveyed villages of Makete have at least 2 churches (1 Lutheran and 1 Catholic). Other denominations found in Njombe-Makete are the Seventh Day Adventist, Baptist, Pentecostal, and Assemblies of God. In Makete and Njombe towns there are a few Muslims present as well. All surveyed villages have a CCM office. NCCR and other opposition party flags are much in evidence but there are only two offices located in Njombe and in Makete towns.

**Table 2: Makete Village Services**

	Lupalilo	Kisinga	Usungilo	Mang'oto	Iwawa
Post	no	no	no	no	yes
Church	yes	yes	yes	yes	yes
Cooperative	yes	no	no	yes	yes
Police	no	no	no	no	yes
CCM	yes	yes	yes	yes	yes
Mosque	no	no	no	no	yes
Market	yes	yes	no	no	yes
Telephone	no	no	no	no	yes
Radio Call	no	yes	no	yes	yes
CDO <sup>3</sup>	yes/no <sup>4</sup>	no	no	yes	yes
Bank	no	no	no	no	yes
Court	yes	no	no	yes	yes
Electricity	no	no	no	no	no

(Source: Village Executive Officers/Village Surveys)

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<sup>3</sup>Community Development Office/r.

<sup>4</sup>Community Development Officer died last year and has yet to be replaced.

**Table 3: Njombe Village Services**

	1	2	3	4	5	6	7	8	9	10
Post	no	no	no	yes	no	no	no	no	no	no
Church	3	4	4	1	2	2	4	3	4	2
Co-op	* <sup>5</sup>	no	no	no	yes	no	*	yes	*	no
Police	no	no	no	no	no	no	yes	no	no	no
CCM	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Mosque	no	no	no	no	no	no	no	no	no	no
Market	no	no	no	no	yes	no	no	yes	no	no
Teleph.	no	no	no	no	no	no	no	no	no	no
Radio C.	no	yes	no	no	yes	no	no	no	yes	no
CDO	no	no	no	no	yes	no	no	no	no	no
Bank	no	S	S	no						
Court	no	no	no	no	no	no	no	no	no	no
Electric	no	no	no	no	no	no	no	no	no	no

1=Igagala, 2=Ulembwe, 3=Usalule, 4=Ng'anda, 5=Makoga, 6=Mdasi, 7=Igosi, 8=Mafinga, 9=Kipengere, 10=Moronga

(S=Savings and Credit schemes)

(Source: Village Executive Officers and General Village Surveys)

Any lack of locally available services is less of a problem than in previous years as access to transport is easy and reliable now. Travel to hospitals like Ikonda has been made easier. Consumer durables and agricultural inputs are more easily accessed as the road improvements have brought a large increase in the sources and numbers of vendors at the larger monthly markets. For these, one or two trucks used to come from Njombe. Now,

<sup>5</sup>\*Cooperative present but closed for long period of time now.

however, a wider variety of goods is brought not only from Njombe but from Iringa, Songea, Mbeya and Makambako. The only complaints are from local shopkeepers who are losing custom to the large monthly markets and can no longer afford to stock some of the larger or more expensive durables (e.g. plastic buckets).

All villages surveyed had a limited variety of shops (maduka) and small kiosks (vioski), a few eateries and a large number of clubs (kilabu) for the sale and consumption of locally brewed beers (maize, millet or sorghum) and bamboo alcohol (ulanzi).

**Table 4: Retail Services**

DISTRICT	VILLAGE	MILLS	SHOPS	TEA SHOPS	CLUBS
Njombe	Igagala	2	13	3	5
	Ulembwe	2	10	1	10
	Usalule	2	13	5	15
	Ng'anda	1	4	2	1
	Makoga	4	12	5	9
	Mdasi	1	4	2	4
	Igosi	2	7	4	1
	Mafinga	1	3	1	9
	Kipengere	3	7	2	3
	Morongu	2	10	1	5
Makete	Mang'oto	1	7	2	2
	Usungilo	0	5	0	6
	Lupalilo	1	8	1	10
	Kisinga	1	4	1	5
	Iwawa	3	25	16	5

(Source: Village Executive Officers & General Village Surveys)

**Table 5: Skilled Trades Services**

DISTRICT	VILLAGE	BUTCHER	CARPENTER	TAILOR	MECHANIC*
Njombe	Igagala	1	3	15	0
	Ulembwe	1	3	3	0
	Usalule	1	5	4	0
	Ng'anda	1	2	2	0
	Makoga	2	7	9	1
	Mdasi	0	4	4	0
	Igosi	1	5	4	0
	Mafinga	0	2	2	0
	Kipengere	1	6	4	1
	Morongwa	0	5	9	0
	Makete	Mang'oto	1	3	3
Usungilo		0	3	2	0
Lupalilo		1	5	8	3
Kisinga		1	3	4	1
Iwawa		2	3	5	4

\*For Njombe only data for auto mechanics collected.  
For Makete data for both bicycle and auto mechanics collected

(Source: Village Executive Officers and General Village Surveys)

### Education

In every village there is at least one primary school and all but Usungilo in Makete and Mafinga in Njombe, have at least one nursery school or pre-school. In every village, the primary schools and existing nursery schools are built predominantly of burned bricks with

iron sheet roofing. Education officials noted the lack of textbooks for some of these schools as their major concern.

**Table 6: Primary School Teacher Student Ratios**

DISTRICT	VILLAGE	NUMBER OF TEACHERS	NUMBER OF STUDENTS	RATIO	AVERAGE RATIO
Njombe	Igagala	7	290	1:41	
	Ulembwe	17	349	1:21	
	Usalule	10	275	1:28	
	Ng'anda	6	187	1:31	
	Makoga	11	387	1:35	
	Mdasi	6	231	1:39	
	Igosi	11	500	1:45	
	Mafinga	4	191	1:48	
	Kipengere	10	470	1:47	
	Morongu	4	306	1:76	1:41
Makete	Mang'oto	5	226	1:45	
	Usungilo	6	139	1:23	
	Lupalilo	11	292	1:27	
	Kisinga	7	173	1:25	
	Iwawa #1	14	295	1:21	
	Iwawa #2	14	230	1:16	1:26

(Source: Village Executive Officers & General Village Surveys)

At least three villages in Njombe exceed the government mandates for teacher student ratios. However, Njombe on average is just below this ratio with 1:41. In Makete on the other hand we found ratios to be extremely low for Tanzania, 1:26.

As in other areas of Tanzania, students are often not enrolled in school until reaching the age of 9 or 10. However, an exception to this was found in Kisinga with large numbers of children ages 12 to 13 who had already completed Standard 7. Several parents noted the nursery and preschools and the well maintained primary school and motivated primary school teachers as factors encouraging early education in Kisinga. Secondary school attendance in Kisinga is also of a higher percentage than in the villages surveyed for Njombe. It has been suggested that in areas such as Makete with less viable or productive agriculture that parents are more likely to strongly encourage the education of their children.

One secondary school is found along the study road, in Makoga village. It is run by the Njombe District Development Trust (NDDT), a locally initiated NGO, and was officially opened in 1987. Each family contributes 400/- per year to its operation. Unfortunately, to the concern of parents, teachers and administrators, the total enrollment has declined dramatically in recent years. School capacity is 220 students but currently only 89 students are enrolled. Current student teacher ratio is 1:10. The road rehabilitation holds out the possibility of widening the catchment area for the school allowing it to perhaps increase enrollment closer to its capacity.

Health. The survey area is served by Kibena District Hospital in Njombe, Makete District Hospital in Makete, Ikonda Mission Hospital, Kipengere Mission Dispensary (7 wards, 67 beds), and Bulongwa Lutheran Hospital, among other smaller village dispensaries and periodic clinics. The improvement in the road has coincided with a 30% jump in the patient load at Ikonda Mission Hospital, but a 75% decrease in patients coming specifically from along the Njombe-Makete road at Kibena District Hospital. Many who used to have

only the option of Kibena now find easy transport to Ikonda or Ilembula Lutheran Hospital (beyond Makambako towards Mbeya). The staff at Ikonda say that a combination of drugs availability (often none are available at District hospitals) and improvements in transport are the two factors behind this increase. The head doctor at Makete District Hospital also noted that they frequently refer their patients to the much better equipped Ikonda Hospital, especially now that the road is complete. Ikonda notes that in response to their increased patient load their funding from the Roman Catholic Church has also been increased.

Ikonda is a fully staffed and equipped hospital facility with 4 wards and the capacity to admit 10 new in-patients daily and to treat upwards of 100 outpatients per day. They have four doctors (including one expatriate), 101 additional medical staff (nurses, MDAs, lab techs, etc), and 35 hospital workers (clerical, grounds, cooks, etc). The most frequent diseases seen at Ikonda are tuberculosis, pneumonia, intestinal parasites and diarrhoea, malaria, and dental caries. Alarmingly, they report that among blood donors at this hospital, usually family members coming to donate blood before someone undergoes an operation, the rate of positive HIV tests is approximately 80%. They report on one local family who came in for pre-operative blood donation in which all 20 members tested positive for the HIV virus. The hospital reports that of the most frequent diseases noted above, all but dental caries are illnesses most often reported prior to diagnosis of an AIDS patient. AIDS blood testing is currently carried out for blood donors only and notification is made only if the information is specifically requested (which it seldom is). The 80% figure is high and it is unclear why it is so high given that the most recent figures from local maternal and child health clinics in Makete give a rate of 25% HIV+ (1995, Njombe District Commissioner).

In the household interviews, people were asked about their opinion of the overall state of health in their village. For Njombe District in 1993 Strauss found health rated as "bad" or "very bad" by 18.7% of the respondents. In 1995, we found health rated as "bad" or "very bad" by only 10% for Njombe but 25% for Kisinga.

Out of the 15 villages surveyed condoms are available at only 7 villages with government clinics or dispensaries. The family planning services are available from only 5 villages. The best funded and provided for health facilities in the areas are all Catholic and therefore condoms and family planning (other than "natural family planning") are not available to most who need them. However, again, the road improvement has meant that people can more easily travel greater distances in order to obtain necessary family planning services.

Treatment for STDs can be obtained at 6 village health facilities (other than Ikonda) about 75% of the time. The numbers of staff range from two to seven and drugs are usually adequate for two to three weeks only out of every month at government facilities. The missions have drugs available 100% of the time but they are expensive as they must be purchased by patients at an unsubsidized price.

Water and Fuel. The water supply for residents along the Njombe-Makete Road comes from valley-bottom rivers, streams, and springs; small upland irrigation channels; or local village-center standpipes or hand pumps. In Makete, all villages along the road with the exception of Usungilo are noted as having a water pipe. All water should be boiled for safe drinking, but seldom is. Those villages with a local stand pipe, hand pump, or adjacent irrigation channels require dramatically less time spent in water collection. An average of 87

minutes is spent each day in water collection by households in villages with limited or no access to piped or channeled water. Those households with access to a stand pipe or irrigation channel spend only 37 minutes a day in water collection.

Though some charcoal is used by villagers for heating, the bulk of the fuel used for domestic purposes is wood. In villages where larger numbers of households maintain planted woodlots of wattle, eucalyptus or grevillea for domestic use or who have planted pine or cypress lumber crops for future sale, time spent in fuelwood collection per week is only 6.8 hours per household. This compared to 18 hours per week per household on average for those villages with more use of wood scavenged from open, wild areas (porini).

#### **V. Transportation and Roadworks**

In the opinion polls conducted in 1993 by Strauss et al, villagers along the road considered the condition of the road, goods transport, and human transport to be generally bad. The condition of the roads in the area were noted as "Bad" or "Very Bad" by 51% of respondents and only "Average" (wastani tu) by the remaining 49%. The quality of transport of people was considered "Bad" or "Very Bad" by 45% and only "Average" by 54%. Finally, transport of goods obtained a negative rating from 62% of respondents and an average rating from only 36%.

The situation in August 1995 was markedly different than was found in 1993.

**Table 7A: Opinion Poll: Transportation: % Rated Bad or Very Bad**

CONDITIONS OF:	1995 NJOMBE	1995 KISINGA	1993 NJOMBE
Roads	20%	20%	51%
Public Transport	2.5%	0	45%
Transport of Goods	10%	2.5%	62%

(Source: Household Census & Strauss 1993)

The differences are clear-cut between 1993 and the present.

More dramatically yet:

**Table 7B: Opinion Poll: Transportation: % Rated Good or Very Good**

CONDITIONS OF:	1995 NJOMBE	1995 KISINGA	1993 NJOMBE
Roads	45.5%	65%	0%
Public Transport	94.9%	87.5%	1%
Transport of Goods	75%	60%	1%

(Source: Household Census & Strauss 1993)

Prior to rehabilitation of the road, transportation was limited to the occasional pick-up truck, lorry or the one large bus, "Mwafrika" which would come once every few days variably, depending on the season, breakdowns, or passenger load. A good deal of local transport was and still is carried out by head loading and on foot. However, it was repeatedly noted by respondents that the road improvement has decreased travel time for pedestrians as well. Travel by foot is now faster and generally less hazardous than prior to the rehabilitation. The only negative feature for pedestrians is that the increased speed of vehicle traffic along the rehabilitated road means increased danger of vehicle/pedestrian road

accidents and increased levels of blinding dust being churned up by passing vehicles. Strauss does not report on the number or frequency of foot traffic in 1993. Current figures for Makoga and Kisinga point to the continued importance of foot traffic in the area. At the traffic census point in Makoga there was an average of 395 pedestrians passing each day. At Kisinga a lower, but nonetheless significant average of 225 was recorded. This importance of pedestrian travel is noted in other assessments carried out in Tanzania as well (see Fleuret 1994).

In 1993 bicycles were much in evidence, Strauss noting an average of 85 registered bicycles per village. However, the general census for the villages of Njombe in 1995 found an average 172 bicycles per village now, bicycle numbers having doubled in the past two years. Reasons for this increase are multiple, but come down to the coincidence of the rehabilitation of the road and the increased availability in the last year or so of bicycles in the shops in Njombe town. Villagers of Makoga and Kipengere report that a trip as far as Njombe by bicycle is now easy and fast with little wear and tear on the bicycles themselves. Again, there were some negatives expressed in terms of competition between bicycles and vehicles for the road. Also, there have been a few injuries and deaths of bicyclists occurring due to lack of brakes on many of the older bicycles in the area. On the old road lack of brakes was not a problem as one could not achieve any significant speed.

In 1993 there was an average of 90 bicycles passing the traffic check point in Makoga. In 1995, this figure had more than doubled to an average of 183 (3% being ridden by women). Due to the mountainous terrain of Makete bicycles are not much in evidence or use there.

Motorized transport in 1995 has increased dramatically over figures obtained for 1993 and as noted previously, it is now a travelers market with carriers competing for passengers and cargo. The number of large buses traveling the road has not increased; Mwafrika is still the only large (65+ seat) Leyland bus to ply this route. However, Mwafrika now keeps to a regular schedule with daily service to and from Iringa or Makete via Njombe. The mid-sized buses and passenger lorries have increased in number and frequency as have the smaller (<25 seat) minibuses. Two round trips daily between Njombe and Makete is not uncommon for these vehicles now.

**Table 8A: Makoga Traffic Count 1995, August 3-9**

VEHICLE TYPE	Aug 3	Aug 4	Aug 5	Aug 6	Aug 7	Aug 8	Aug 9	MEA N
Cars & Taxis	2	1	1	-	2	-	-	1
L/Rover, P/Up	29	35	39	43	33	38	56	44
Lorry <5 Tons	1	-	2	3	3	2	3	2
Lorry >5 Tons-Empty	3	4	3	2	1	3	-	3
Lorry >5 Tons-Full	2	2	2	3	4	3	3	3
Lorry + Trailer E	1	5	-	4	-	-	-	1
Lorry + Trailer Half	5	-	3	4	-	5	5	3
Lorry + Trailer Full	-	3	-	-	2	-	3	1
Motorcycles	3	6	5	7	3	1	4	4
Tractors	1	5	-	-	1	-	2	1
Bus <25 seats	5	10	4	2	6	9	5	6
Bus >25 seats	5	8	10	8	7	7	10	8
<b>AVERAGE DAILY TOTALS</b>	<b>57</b>	<b>79</b>	<b>69</b>	<b>76</b>	<b>62</b>	<b>68</b>	<b>97</b>	<b>73</b>

(Source: Traffic Count Makoga)

**Table 8B: Makoga Traffic Count 1993, May 12-16**

VEHICLE TYPE	5-DAY AVERAGE	1995 INCREASE
Cars & Taxis	2	none
L/Rover, P/Ups	25	76%
Lorry <5 tons	2	none
Lorry >5 tons	5	120%
Motorcycles	3	33%
Tractors	2	none
Bus <25 seats	0	up from 0 to 6
Bus >25 seats	5	60%
<b>AVERAGE DAILY TOTAL</b>	<b>43</b>	<b>70%</b>

(Source: Strauss 1993 & 1995 Makoga Traffic Counts)

When the data are compared it becomes clear that there has been over 70% increase in average daily motorized traffic since completion of the road rehabilitation.

The average number of passengers aboard at the Makoga traffic count was 356 in 1993. This number increased by 64% to an estimated average total of 582 per day. The fact that passenger traffic has not increased as much as vehicle traffic is a positive sign that the number of passengers per vehicle is down and therefore competition between carriers for passengers is indeed likely to be occurring. This also has significance for vehicle wear and tear in as much as this indicated less overloading of vehicles than in the past.

The fares charged for travel along the road appear to have changed significantly. Strauss notes an average of Tshs 40-60/km for travel on the road in 1993. The various fares charged in August 1995 are summarized below but though some are higher than previously, especially for midpoint travel (e.g. to Kipengere) it should be noted that all respondents

noted the total travel expense as significantly lessened as one no longer need spend one or two nights at one's destination before being able to make a return trip.

**Table 9: Passenger Fares 1995**

\*All figures are in Tanzanian Shillings

ORIGIN	DESTINATION	MINIMUM FARE	MAXIMUM FARE	AVERAGE FARE
Njombe	Kipengere	700	900	800
	Makete	2000	2000	2000
	Ikonda Hospit.	1300	1700	1500
Iringa	Makoga	2800	3200	3000
	Kisinga	3600	4000	3800
Mbeya	Makoga	3000	4000	3500
Makete	Ikonda Hospit.	400	600	500

(Source: Origin-Destination Surveys 1995)

Cost of travel to Makete as based on 1993 figures, has come down significantly. In 1993 public buses supposedly charged the same rates of Tshs 15/km. However, as many respondents in 1995 pointed out this was the official rate. It was a tight market in which arbitrary fare changes and refusals to ferry goods often took place. 1993 estimates of actual fares paid on average were Tshs 40-60/km. The current fare of Tshs 2000 for the Njombe to Makete run works out to only approximately Tshs 19.2/km. In 1993, Njombe to Kipengere fares were officially based on ~~Tshs 14/km~~ and in 1995 they were slightly higher at Tshs 19.2. However, this indicates more uniformity in the fare structure than was evident in 1993. Cargo rates have gained uniformity as well with standard charges for hauling. For example, one 50 kg sack of sugar carries a cargo rate of Tshs 500 for transport between

Njombe and Makoga. This figure is higher than the rates noted for 1993 of Tshs 300-400 per 50 KG sack, but is a decrease in constant 1993 T. Shillings.

Other current crop transportation rates are: 100 kg sack of maize: Tshs 1500 Makete to Njombe, 120 kg of potatoes: Tshs 2000 Makete to Njombe. For crop sales however, as the greater number of buyers come to the farmer with their own transport, these transport costs are not of significance to farmers themselves.

The cargo of the vehicles on the Njombe-Makete road can be summarized as follows: 19% of the vehicles were engaged in general paid passenger transport, 6% were ferrying the sick to the hospital, and 47% carried people for business and government work. The final portions are made up of those hauling freight: 10% of the vehicles were hauling lumber, and 18% were hauling a combination of agricultural produce, building and road supplies, and consumer goods for local shops.

For vehicle operating costs, as noted in Strauss and in other studies, accurate figures were difficult if not impossible to come by. The table below summarizes the findings we did make. The figures are exclusive of depreciation, interest, overheads, etc.

**Table 10: Vehicle Operating Costs**

\* All figures are in Tanzanian Shillings

VEHICLE TYPE	1995 VOC-LOW	1995 VOC-HIGH	1995 VOC-AV	1993 VOC-AV
Saloon Car	63/km	--	63/km	167/km
Pick-ups	51/km	212/km	131/km	246/km
Lorries <5 T	95/km	252/km	173/km	329/km
Lorries >5 T	300/km	442/km	371/km	569/km

(Source Strauss 1993 & Vehicle Operating Costs Survey 1995)

In the villages surveyed there are still only small numbers of vehicles owned by villagers themselves. Most of the vehicle traffic on the road is registered in places such as Iringa, Njombe town, or Makete town. 14 Pick-ups, Land Rovers, or Saloon cars, 24 tractors, at least 9 Lorries, and 10 or more motorcycle are the total reported vehicles registered in survey villages. These numbers are not significantly different from those noted by Strauss. Ownership of local vehicles is still predominantly in the hands of church organizations. Some of the private vehicles Strauss noted as being registered in Igesi Ward have now shifted registration to Njombe.

A further gauge of the impact of the road on residents of Njombe-Makete can be seen through the responses to questions concerning residents' most frequent use and their positive or negative impressions of the road. (Source: Household Census).

**Table 11A: Most Frequent Use of Road (1995): Men**

TYPE OF ROAD USE	MAKOGA	KIPENGERE	KISINGA
Health <sup>6</sup>	56.8%	45.7%	48.0%
Business/Farm	27.0%	48.6%	18.5%
Social	16.2%	5.7%	22.2%
NONE	-	-	11.1%

(Source: Household Surveys)

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<sup>6</sup>Health is defined as seeking treatment for self or a family member as well as visiting/assisting sick relations in hospital.

**Table 11B: Most Frequent Use of Road (1995): Women**

TYPE OF ROAD USE	MAKOGA	KIPENGERE	KISINGA
Health	85.0%	38.5%	57.0%
Business/Farm	2.6%	17.9%	21.0%
Social	12.4%	33.3%	14.0%
NONE	-	10.3%	7.0%

(Source: Household Surveys)

Figures for "most recent use of the road" are consistent with the figures noted above. It is significant to note that health care is the most significant category of use for the road. This does correspond with the high rates of HIV/AIDS and other illnesses in the area as well as the demand for preventive services. However, the way in which this question was structured allowed most farm use of the road to be under-reported. The rehabilitation of the road has led buyers of farm produce to come directly to the farmer. The buyer uses the road in order to purchase crops from the farmer, but the farmers are unlikely to categorize this component as their "use" of the road despite their receipt of benefit from this use.

In terms of general perceptions about the road and roadworks, 75% of respondents, male and female, felt the road rehabilitation to have provided benefits ranging from increasing the number of vehicles available for travel, engendering the sales of crops, shortening roundtrip travel to less than one day and therefore reducing the cost of travel to Njombe, increased comfort levels on buses taken, and easier walking conditions on the road. Along the Njombe portion of the road the only negative reactions to the road were a result of the increased traffic (too many new cars, strangers, and sick people passing through now) and increased hazards of speeding traffic. In Makete, this was not a concern due to terrain

and consequent lower speeds. A few also mentioned that if the roadworks had included money for some minor grading of the smaller feeder roads that benefits to agriculture in the area would have been increased. The only concerns noted in Makete were the problems relating to compensation for roadwork damage to crops, trees and land. However, in Njombe 30% and in Makete 96% of the respondents felt there to be no negatives resulting from the Njombe-Makete road rehabilitation.

Roadworks: Along the Njombe-Makete road there are still minor roadworks on-going such as the work of subcontractors to Badr East Africa who are completing some of the cemented drainworks and repairing rainy season damage (not unexpected) to some of the low-cost (stick and stone) drainworks. Bridges along the road are also being rehabilitated and are slated for completion at the end of September. Badr hopes to continue work in the area, bidding for the rehabilitation of the road beyond Makete that links up with Mbeya District. They still maintain offices in Ulembwe village and Makete town.

Inputs for much of the roadworks were obtained locally. However, Badr had complaints that the quality and quantity of murrum and gravel said to be available locally was inadequate. A lot of gravel and better quality murrum had to be brought in from outside at considerable cost. Due to this problem, there are a few areas where the murrum or gravel used were not of the proper standards, did not hold up very well or were found to be too ~~shock in the~~ rainy season. However, spot repairs are being carried out and most respondents ~~to our~~ to our questions noted these bad spots as being insignificant.

Issues of compensation for lost crops and trees during the roadworks were not raised to a significant degree in Njombe District. However, in Makete the heads of every village

questioned thought we had come in order to document their claims for compensation. In Njombe, Badr had been able to settle some of the claims directly. However, they apparently were unable to do so in Makete. It has been suggested that for future roadworks a set fee should be established for particular types of damage. Affected villagers would have the choice of taking immediate cash payment before damage is done (e.g. felling of trees or digging of murrum pits on their land) or going the traditional and lengthy process of submitting a claim to the Ministry of Works, the latter route taking upwards of three years for settlement.

## **VI. Business Surveys**

As noted in Section IV, the 15 surveyed villages support a number of retail and service oriented businesses. For the 15 villages there are a total of 132 shops, 26 milling machines, 46 tea shops, and 90 pombe clubs.

From the three villages selected for indepth study, 19 businesses were chosen. Actually all shops in each of the three villages chosen for indepth study were surveyed. Interviews were then conducted with owners or on-site managers. Of the 19 businesses surveyed, 16 would be classified as general retail stores, selling household consumables (sugar, soap, salt, etc.) and as well a limited number of consumer durables such as plates, khanga or vitenge, buckets and the like. Of the remaining three businesses surveyed, one is a small used-clothing shop and two are small tea and food shops (mgahawa). For all businesses a general business survey, retail inventory and purchasing patterns survey were

carried out. In the retail shops one can find a large variety of goods. In the smallest of the shops, there were only 13 different items being sold. This figure is offset by the fact that on average shops carry an average of 44 different items. At the largest of these shops there is an inventory of approximately 130 different types of commodities for sale (shop is located in Kipengere). It is interesting to note that in these permanent shops the availability of some goods has gone down since the rehabilitation of the road took place. The chief reason cited by shopkeepers for this decline is the increase in availability of competitively priced goods being sold at the large monthly markets. Most respondents in Makoga and Kipengere make most of their major durables purchases at these local monthly gatherings.

Of twenty basic goods inventoried at shops in 1993, availability has gone down for a number of items. Again, shopkeepers cite the enhanced monthly market as principal cause of this decline. It has also been suggested that these decreases could simply be episodic. (cont. on following page).

**Table 12: Availability of Basics 1995 and 1993**

ITEM SOUGHT	1995		1993	
	Availability in 16 Shops N	(%)	Availability in 15 Shops N	(%)
1. Sugar	15	(94)	15	(100)
2. Cooking oil	15	(94)	9	(60)
3. Salt	15	(94)	14	(93)
4. Tea	12	(75)	14	(93)
5. Rice	1	( 6)	6	(40)
6. Kerosene	8	(50)	15	(100)
7. Soap	14	(88)	15	(100)
8. Toothpaste	5	(31)	11	( 73)
9. Matches	13	(81)	15	(100)
10. Battery	11	(69)	15	(100)
11. Exercise book	8	(50)	12	( 80)
12. Bucket	2	(12.5)	4	( 27)
13. Panadol	6	(37.5)	14	( 93)
14. Petroleum Jelly	15	(94)	15	(100)
15. Rubber sandals	7	(44)	10	( 67)
16. Small lamp	6	(37.5)	8	( 53)
17. Hoe	1	(6)	6	(40)
18. Khanga	4	(25)	9	(60)
19. Bic pen	11	(69)	14	(93)
20. Machete/panga	0	(0)	0	(0)

(Source: Strauss 1993 and 1995 General Business Surveys)

Shopkeeper estimates of minimum daily sales in surveyed shops range from Tshs 150 up to Tshs 7000. Estimates of maximum daily sales range from a low of Tshs 500 to a high

of Tshs 15,000. Reported average daily sales are estimated at approximately Tshs 3500. We suspect that this figure is an underestimate of the actual daily sales. As part of our survey work for each shop one hour of observation was made in order to record actual sales taking place. Based on these data we found average hourly sales to be on the order of Tshs 1650. This figure is no doubt low given that at least one half of the shops were not surveyed at peak business hours. Given this figure shops would need be open only slightly more than 2 hours in order to achieve the shopkeepers' estimates of average daily sales.

Households surveyed reported average/household weekly expenditures of the following:

<u>Makoga</u>	<u>Kipengere</u>	<u>Kisinga</u>
Tshs 2557	Tshs 1303	Tshs 812
(HH 564)	(HH 547)	(HH 218)

Given these figures, estimates can be made of week expenditures for each of the villages.

Makoga:  $Tshs\ 2557 \times 564 = Tshs\ 1,442,148.$

Kipengere:  $Tshs\ 1303 \times 547 = Tshs\ 712,741.$

Kisinga:  $Tshs\ 812 \times 218 = Tshs\ 177,016.$

These estimates of weekly spending should be noted as local spending as most respondents noted their weekly purchases to be made at their local vioski or maduka. For Makoga that means that on average a single shop sells Tshs 180,268 of merchandise in the space of just one week. For Kipengere, the rate is Tshs 118,790/week and ~~Kisinga~~ Tshs 59,005/week. In all cases estimates of local weekly purchases far exceed shopkeepers' stated estimates.

Most business owners noted that cost of transport and capital for purchases from wholesalers (in Njombe or Makambako) are their principal constraints to success. As noted

previously, the enhancement of the monthly markets since the rehabilitation of the road is another constraint they now face. Villagers also noted that they are increasingly making some of their consumables purchases in bulk at these monthly markets (salt, rice, etc.) in addition to purchases of any necessary durables (clothing, plastic buckets, shoes, etc.) or agricultural inputs such as new hoes or pesticides (see Section VII for full discussion of agricultural inputs).

It is interesting to note that 12 out of the 19 businesses surveyed opened after work on the road had begun. Also, not surprisingly, not one of the shopkeepers derives his/her sole livelihood from the shop. All note their other businesses as being farming with several adding one or more types of work such as carpenter, sawyer, teacher, mechanic, club owner, to their roster of income earning activities.

## **VII. Household Surveys**

Indepth household interviews were conducted with 120 households total, throughout the three villages of Makoga, Kipengere, and Kisinga (40 households each village). Sample selection was made by village officials who were asked to choose a representative sample of households. A condition was added that where possible we wished one half of the sample to come from beyond three kilometers from the main road. This condition however could not entirely be fulfilled as most households of the villages were all located within one to two kilometers from the main road. The exception to this were 10 households in Kipengere located 4.9 km out and approximately seven households in Kisinga. Interviews were

conducted when possible in people's homes or barring that, at a neighborhood CCM or government office. Interviews were conducted with the senior member of the household present. Sometimes this was a woman, and sometimes, a man, though occasionally both partners were present and harmoniously responsive. The respondents were on the whole receptive and willing to answer our many questions. Our thanks especially go to them and to the village leaders who kindly acted as interpreters for those respondents only speaking their local languages of Kikinga or Kibena. Some of the household numbers in figures to follow are higher than 40/village as for some data sets we were able to obtain full answers for the households of all wives of a polygynous marriage.

#### A. Household Structure & Composition

For this study, a household was defined as those individuals sharing living quarters and/or food consumption (and production to a lesser extent). The size of households overall averaged 4.8 with Kisinga at a low of 4.7 and Makoga at a high of 4.9 persons per household. Categories of household types are summarized below, most households consist of parent(s) and child(ren). Very few households report containing household members such as other relatives, workers, or friends.

**Table 13: Household Structure**

HOUSEHOLD HEAD GENDER	MARITAL STATUS	MAKOGA	KIPENGERE	KISINGA
FEMALE	Never Married	1	3	1
	Widowed	4	3	17
	Migrant	3	3	1
	<b>FEMALE HEADED TOTAL %</b>	<b>(20%)</b>	<b>(18%)</b>	<b>(47.5%)</b>
MALE	Monogamous	21	20	12
	2-4 Wives	10	12	9
	Migrant <sup>7</sup>	--	1	--
	Never Married	1	-	--
	<b>MALE HEADED TOTAL %</b>	<b>(80%)</b>	<b>(82%)</b>	<b>(52.5%)</b>

(Source: Household Surveys)

Women in the sample households have an average of 4.1, 3.2, and 4.5 living children respectively for Makoga, Kipengere and Kisinga. Only Kipengere is lower than the national statistics which show an average of 3.3 living children per married woman (Weinstein et al 1995:23).

The ethnic group found in each village is 100% Kinga in Kisinga and close to 100% Bena in Kipengere and Makoga. In Kipengere and Makoga there are 6 Kinga who have married into the area as well as some Pangwa and one Chagga. Most people are born in the villages they now reside in, the exceptions being women who have married in from a neighboring village. All report having been born in the same village as their fathers.

<sup>7</sup> Migrant in this instance refers to a sample member who is a migrant laborer working in Kipengere whose wife lives in the next village.

Average age of respondents was much lower for Makoga and Kipengere than for Kisinga. It seems that in Kisinga men do not establish separate households until they have worked outside the village for sometime. This would account for the lack of younger household heads in Kisinga.

**Table 14: Average Age of Respondents/Household Heads**

MALE/FEMALE	MAKOGA	KIPENGERE	KISINGA
Females	25.8	34	46.1 <sup>8</sup>
Males	36.8	39.2	50.8

(Source: Household Survey)

The data reported for education of household heads and their children reflects a positive trend in increasing levels of education for the children in the area. The education level of household heads varied, evenly spread across the categories of those having no formal education up through those completing primary school.

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<sup>8</sup>Note that 68% of female respondents in Kisinga noted their age as "unknown".

**Table 15: Education of Household heads**

LEVEL	MAKOGA FEMALES / MALES	KIPENGERE FEMALES / MALES	KISINGA FEMALES / MALES
NONE	32.7% / 19.5%	43.5% / 24.2%	61.9% / 30.4%
ADULT ED	18.2% / 9.7%	-- / --	19.1% / 30.4%
St. I-IV	12.7% / 26.8%	21.7% / 30.3%	11.9% / 13.0%
St. V-VIII	36.4% / 43.9%	34.8% / 39.4%	7.1% / 21.7%
Secondary	-- / --	-- / 6.1%	-- / 4.4%
N=	55 / 41	46 / 33	42 / 23

(Source: Household Survey)

Significantly, among the children of these households who have completed their schooling, 82% have completed at least primary school (St VII). Also, apparently, once a child has begun school it is likely he/she will complete primary school. The other 18% of children noted are those who never attended school. These figures reflect an educational level far above that noted for Iringa Region by the Bureau of Statistics which showed only 26.9% of their sample as having completed primary school or gone beyond primary education (Weinstein et al, 1995:8).

The religious affiliation of the respondents is predominantly Roman Catholic.

However, in Makoga affiliation with the Lutheran Church is predominant.

**Table 16: Religious Affiliation**

DENOMINATION	MAKOGA	KIPENGERE	KISINGA
Roman Catholic	46%	59%	75%
Lutheran	53%	27.5%	10%
Other <sup>9</sup>	1%	13.5%	15%

## B. Agriculture and Livestock

Though in one area of Kisinga village there are small irrigation channels present, agriculture in the Njombe-Makete area is predominantly rainfed. The variation in altitude and topography mean that each of the study villages works on a slightly different agricultural calendar and with some minor differences in crop mix. The differences in the agricultural calendar have consequences for income data collected in this survey. At the time of this survey Makoga had begun maize and potato harvests and farmers had already sold or could easily estimate what they would be selling. The higher income figures for Makoga reflect this as different from Kipengere were only limited harvesting had begun and most was still a few weeks away. In Makete, the sales harvest, in this case wheat, was even further off and farmers were even less willing to speculate about possible crop sales.

**Table 17: Agricultural Calendar Planting (P) & Harvest (H) Dates**

CROP	MAKOGA	KIPENGERE	KISINGA
	Plant-----Harvest	Plant-----Harvest	Plant-----Harvest
Maize	Nov-----Aug	Nov-----Aug	Aug/Nov----Aug
Wheat	Mar-----Aug/Sept	Feb-----Aug	Feb/Mar----Nov
Potatoes	Nov-----May/Aug	Nov-----Feb	Sept-----Mar/Sept
First Beans	Nov-----May	Nov-----Mar	Nov-----May
Second Beans	Jan-----July	Jan-----July	Jan-----July

(Source: Village interviews)

**Table 18: Crop Inventories of Surveyed Villages**

CROP	Makoga N / (%)	Kipengere N / (%)	Kisinga N / (%)
Maize	40 / (100)	40 / (100)	40 / (100)
Wheat	36 / (90)	40 / (100)	37 / (93)
Potatoes	38 / (95)	40 / (100)	39 / (98)
Pumpkins	40 / (100)	37 / (93)	34 / (85)
Beans	35 / (88)	40 / (100)	36 / (90)
Peas	19 / (48)	35 / ( 88)	6 / (15)
Bamboo	24 / (60)	34 / ( 85)	32 / (80)
Numbu	32 / (80)	8 / (20)	4 / (10)
Temperate Fruits	36 / (90)	36 / (90)	36 / (90)
Bananas	19 / (48)	9 / (23)	1 / ( 3)
Millet	-- / --	3 / ( 8)	-- / --
Sorghum	-- / --	-- / (--)	10 / (25)
Sweet Potatoes	10 / (25)	24 / (60)	27 / (68)
Cabbage	19 / (48)	9 / (23)	8 / (20)
Pyrethrum	-- / --	4 / (10)	7 / (18)
Sunflowers	18 / (45)	5 / (13)	4 / (10)
Greens	11 / (28)	31 / (78)	10 / (25)
Tomatoes	4 / (10)	4 / (10)	-- / --
Onions	4 / (10)	5 / (13)	9 / (23)
Barley	-- / --	-- / --	1 / ( 3)
Tobacco	-- / --	-- / --	1 / ( 3)
Pineapple	2 / ( 5)	-- / --	-- / --
Papaya	2 / ( 5)	-- / --	-- / --

(Source: Household Survey)

As can be seen above, 100% of all households surveyed grow maize. The majority grow wheat, potatoes, pumpkins, beans, bamboo (for ulanzi), and temperate fruits (such as plums, peaches, apples, and pears). The principal cash crop noted for Makete District and the westernmost parts of Njombe District is usually pyrethrum. However, our survey found only seven households in Kisinga and four households in Kipengere who were currently producing pyrethrum. It is important to note that several other farmers stated that with the coming season they were going to be returning to pyrethrum production again, inputs and transport now being more readily available.

Barley is grown by only one surveyed household. However, barley has a good deal of potential especially in the area just to the south of Kipengere. A small group of investors (two Italian expatriates and one Tanzanian from Makete) is in negotiations with Tanzania Breweries Ltd. over leasing of additional lands for barley and wheat production, upwards of 3700 acres. One smaller scale producer currently has 300 acres of barley at this same location.

The agricultural extension officers for the villages could only give some rough estimates of land under production for various crops and yield information was not available. As noted, recent staffing and government changes meant that most of the officers has not had the opportunity to become familiar with their new postings.

Household food inventories collected are deceptive as most crops were on the verge of harvest and many households noted that their daily food was harvested on a daily basis. Potatoes and maize especially were of lower quantities than expected for household stores as a direct result of this timing difficulty. 61% of all meals contained some maize and 24%

contained potatoes. In Makoga, 25% of all meals taken contained potatoes despite only 8% of households citing potatoes in their household stores inventory. Sample households use a variety of staples and staple combinations. Traditional maize ugali may find substitution by wheat or millet ugali, potatoes are often mixed with maize or wheat.

Agricultural labor is carried out manually by both men and women. The Bena and to a lesser extent the Kinga exhibit a much more balanced approach to labor allocation than often noted in the literature for Tanzania, or indeed for Africa. Figures noted in the literature of 70-80% of agricultural labor being carried out by women does not seem to hold for this area. There is still an unequal representation of women in the workforce. However, males in the household do not leave certain agricultural tasks solely to the women. The usual response from both men and women when asked who performs various agricultural tasks was "wote pamoja" "all of us together". Where men are present, unless ill, they take full part in all agricultural tasks. There are more adult daughters remaining at home than sons. Consequently, the figures are weighted towards women's labor. Men make up uniformly for all villages, 35% of the agricultural labor force for land preparation, digging, planting, weeding and harvesting; adult women 60%, male children (<15) 4% and female children 1%.

The tasks of water and firewood collection still fall predominantly to women and girls who make up 91% of the collection force for water and 89% for firewood. Tending of livestock seems to be pretty evenly distributed among all ages and both sexes. Food preparation is the one area that adult men seldom participate in.

Among households in Makoga and Kipengere traditional cooperative work parties (mgowe) were used this season by 84% of all households. These mgowe are usually mixed groups of men and women, neighbors, friends and relations of the household hosting the work party. People are invited to work in exchange for food (usually kande, a mixture of maize and beans) and for pombe (local home brewed beer) and ulanzi. In Kisinga, mgowe labor is significant but less so, with only 60% of households reporting having used mgowe this season.

Very small numbers of households reported using hired labor for their farms: Makoga: 27.5%, Kipengere: 17.5% and only 5% of households in Kisinga used hired labor.

Households in Makoga report an average landholding of 2 acres only; Kipengere, 3.5 acres and Kisinga 2.5 acres. In Makoga these 2 acres per household are on average scattered between 5 different plots. Kipengere's average holding of 3.5 acres is scattered between 4.5 different plots and Kisinga's 2.5 acres, between 5.9 plots.

The reported acreage seems quite low. We suspect that woodlot and tree farm acreages were not reported. Often when asking about shambas (farms) in this area in first response you get the acres of maize and wheat fields only. Only with probing do you get potato plots or bean plots or vegetable plots. Unless tree farms were specifically asked about it is unlikely they were included.

Land was noted by respondents to have been acquired from the parents of the husband in 72% of all cases, and in 13% from a spouse. The remaining land was acquired by rental from the village government or from borrowing or renting from a neighbor.

Figures on the use of purchased inputs vary depending on the village examined.

Fertilizers are used predominantly for maize though some was reportedly used for wheat and potatoes.

**Table 19: Percentage of Households Using Fertilizer This Season**

FERTILIZER TYPE	Makoga	Kipengere	Kisinga
Animal Manure Only	5%	27.5%	30%
Animal & Chemical	40%	20%	7.5%
Chemical Fertilizer Only	32.5%	52.5%	5%
NONE	22.5%	0	57.5%

(Source: Household Survey)

A reflection of the poorer soil quality in Makete was found in that declining yields and sales due to lack of fertilizer affected Makete much sooner. Households noted it had been several years in some cases since they had been able to afford fertilizer even when it was available. Only 30% have access to animal manure.

Problems of lack of fertilizer are increasing still this year. Last year, one 50 kg sack of TSP fertilizer averaged Tshs 6500. This past month the price has jumped to Tshs 13,500. As noted by Sieber, benefits to agriculture from improved roads depend on soil quality, rising fertilizer prices, and the previous breakdown of cash earning markets, for example, pyrethrum in Makete (1995:37).

Figures for sources of fertilizer used show that villagers of Makoga most often purchased their fertilizers in Njombe (most of these at the TFA). Fertilizer purchases by Kipengere villagers were split between local purchase at the Kipengere Catholic Mission and purchase in Njombe at TFA or other shops. Since the completion of the road the manager of

the Njombe TFA reports that sales to farmers from along the rehabilitated road have gone up. This rise is not a dramatic rise, but is significant because the rise in custom coincided with significant price increases. The manager notes that it is therefore surprising that sales are up at all. He also notes that farmers along the road have increased the volume of vegetable seeds being purchased. The Njombe DALDO confirms this increase by noting vegetable production for sale along the road is up from 91 acres in 1994 to 143 acres in 1995. This despite seed price increases in the past year from Tshs 1800/100 grams to the current price of Tshs 2500.

In terms of pesticide use, again Kisinga reflects its more remote and lower income situation.

**Table 20: Percentage of Households Using Pesticides**

TYPE OF PESTICIDE USED	Makoga	Kipengere	Kisinga
"DDT" <sup>10</sup>	25%	75%	20%
Pyrethrum	10%	12.5%	2.5%
DDT and Pyrethrum	60%	--	--
Actellic/Didimark	--	5%	--
Ashes	--	--	20%
NONE	5%	7.5%	57.5%

(Source: Household Survey)

The principal source of pesticide inputs again is noted to be the local monthly markets.

<sup>10</sup>Note: "DDT" appears to be used as a generic word for pesticide and does not necessarily reflect use of actual DDT.

Other inputs were few. A few households in Makoga and Kipengere received loans of fertilizer from the Mama Makinda program of the Community Development Office in Njombe. A tractor was rented for firewood haulage or for wheat field plowing by 10 households total from Makoga and Kipengere. Of those households noting use of hybrid maize only 3 had actually purchased seeds recently. The majority were multiple generations away from the original hybrid seed they had purchased.

Livestock holdings of sample households are summarized below. The data are consistent with data collected from the general village surveys for livestock throughout the target area.

**Table 21: Livestock Ownership**  
(Number of Animals/Households)

TYPE OF LIVESTOCK KEPT	Makoga	Kipengere	Kisinga
Guinea Pigs	204/17	85/7	120/15
Rabbits	16/3	--	--
Poultry	56/18	149/25	85/17
Pigs	12/11	3/3	4/2
Sheep	33/7	15/6	24/7
Goats	41/8	47/12	12/5
Grade Cows	2/1	--	--
Local Cows	11/5	23/7	4/1
Local Bulls	2/1	8/4	12/1

(Source: Household Survey)

Few households kept cattle or much larger livestock at all. A few pigs are raised for yearly slaughter or for breeding and sale of piglets. Sheep and goats are kept for insurance

purposes, most respondents clearly stating that they were used for sale in emergency only. Goats and sheep in Makoga and Kipengere are grazed free and those in Kisinga are all tethered for grazing. Guinea pigs and chickens are kept for their manure and meat. Eggs from chickens were usually used by respondents only as food for the children. One negative impact of the road improvement has been to the chicken population. In the two weeks in the field, the team vehicle alone killed at least 5 chickens along the road. This problem was as well mentioned by one respondent.

### C. Income and Expenditure

Households surveyed obtain their living predominantly from agriculture. Their basic subsistence needs are fulfilled directly from their own farms. Through sales of farm produce and home production, and some wage labor, and artisanal activities, farmers obtain enough cash for commodity purchases (salt, sugar, etc.), healthcare, taxes, farm inputs, etc. The food supply for households of Makoga and Kipengere are rated as "good" or "very good" by 58.7% of respondents. This is only slightly up from 1993 with 52.4% giving this response. In comparison, Kisinga villagers in 1995, 30% consider their food supply to be "good" or "very good", "average" 27.5%, and "bad" or "very bad", 37.5%. It has been suggested that this may be due in part to the fact that they are further from the time of harvest and are therefore less sure of their yields.

In terms of purchasing power, 28.7% of villagers saw their ability to purchase goods as "bad" or "very bad" in Makoga and Kipengere in 1995, contrasted with a figure of 42.4% for 1993. Kisinga villagers in 1995 report a negative rating by 57.5% of respondents.

Chambers (1990:5) notes "the tendency of poor people to give prudent replies to questions and to underestimate their sources of food and income." This certainly seems to hold true for income data for the sample households.

**Table 22: Per Household Average Yearly Income and Estimated Expenditure**

INCOME/EXPENDITURE	Makoga	Kipengere	Kisinga
Wages (Tshs)	85,350	2,690 <sup>11</sup>	17,985
Sales Income (Tshs)	35,785	54,349	24,551
<b>TOTAL REPORTED INCOME</b>	121,135	57,039	42,536
Estimated Expenditure	85,050	<b>112,872</b>	<b>125,280</b>

(Source: Household Survey)

As can be seen from Table 22, reported income for Kipengere and Kisinga is outstripped by estimated expenditure by almost three times in Kisinga and almost two times in Kipengere. Only in Makoga was average yearly income sufficient to cover reported expenditures.

Wage employment is held on a part or full time basis by members of 67.5% of households in Makoga, 60% of households in Kipengere, and 45% of Kisinga households. Wage income is derived from work as sawyers, carpenters, teachers, bike mechanics, shopkeepers, etc. Most of this employment is occasional and itinerant.

Sales of farm produce or home production or livestock for this year are summarized below.

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<sup>11</sup>Despite the fact that the Catholic Mission no doubt provides a lot of employment for villagers, very few Kipengere respondents reported any wage employment, citing their chief sources of income as being derived from agricultural and home production.

**Table 23: Top Ten Sales Figures: Reported Earnings**  
(Total earnings data for three villages combined)

ITEM	T.Shillings
Pombe <sup>12</sup>	1,090,050
Wheat	647,000
Maize	524,500
Ulanzi	523,640
Livestock	494,200
Lumber	348,500
Potatoes	153,020
Hides/Mats	73,100
Beans	68,600
Temperate Fruit	58,350
<b>TOTAL</b>	<b>3,980,960</b>

(Source: Household Survey)

In Njombe District, villagers noted that for 89% of sales buyers come directly to the farm to purchase produce or goods. Buyers noted this year came from Njombe, Iringa, Mbeya, Makambako and Dar es Salaam. 10% of crops/produce is sold to other villagers by the farmer. In Kisinga, 44% of the buyers came, and the remaining 49% of sales (mostly of local brew) took place at local clubs.

Household expenditure patterns reflect the inter-village differences in reported income (despite noted problems). As we move further out from Njombe, reported incomes declined and correspondingly, so do estimated bimonthly expenditures by respondents.

<sup>12</sup>Traditional home brewed beers. Includes kimpumu, msabe, and konomi.

**Table 24: Expenditure Patterns: Two-Week Purchases Recall<sup>13</sup>**

Item	Makoga N-Buyers	Makoga Av. Cost	Kipengere N-Buyers	Kipengere Av. Cost	Kisinga N-Buyers	Kisinga Av. Cost
Maize	1	1500	1	1300	6	1883
Rice	30	1617	22	889	5	670
Meat	35	1183	29	704	13	827
Oil	31	923	24	520	7	1314
Salt	36	261	35	336	36	180
Sugar	32	530	24	523	5	1420
Battery	19	640	6	608	4	837
Kerosene	35	530	36	256	21	185
Newspaper	3	433	0	0	1	200
Matches	37	68	37	23	25	40
Tea	27	311	16	160	5	178
Soap	38	402	35	284	31	235

(Source: Household Census)

Based on the two weeks of purchases recall data, per household weekly mean expenditure was found to be for Makoga Tshs 2557, for Kipengere, Tshs 1303, and for Kisinga a low Tshs 812.

The top five most often purchased items for all villages are soap, matches, kerosene, meat, and salt. It is interesting that sugar is purchased by relatively few households, especially in Kisinga. Major purchases of durable goods as noted before, are usually made at the local monthly markets. Respondents were asked about purchases of clothing, cooking utensils, buckets, livestock, agricultural implements and iron roofing sheets. Purchases

<sup>13</sup> Totals noted in text include one household in Kisinga reporting Tshs 100 of cigarettes.

averaged Tshs 7845 for Makoga, Tshs 2266 for Kipengere, and Tshs 4312 for Kisinga.

There was only one household spending substantial quantities on livestock. This gentleman is employed in the fattening and reselling of cattle from Makete. If his figures are excluded from Kisinga, Kisinga's figures fall below the rest again.

#### D. Standards of Living

Measures of the standard of living found in the three surveyed villages were taken through the use of 24 hour dietary recall, a material inventory of household possessions, and an opinion poll of respondents. Important aspects of the dietary recall were noted in the discussion of village agriculture in terms of the variety found in the diet. It was also found that food resources are adequate such that 3 meals were taken daily by most. The 17 meals of 363 recorded which were missed were skipped due to being away from the homestead.

Houses in the surveyed villages were predominantly of brick construction, with grass thatch roofing and mud floors. Kisinga had the highest proportion of iron sheet roofs reflecting its householders' past as wives and now, widows of well paid migrant workers. In Makoga, bricks are predominantly mud and not burned. In Kipengere and Kisinga burned and mud bricks each represent about one half of total construction.

**Table 25: House Construction Materials**

(N=Number of Buildings)

Section of House	Materials Used	Makoga N (%)	Kipengere N (%)	Kisinga N (%)
ROOF	Thatch	112 (95%)	81 (91%)	67 (85%)
	Iron Sheets	9 (7%)	8 (9%)	12 (15%)
WALLS	Burned Brick	15 (12%)	42 (47%)	42 (53%)
	Mud Brick	106 (88%)	46 (52%)	31 (39%)
	Wattle/Daub	--	--	6 (8%)
FLOORS	Cement	5 (4%)	11 (12%)	4 (5%)
	Mud Brick	--	5 (6%)	--
	Earthen	116 (96%)	73 (82%)	75 (95%)
BUILDINGS	Average No.	3	2.2	1.9

(Source: Household Survey)

The small average number of buildings from Kisinga reflects the large numbers of female headed household and widows from polygynous unions.

Findings differ from Strauss 1993, who found 36% of all households in possession of some iron sheet roofing. The 1993 data reflect that households were apparently counted as having one building/one roof each and did not reflect the fact that most households have more than one dwelling in their compound. Also, as a measure of income level burned versus mud bricks are more usually an indication of the relative clay content in the local soil.

Given this plus the fact that most burned bricks are produced by householders themselves puts into doubt the effectiveness of this as a measure of income levels.<sup>14</sup>

Finally, it should be noted that though not reflected in the data from household surveys all members of the team were struck by the level of on-going new house construction. Quite a large number of new homes have new iron sheet roofing, though the majority of new homes have been given grass thatch roofing.

Consumer durables owned by sample households were noted in the material inventory completed for each household.

**Table 26: Consumer Durables**  
(Number of items/Number of households)

ITEMS	MAKOGA	KIPENGERE	KISINGA
Hurricane Lamp	38/26	23/18	4/3
Pressure Lamp	--/--	--/--	2/2
Watch	29/24	26/21	8/7
Radio	--/--	22/17	10/8
Radio-Cassette Player	19/17	4/3	3/3
Sewing Machine	3/3	2/2	--/--
Grinder/Huller	3/3	1/1	14/14
Bicycle	20/17	11/10	1/1
Pressure Stove	4/4	--/--	2/2

(Source Household Survey)

<sup>14</sup>Though the breakdown of mud brick versus wattle/daub housing has some use for assessment of income level. Bricklaying (mud or burned) is a skilled occupation and a mason must be hired to build the house. Further, good quality thatching of roofs is often purchased as well.

Overall purchases of these durables had occurred at a considerable distance in the past. Several respondents noted that in order to purchase needed fertilizers or other necessities over the past few years a number of durables had been sold off including bicycles, watches, and radios. Figures reported by Strauss seem to confirm this. In 1993, 50% of households had a radio. This figure has declined to 25%. For bicycles, Strauss reported 42% of households owning a bicycle. Current figures are 34%. It should be kept in mind however that changes might also be a result of differences in sampling strategy. In January 1995, 65% of the 40 households surveyed in Makoga had a radio and more than half had bicycles (Fleuret 1995).

An opinion poll conducted with respondents shows that in comparison to 1993 villagers felt that conditions have improved in relation to the availability of consumer goods and of medicines. For other indicators, their ability to purchase goods, the state of education and the state of health in the villages opinions had not changed significantly.

### **VIII. Conclusions and Impact Summation**

The improvement of the Njombe-Makete road was implemented as part of a strategy for the improvement of agricultural production and marketing in Tanzania. Despite the fact that the road has ~~only been~~ completed recently, it is clear that such improvement has taken place. However, before stating the specifics of this impact it is necessary that two points be made. A key aspect to the improvement of agricultural production in the Njombe-Makete area is the potential for enhanced access to fertilizer by farmers. However, the ability of the