FEEDER ROADS PROJECT ZAMBÉZIA:

FOLLOW-UP ASSESSMENT

Mozambique

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This project was funded by the Africa Community Access Programme (AFCAP) which promotes safe and sustainable access to markets, healthcare, education, employment and social and political networks for rural communities in Africa.

Launched in June 2008 and managed by Crown Agents, the five year-long, UK government (DFID) funded project, supports research and knowledge sharing between participating countries to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources.

The programme is currently active in Ethiopia, Kenya, Ghana, Malawi, Mozambique, Tanzania, Zambia, South Africa, Democratic Republic of Congo and South Sudan and is developing relationships with a number of other countries and regional organisations across Africa.

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Abbreviations	English	Portuguese
ACDI VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance	
ADEL	Local Economic Development Agency	Agência de Desenvolvimento Económico Local
Admin	Administrator	
ADPP	Humana People to People	
ADRA	Adventist Development and Relief Agency	
AFCAP	Africa Community Access Programme	
AGRIMO	Mozambique Agriculture and Livestock Company	Companhia Agro-Pecuária de Moçambique, Lda
ANE	National Roads Administration	Administração Nacional de Estradas
AP	Administrative Post	
AP HQ	Administrative Post Head Quarter	
CAME	Improved Houses Ltd.	Empresa Casas Lda.
CBC	Consortium of Improvements and Buildings	Consórcio de Benfeitorias e Construções
CD	Compact Disc	
CLUSA	Cooperative League of the USA	
DEP	Department of Roads and Bridges	Departamento de Estradas e Pontes
DFiD	Department for International Development (British Government)	
EMAMIZ	Zambézia Company for Maintenance and Expansion of Buildings	Empresa de Manutenção e Ampliação de Imóveis da Zambézia
EP1	1st level Primary School	Escola Primária do 1º Grau
EP2	2nd level Primary School	Escola primária do 2º Grau
EPC	complete primary school	Escola Primária Completa
ER	Rural Road	Estrada Rural
Feb.	February	
Fig	Figure	
GPS	Global Positioning System	
ha	hectare	
HH	Household	
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome	
HQ	Headquarter	
ILO	International Labour Organization	
IT	Informatics Technology	
kg	kilogram	
km	kilometre	
LCC	Local Consultative Council	
LED	Local Economic Development	
LOLE	Law of Local Bodies of State	Lei dos Órgãos Locais do Estado
Mt	Metical	
MUSD	Millions United States Dollars	
N	National	

NGO	Non-Governmental Organization	
PS	Permanent Secretary	
R	Rural	
SDAE	District Services of Economic Activities	Serviços Distritais de Actividades Económicas
SDET	District Services of Education and Technology	Serviços Distritais de Educação e Tecnologia
SDPI	District Services of Planning and Infrastructure	Serviços Distritais de Planeamento e Infraestruturas
SDSMAS	District Services of Health, Women and Social Action	Serviços Distritais de Saúde, Mulher e Acção Social
SPSS	Statistical Package for Social Sciences	
STI	Sexually Transmitted Infection	

1 Summary overview

The British government's support to rural development in Mozambique included funding feeder road rehabilitation to help improve the living conditions of rural communities with better access to markets and services. The Zambézia Feeder Roads Project rehabilitated over 900 km of rural feeder roads in Zambézia Province from 1996 to December 2001, using labour-based methods.

The Project was implemented by the National Roads Administration (ANE) through the Zambézia Provincial Department of Roads and Bridges (DEP) and it was financed by the British Government's Department for International Development (DFiD). In 2001 a study was carried out to assess the immediate social, economic and cultural impacts of the Project on the communities along the improved roads.

The present Follow-up Study of the Social and Economic Impact of the Feeder Roads Project in Zambézia Province was designed to assess the outcomes and consequences of the Project on communities and people living in the vicinity of rehabilitated roads, ten years after the Project's final socio-economic impact study. The study covers communities in the districts of Ile, Maganja da Costa, Mocuba and Morrumbala. The road network in these areas was improved between 1996 and 2001. The study covers the roads between Mocuba and Nipalaga, Mocubela and Bajone, Alto Benfica and Derre, Bive and Maganja, and Mugulama and Ile.

As part of the follow-up assessment a field survey was carried out. This survey covered five communities along the five roads mentioned above and four others in the area which were to serve as controls. In the five target communities five enumerators interviewed 315 household heads or their representatives using a questionnaire in Portuguese which was translated on the spot into the local language. In all nine communities group interviews were held to provide the background for a qualitative analysis. Finally, on every road in the study a traffic count of 24 hours over three consecutive days was carried out.

The results of the study indicate several important changes since the conclusion of road works in 2001:

- Increased access to services and number of social infrastructure (schools, health units, water supplies);
- Increased number of small businesses;
- Intensified resource use with a concurrent increase in local processing and trade (markets for agriculture products, small traders, small processing industries, sale of charcoal and firewood);
- Increased flow of goods and transporters;
- Increased market activity;
- Changes in settlement patterns with people moving from areas further away to the roadside;
- The growth of logging and charcoal burning and their commercialization;

- Although the project has in its objectives that 25% of the contracted work should be female, the hiring of women workers was in retrospect, considered far short of the expectations of women in general;
- An increase in women's participation in the informal labour force as an income generating activity.

Longer term changes such as an increase in services and business activities have occurred close to the roads and along their length. The benefits of these, and indirectly, of the road are hardly felt in communities that are located away from these roads.

Factors that influence the different outcomes of road rehabilitation in the longer term are the presence of NGOs, the quality and ease of passage given by the roads, their connections to networks and viable developing growth poles, and the presence of natural resources or other economic drivers in the influence area.

Cultural changes are limited, but women have been stimulated by their original participation in road rehabilitation and maintenance through the Project to see their work outside the home as a fair right and to participate with much greater frequency in labour-based income generating activities.

Improved standards of living and access to services, especially on the Mocubela-Bajone and Alto Benfica-Derre roads have caused social changes within households. Bicycles and motorbikes are affordable forms of transport used by all family members to strengthen economic and social networks.

The road along which local communities appear to have been least benefitted by rehabilitation is from Mocuba via Nipalaga to the badly maintained main road leading to Milange and Malawi. This section is mainly used as a through-road by traffic with few stopping points along the way.

The appearance of new settlements and the increasing population in some communities along the roads signify importance demographic changes as people have moved closer to the road attracted by, in particular, the possibility of marketing agricultural produce.

Main conclusions of the follow-up assessment include:

- Full consideration of the current and potential functions of each road to be rehabilitated in terms of its potential users and route linkages is essential to guarantee benefits to the local population.

- Targeting roads for rehabilitation should take into account the potential productivity of an area and make linkages into a network connecting production areas and markets.

- Tailoring road rehabilitation so it can incorporate design improvements related to encouraging the most appropriate road users and uses that trigger local development, may increase the local benefits of rehabilitation significantly.

- Road rehabilitation undoubtedly contributes to improved access to services, but the benefits extend mainly those living close to the road and within a limited radius, depending on the affordability and availability of transport.

- The project specifically targeted the involvement of women and the significant rise in the proportion of women who engage in wage labour in various activities is testimony to longer term changes in attitudes and practices.

- Road rehabilitation leads to an increase in the pressure on natural resources such as land, water and timber and unless there are efforts to protect the resources and local community rights to use them, the outcomes may include lower food security and less livelihoods sources due to erosion, soil fertility loss, unselective wood extraction, and higher competition for resources by outsiders.

On the basis of these conclusions the following recommendations are made:

- Assess the role of a section in the regional transport network before deciding on its improvement. There is little use in investing in orphan roads with no access at the beginning or the end;
- Prioritize roads that open up production areas and link these to local, regional and national markets;
- Take into consideration the inclusion of design changes in road rehabilitation: it may not be enough to invest in surface improvements or bridges if the gradients are too steep for trucks;
- Integrate road rehabilitation works with investments by government and NGOs in social infrastructures, taking into consideration likely changes in settlement patterns;
- To increase the opportunities for women to benefit from labour opportunities offered by road works and by associated induced development it is important that investments are made in the continued education of girls, adult education of women and to investigate and promote areas most suitable for the employment of women in road rehabilitation and maintenance and in other jobs;
- Reduce the risk of uncontrolled extraction and use of natural resources in areas opened up by road rehabilitation by a) ensuring institutional support is provided to district authorities in parallel with the road rehabilitation programme for licensing and monitoring implementation of planned extraction, and b) supporting the communities responsible for use, management and monitoring of these resources.

2 Introduction

2.1 Background

The Zambézia Feeder Roads Project rehabilitated over 900 km of rural feeder roads in Zambézia Province from 1996 to December 2001, using labour-based methods.

The Project was implemented by the National Roads Administration (ANE) through the Zambézia Provincial Department of Roads and Bridges (DEP) and it was financed by the British Government's Department for International Development (DFiD).

Project implementation aimed to balance the creation of benefits for local communities with business development for local small contractors.

In 2001 an assessment of the impact of the road rehabilitation (Scott Wilson, May 2001) was made and it was concluded that although only a limited number of changes were directly attributable to Project-related improvements, there were some more general changes in local development taking place in the communities in the influence area[1] of the rehabilitated roads.

According to this study

> "Over the course of the Project, over 15,000 people were employed as labourers along the roads, and over 1.1 million person-days of employment were provided, earning over 1.3 million dollars in wages" (Scott Wilson, May 2001).

This represents a significant injection of cash into local economies and communities, benefiting a large number of people living along the roads.

Assuming that their lives could be changed and that some of the benefits in the communities may have had a lasting effect, this evaluation aims to take stock of the major impacts and changes over the past 10 years.

2.2 Assessment Objectives

The Follow-up Study of the Social and Economic Impact of the Feeder Roads Project in Zambézia Province was designed to assess the outcomes and consequences of the Project on communities and people living in the vicinity of rehabilitated roads, ten years after the Project's final socio-economic impact study.

[1] Communities considered to be within the area of influence are all those located within a 2 km strip on either side of the road. Data on the communities studied cover the entire community, not just the community members living within 2 km on either side of the road.

The study's specific objective was to assess changes and impacts of Project activities designed to create positive socio-economic benefits in key areas affecting rural livelihoods in communities and people living along and in the vicinity of rehabilitated roads in the Project area, in particular:

- The involvement of local people (especially women) in (maintenance) labour on the roads;
- The positive trends created by the impact of project wages and employment; and
- The wider impact that the rehabilitated roads had upon livelihood strategies along the roads.

Given the strategic location of some of the rehabilitated roads, impacts of the rehabilitated roads at regional level were also included focusing on issues of connectivity and commercialization of local products.

Information and analysis regarding gender issues were also addressed as cross-cutting issues throughout the assessment, especially referring to women's employment on the roads. Community rights to land use, access to natural resources and HIV/AIDS awareness were part of the scope, too.

Finally, the study aims to identify key lessons learned from the approaches towards sustainable rural livelihoods and rural roads rehabilitation and maintenance.

2.3 Structure of the report

The report consists of nine chapters. The first two chapters are the summary overview and the introduction. The third chapter provides a short account of the Zambézia Feeder Roads Project as it was implemented between 1996 and 2001 and the main impacts observed in 2001. Chapter four presents the approach. It lays down the rationale of the study, the activities and tools and explains how gender will be treated. It also contains a short summary of what were taken as the key indicators of change.

The following chapters contain the results. Chapter five presents the context. Over the last ten years many things have changed in governance, the role and organization of local government and in the way community participation in government is organized. There have also been some important changes in macro-level, national sector policies. Chapter six contains the changes that have been observed with regard to livelihoods, natural resource use, local enterprises, trade and the role of NGOs. It also addresses changes in the social infrastructure along the roads and the five study communities, focusing on education, health and water supply. Chapter seven looks at the role of women. It highlights socio-cultural dynamics and how cultural changes affect the possibilities of women gaining access to natural resources, services and employment.

The last two chapters provide the analysis of the results, and final conclusions and recommendations.

3 Overview of the Zambézia Feeder Roads Project

3.1 Project Objectives

The Project was a major investment by DFiD in Southern Africa and represented a key component in DFiD's poverty reduction strategy for the region. It was designed to reopen 900 km of feeder roads, creating sustainable access improvements in order to increase socio-economic development and prosperity of rural households.

To this end, the Project included components designed to ensure the development of local capacity to guarantee maintenance and sustainability of the roads in the province. The components included:

- Development and support of a number of small private contractors to encourage local road rehabilitation and maintenance capacity;
- A local labour-based approach to road rehabilitation and maintenance;
- Community engagement to facilitate hiring of the workforce, to encourage participation of local communities and especially women.

The Project also assisted in mobilising communities for recruitment by local contractors. In addition it also engaged in HIV/ AIDS awareness creation in communities and at work camps along the roads, and monitored contractors' provision of condoms and health care services at the camps.

A social impact monitoring process constituted an integral part of the overall Project programme in order to identify and track changes occurring in the short term.

3.2 Socio-economic characteristics of the communities served by the roads

Before rehabilitation, most of the roads studied were in a very poor state and seasonally impassable especially for motorized vehicles, mainly due to a lack of maintenance and washed away bridges. Traffic use on these roads was nil or extremely low.

The Gender and Employment Report of the Project (Sustém Consultores Lda, February 2000), estimated that 1.67 million people were directly affected by the rehabilitation of roads in the Project's life time, of which about 800,000 were women.

The report identified nine districts (Ile, Lugela, Maganja da Costa, Milange, Mocuba, Mopeia, Morrumbala, Namacurra and Namarroi) as having benefited directly, and that according to the Second Population Census undertaken in 1997, about 130,000 households along those roads were female headed rural households (of a total of 216,000 in the whole province). Of these households, some 73,000 were estimated to be headed by members of vulnerable groups such as single/separated/divorced/widowed women, who were the main, and sometimes only, income earning members of their households.

The majority of people living along Project roads were small-scale farmers operating at subsistence level. The small reserves of financial capital they built up were from the casual sale or processing of agricultural surplus or products acquired from natural resources.

Only a few people had any experience of formal wage employment of any kind, and the economy was weakly monetised (with little stimulus since the war, the exchange of goods and labour frequently took the place of money exchange).

This situation changed after rehabilitation of the roads, largely due to the direct employment of 15,000 people as labourers on the Project, and some of these having made changes to their livelihoods conditions that positively affected their households. Employment on the roads, although it represented a short term income source, facilitated an improved circulation of money.

Agricultural production increasingly became an income-earning activity for residents along all Project roads. According to the impact study report by Scott Wilson in May 2001, the overwhelming majority of small-scale farmers operated on landholdings of between 0.5 and 1.5 hectares, men and women sharing work on the land.

Through improving the feeder roads, transport and communications were improved, and links were made to the regional roads network.

3.3 Main impacts of the Project identified in 2001

The Analysis of Phase 4 Interviews and Other Observations (Scott Wilson, May 2001) pointed out some important issues recognized as impacts of the road rehabilitation which included the following:

- Private sector growth and development

  The Project encouraged the emergence of small construction companies with experience in labour-intensive techniques for rehabilitation and maintenance of the roads. Using local labour, these small enterprises contributed importantly to the growth and development of local communities.

- Roads development

  The improvement of roads allowed greater flux of motorized and non-motorized traffic. This seemed to favour the greater circulation of bicycles and motorbikes (mostly), many of which were used as public transport. However higher numbers of larger vehicles also increased the transportation capacity of goods and people on these roads, promoting significant changes in the life of roadside and nearby communities.

- Community development

  The rehabilitated roads had impact upon livelihood strategies along the roads. Approximately, 1.3 MUSD were injected into the local economy through local employment with contractors. This is one of the main impacts of the rehabilitated roads causing changes in household life, and creating opportunities for more sustainable development and well-being.

The positive trends created by the impact of project wages, employment providing skills and improved self esteem among local people (especially women), constituted important aspects and the basis for the changes in households' incomes.

Road rehabilitation made changes to the way of life of communities, providing the resources and access to open new farming areas and the adoption of new crops creating better food security. The easier access also enabled greater use of health and education services and increased mobility, strengthening social networks.

- Women's development

Women's access to work on the roads was an important starting point for creating a positive mentality about a role for women in tasks outside the home.

The final Social Impact Report (Scott Wilson, May 2001) noted that before the Project began, employment was not a considered option for women in communities along the roads studied.

The women who went to work on the roads were largely single mothers and widows. Need and greater independence in decision-making contributed to this.

The few married women who did work on the roads were less constant, and some registered for work but then passed the position on to their husbands or to an unemployed brother.

4 The 2012 Assessment Approach

4.1 Overview and Rationale

The study Terms of Reference required the follow up assessment to be carried out in five areas where the social impact study had taken place. Five study communities were selected as a generally representative cross-section of the variable agro-ecological conditions in Zambézia. Each community also has specific characteristics that affected its development processes. Some of the households in the communities that were included in the Project's monitoring and evaluation framework were revisited.

The rehabilitated roads where the study communities are situated are shown in Table 1 below:

Table 1: Study communities and roads

Community	Road	Old Road Classification	New Road Classification	District	Length of road
Dugudela	Mocuba/ Nipalaga	ER 227	N 321	Mocuba	39 km
Damião	Bive/ Maganja	ER 479	Unclassified	Mocuba	88 km
Maticula	Alto Benfica/ Derre	ER 472	R 652	Morrumbala	61 km
Muaziua	Mugulama/Ile	ER 487	R 1114	Ile	41 km
Nialene	Mocubela/ Bajone	ER 485	R 656	Maganja da Costa	50 km

Source: Scott Wilson, Mocuba, 2012

There has been a change in the classification of roads since the Feeder Roads Project was completed, as the above table (Table 1) shows. One road has been upgraded to a national road (N 321) and one declassified turning it into a local road under the responsibility of the District.

These changes in road classification reflect the Government's perception of the strategic importance of each of these roads and this evaluation contributes to a clearer understanding of some of the reasons for these decisions.

The map in Figure 1 below shows the location of each one of the study roads:

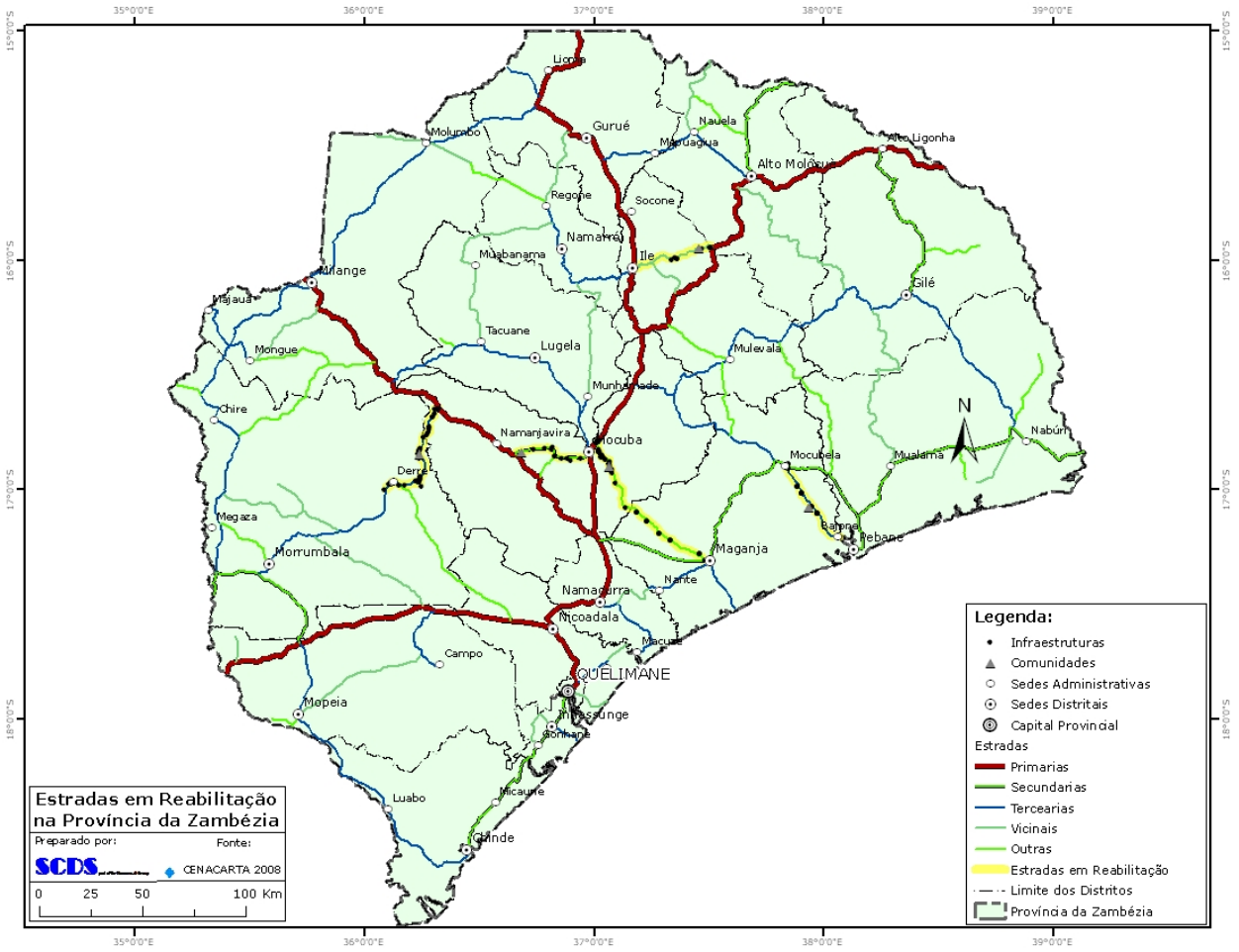

Figure 1: Location of Study Roads

The map shows that four of the study roads connect to a corridor, facilitating linkages between neighbouring countries, the provincial capital (Quelimane) and the Zambézian coast. These four roads connect important local development poles. A short summary of the main characteristics of the five roads studied follows below:

- *Mocuba – Nipalaga (Dugudela community)*

  This road has been reclassified and was being asphalted during fieldwork. The District Director of Planning and Infrastructure of Mocuba explained that asphalting the road is due to its importance as a connector between Mocuba and Milange on the border to Malawi. It will allow passage for goods to be transported to Malawi from the port of Nacala and vice versa. Given the importance of this link, it has been upgraded from a Rural to a National Road in the new road classification system. The contractor responsible of the road rehabilitation is Mota Engil.

  This road has a regular flow of vehicles, but local access to transport is only modest as many vehicles are already full with passengers and goods when they pass through.

Local community leaders say that the road serves the interests of Malawi in commodity flows from Nacala, and the end destinations of Mocuba and the Administrative Post of Namanjavira and Milange, rather than local development along the road.

Dugudela is the studied community on this road.

Figure 2: Road rehabilitation – pre-asphalt

Figure 3: Mocuba-Milange passengers and goods transportation

- *Bive – Maganja (Damião community)*

This road links Mocuba and Maganja da Costa and facilitates connection with other districts. Traffic includes loggers and other smaller transporters.

The road crosses an area of lumber camps (in the community of Etabo, for example, there are three timber concessions (Nelson, Rossil e Soimadeira), the largest of these being 45,000 ha and the other two around 5,000 ha each, and two sawmills, one of which also cuts timber as well. The timber and cut wood is transported along the road to Bive and beyond. Some of the timber is extracted illegally, particularly in Macuia and Etabo from where the illegal logs are transported out of the area at night.

Damião is the studied community on this road.

Figure 4: Bive-Maganja road

Figure 5: Firewood on sale by the road

- *Alto Benfica – Derre (Maticula community)*

Due to its proximity to Milange on the border with Malawi, the importance of the road is associated with cross-border marketing of agricultural produce.

In addition it connects Mocuba and Morrumbala providing links to in-country markets for cereals and timber. There is one forestry concession and three operators with annual licenses to extract wood on this road. Some interviewed transporters also asserted that the local produce passes from Mocuba to Quelimane.

Maticula is the community studied on this road.

Figure 6: Alto Benfica-Derre road

Figure 7: Timber transportation

- *Mugulama - Ile (Muaziua community)*

This road should connect Ile District to Alto Molócue and Nampula. However, due to it crossing a mountainous area, there is a section of about 15 km (from Ile to Mutetereia), where the road is too steep for loaded lorries to pass. During the rainy season the road is practically closed to vehicles, and transporters will only load up their lorries in places where they can avoid steep areas. Transporters from Nampula and Alto Molócue trying to link with Ile District, must add more than 60 km of highway to their journey to Mugulama-Nampevo crossroads to Ile.

Muazíua is the studied community on this road.

Figure 8: Mugulama-Ile road

Figure 9: Bicycle transport

- *Mocubela – Bajone (Nialene community)*

The fifth road has no connection with a corridor but links large coconut palm plantations near the coast with local markets. It connects Mocubela and Bajone and channels the flow of local products. The main product of this area is coconut as there are extensive coconut palm plantations. The produce is transported to Mocuba, Maganja da Costa, Quelimane, Nampula, Beira, and Maputo.

There are two operators with annual wood extraction licenses and storage and cutting points in Nialene.

Nialene is the community studied, on this road.

Figure 10: Mocubela-Bajone road

Figure 11: A palm tree plantation

Aside from the five studied communities on each rehabilitated road, four other communities located close to the study roads, but outside of the two kilometre influence zone, were also chosen with the aim of trying to establish control sites, for focus group discussions to be carried out.

Information was collected along each road and in each respective study community, in order to assess the main changes after ten years and whether these could be attributed to the roads' rehabilitation.

4.2 Assessment Methods

4.2.1 Activities

The work was divided into an inception and a research phase.

In the inception phase a reconnaissance visit was carried out by the field team to all the roads identified for study. This first phase also involved a review of Project documentation, identifying the logic of intervention, objectives and how to assess key indicators used for measuring the outcomes of the Project.

At this stage it was also important to understand the history of each of the roads, and the consultant tried to verify the maintenance and repair history of each of them over the last ten years in order to be able to create the context to understand the main trends of development along each of them.

Following the inception phase, an approach was developed based on various research methods, in which a primary qualitative component was supported by various quantitative elements.

Thus in all study communities qualitative instruments were used to provide a community characterization, and the means of listening to the opinions of households and women in particular. Along each of the roads group discussions were held with heads of household, leaders, women and community leaders. More than 100 key informant interviews were carried out with province and

district levels institutions, private operators, local government representatives, local leaders, women, contractors, transporters, small business owners, market vendors, intermediaries, and road workers. A photo story of existing infrastructures and thirteen case studies were also made.

The consultant used field observation throughout the work, and this forms an important basis for comparative analysis of situations found on each one of the roads.

To complement and complete the information collected via discussion groups, 315 questionnaires were also administrated in the five study communities.

On every road in the study a traffic count of 24 hours over three consecutive days was carried out.

The following table (Table 2) summarizes the types of people that participated in the assessment during the field work along each road.

Table 2: Participants in the field research

Instruments	Stakeholders	Roads / Communities					
		Mocuba/ Nipalaga (Dugudela)	Bive/ Maganja (Damião)	A.Benfica/ Derre (Maticula)	Mugulama/ Ile (Muaziua)	Mocubela/ Bajone (Nialene)	Control communities*
Discussion Groups	Households	*2 groups (26 households represented)*	*2 groups 25 households represented)*	*2 groups 27 households represented)*	*2 groups 26 households represented)*	*2 groups 26 households represented)*	*2 groups 27 households represented)*
	Women	*2 groups (22 households represented)*	*2 groups (28 households represented)*	*2 groups (11 households represented)*	*2 groups (55 households represented)*	*2 groups (19 households represented)*	*2 groups (30 households represented)*
	Community Leaders	*1 group (6 leaders represented)*	*1 group (12 leaders represented)*	*1 group (18 leaders represented)*	*1 group (12 leaders represented)*	*1 group (9 leaders represented)*	
Questionn-aires	Households	*63 households*	*63 households*	*63 households*	*63 households*	*63 households*	
Case studies	Men	*3*	*2*				
	Women		*1*		*2*	*5*	
Semi-Structured Interviews	Local Government	*Admin; SDAE;SDPI*		*SP;SDAE; SDPI; technical sector*	*Adm; SDAE; SDPI;SDET; SDSMAS; Head of AP HQ; Head; Head of HQ Locality; Head of Phalane Locality*	*SP;SDPI; SDAE; Head AP Mocubela; Head Bajone locality HQ; Head Naico Locality*	
	Women		*2*		*5*	*5*	
	Contractors	*1*	*1*		*1*		
	Small			*3*	*9*	*6*	

Instruments	Stakeholders	Roads / Communities					
		Mocuba/ Nipalaga (Dugudela)	Bive/ Maganja (Damião)	A.Benfica/ Derre (Maticula)	Mugulama/ Ile (Muaziua)	Mocubela/ Bajone (Nialene)	Control communities*
	business owners						
	Transporters	*35*	*0*	*4*	*3*	*6*	
	Market vendors/ inter-mediaries	*4*	*3*	*8*	*6*	*4*	
	Road workers		*1*		*3*	*5*	
	Private/ Institutions		*ADRA*	*World Vision; OLAM*		*ACDI Voca; ADRA*	
	Others	*Scott Wilson, ANE, Provincial Forests and Wildlife Services, , Provincial Directorate of Commerce, Provincial Directorate of Tourism, Provincial Geography and Cadastral services, Provincial Directorate of Mineral Resources and Energy.*					

* Control communities were: Namambiri, Murangano, Machona and Mebudana

The consultant prepared guides for semi-structured interviews and focus groups, questionnaires, frameworks for recording transport and merchandise costs, infrastructure and for counting traffic and photographs. After three days of training by the consultant, these materials and their implementers were tested on the ground. The materials were then updated where necessary and reprinted for use in the study (Annex 10.1 contains the research instruments).

After fieldwork ended video testimonies were collected of the study communities in Damião and Muaziua (in a DVD attached to this report)[2].

Special efforts were made to control the quality of information obtained in the field. A team of facilitators and enumerators was coordinated and overseen by supervisors charged with ensuring the best application of the sampling methodology, implementation of the research tools and supervision of the results of the field work. The supervisors also had a leading role in the management of semi-structured interviews and observations.

The qualitative information gathered during fieldwork was summarized in matrices to facilitate their analysis.

The records of infrastructure and the traffic count were summarized in tables so that they could be compared with similar previous data, where available.

[2] A short documentary film was compiled from these testimonies. This supported a PowerPoint presentation at the Second AFCAP Practitioner's Conference for rural transport professionals in Maputo, 3rd to 5th July 2012.

The data from questionnaires were coded and put into a database. The data were cleaned and analysis made in SPSS (Statistical Package for Social Sciences).

4.2.2 Tools

4.2.2.1 Discussion groups.

Focus group discussions were carried out in all sample and control communities. These groups were:

- Groups of household representatives (men and women);

- Groups of women;

- Groups of community leaders

Group discussions aimed to qualitatively assess long term changes in livelihoods resulting from changes in access.

4.2.2.2 Semi-structured interviews

Semi-structured interviews were carried out in the capitals of the target district and administrative posts, with government representatives (district administrators, permanent secretaries, directors of district services, heads of administrative posts), representatives of relevant institutions and NGOs, contractors and other key informants. At locality level, interviews were realized with locality presidents and local community leaders. The latter were also important to obtain specific information on the role of the road in local livelihoods and on the characteristics of each study community.

Also along the road, interviews were carried out with informants considered important to help understand the history and trends of local development (teachers, nurses, religious leaders, etc.), shop owners, informal traders, people who were hired to work on rehabilitation and maintenance of roads during the past ten years, and people who have moved close to the road since rehabilitation. These interviews were done to gain a more complete idea of road history over the past 10 years and what effects the road rehabilitation had on the well-being of households and businesses.

The study also foresaw follow-up on the progress of the nine contractors that worked on the Project. However, only three of the small enterprises are still operating and their representatives were difficult to find. Only one of the small contractors, EMAMIZ, was interviewed. EMAMIZ is currently rehabilitating the Bive-Maganja road.

CBE and CAME are the other two active contractors. It was not possible to interview them as they were not available during the field work period.

4.2.2.3 Short Questionnaires

A questionnaire was applied to 63 households in each of the five target communities. The questionnaire obtained quantitative data at household level on household and demographic characteristics, details of property ownership, agricultural production, marketing, resource use, knowledge about HIV/AIDS and expectations.

The results of the survey were introduced in an SPSS data base, cleaned and analysed.

4.2.2.4 Traffic Count

The traffic count on each road included all kinds of road users, from pedestrians to heavy transport. To get a clear idea of the frequency and the type of traffic that occurs in each of the roads, and to be able to do a comparison of data obtained, with the results of earlier studies (10 years ago), the counts were made during 24 hours over three consecutive days.

The traffic counts were used to analyse road use. In addition, complementary information obtained from discussion groups and interviews was used to try and understand trends in the seasonal use of roads by the various categories of user and types of transport.

This involved studying data from the previous research's traffic count for comparative purposes. For the most consistent comparison, counts were made over a three days period in approximately the same season of the year as in 2001 research

The traffic count covers the following kinds of transporters:

- Pedestrians
- Motorbikes
- Tractors
- Minibuses
- Bicycles
- Vehicles (mostly light pickup trucks)
- Trucks

4.2.2.5 Case Studies

The study also included case studies. These were carried out to compare with the testimonies of some interviewees from 10 years ago. Efforts were made to find women and households involved in the previous study, as well as others that were involved in previous work on the roads or previous case studies. However, only one of the cases actually interviewed is a follow-up from 10 years ago. Unfortunately the team did not have access to her 2001 interview.

Mobility of households on every road has been high which made it difficult to locate households covered in earlier research. The consultant made life stories following the same criteria as the previous research, trying to obtain comparative information.

Thus, the case studies involve men and women and trace the paths followed by them over the 10 years since the Project's impact assessment.

Video recordings of the case studies captured some of the changes on each of the roads.

4.2.2.6 Control communities

Four communities close to the study communities, living on roads that were not rehabilitated, were identified as control communities. A brief observation and discussion groups with two groups of household representatives and two groups of women were carried out at each place.

4.2.3 Women's Perspectives of the Project

According to the Project's Gender and Employment Report (Sustém Consultores Lda, February 2000), the Project tried to identify and introduce more effective and dynamic mechanisms to address the questions of gender, and in particular to benefit women in rural areas by involving them in road rehabilitation activities.

Following this line of thought, throughout the research special attention was given to the involvement of women in the different aspects studied. A gender perspective was thus included in the analysis of all issues related to the development of roads and the way of life of households.

4.3 Key indicators of change

The impact analysis is centred around key indicators which are consistent with the previous studies. The following sections provide a short description of each of the indicators.

4.3.1 Role of the road in the regional road network

An important factor influencing the impact of a road on its surrounding society is the role it occupied in the road network. Roads that lead "from nowhere to nowhere" will have less impacts on the people living next to them than roads that connect a hinterland to the coast or a pole of production to a regional market.

Road rehabilitation may lead to a change of the position of a road in the network as it may become a more attractive alternative and displace a previous connection as the favourite route for the transport of people and commodities.

4.3.2 Settlement pattern

One impact roads may have is the attraction of people from the interior to the roadside. The result is an increase in settlements along the road. These settlements may acquire a linear structure as it is more important to be close to the road than to a specific centre of a settlement nucleus.

Settlement may also be associated with the kinds of building materials used. If roads influence local livelihoods one may expect an improvement in the quality of construction, for instance transiting from plant-based to mineral-based (hay, cane and sticks to bricks and corrugated iron). There may also be changes in the design of houses as increased external contacts may influence local architecture.

4.3.3 Trade and markets

The third indicator concerns trade and markets. This indicator has two elements:

- Changes in farming or natural resource use in response to market opportunities that follow from improved year round access to markets;
- The emergence of local markets and commercial centres where residents sell their produce and buy commodities such as soap, utensils and assets.

The first element is basically extracted from the results of interviews with the local population. The second element is observed as it refers to changes in physical infrastructures.

4.3.4 Income and economic development

Roads may change income and economic development indirectly through the stimulation of trade and commerce, and directly through employing people. They may also change the culture of labour. For example, engaging people who traditionally do not work in a wage labour relation in a project which provides payment in exchange of labour, may change the attitude of people to wage labour and open a window for its internalization in the local society.

Another important aspect is the emergence of new economic opportunities, for example the production of new services and goods in response to regional and national markets.

4.3.5 Access to goods and services

Development is not only based on improved access, it is also supported by improvement of local human capital, thanks to, for example, the expansion of the educational system, the improvement of access to health services and the access to drinking water.

Access to key assets is the private corollary of access to public services. Key assets include agricultural tools, means of communications, and goods such as chairs and tables that are essential to a more comfortable life.

4.3.6 Traffic

Besides changes in the volume of traffic, changes in the type of traffic are important. Traffic may be for short distances, pedestrians carrying water, for example; medium distance such as going to the health centre; or long distance such as the transport of coconuts and timber out to the provincial capital for processing or shipping.

The analysis of traffic needs careful interpretation, since growth of long distance traffic may for example indicate a stronger integration of the people along the road in the wider economy. However, if it is long distance traffic that does not stop and to which local producers do not have access, it only indicates development at the road's end or elsewhere.

4.3.7 Women´s involvement

Changes in household life will affect mainly women as they are the group that is most involved in day-to-day domestic activity. Household gains will be assessed to verify if they make women's lives easier and create new opportunities for them. Special attention will be given to the following aspects:

- Women's access to land
- The inclusion of women in road rehabilitation/maintenance work and the role of contractors in this integration.
- Women's relationship to the benefits created by the improved road access:

- Access to infrastructure and services (access to water sources, education in general and literacy in particular, health and especially maternity clinics and grain mills).
- Changes in her role in relation to household income (shifting from beneficiary to provider, contribution to decisions on how family income should be distributed).
- Attitudes to life in the light of new possibilities and challenges for women.

4.4 Limitations of the assessment

The limitations of a rapid assessment in a brief moment with limited understanding in comparison to the far broader and deeper long term monitoring and evaluation that was carried out during the Feeder Roads Project obviously limited the interpretation of observations in the field.

Constraints in fieldwork included:

- The tendency for respondents to use short-term recall to answer questions about the past may have also biased the views in ways that controls could not overcome.
- Field constraints included rainy days that made it difficult to hold interviews and organize discussion groups.
- At provincial level and in some districts, there were some difficulties in obtaining access to information due to the absence of people authorized to provide it. This required follow up after the end of the fieldwork.
- The absence of an organized base list of interviewed households and informants from the 2001 impact assessment with GPS coordinates presented difficulties in finding the different potential participants. This was aggravated by considerable mobility of workers who had been contracted often accompanying the contractor on the roads where it is working and finally re-establishing in a new place. Consequently, the idea of interviewing the same people from the previous study was not possible in the available time and it had to be abandoned.

Other constraints include the paucity of indicators that could not only capture change, but could also attribute it to improved road conditions. Control communities were introduced as a means of comparing differences and interpreting the factors causing changes. The control communities were chosen on roads that had not been rehabilitated that had similar characteristics to the roads studied and were close to them (within the same region).

Given the time constraints, only four control communities were covered with a discussion group on each. The material collected from these provided no special differences that could distinguish their characteristics from communities along the study roads. This was assumed to be due to road rehabilitation having been extensive in the ten year interval: the communities selected as controls, though outside of the influence zone of the Project rehabilitated roads, were in fact within areas influenced by other rehabilitated roads, and it was not possible to identify aspects that could be used for comparison.

No quantitative information was collected from control communities as the qualitative aspects of the assessment were prioritised from the design phase with the idea of rapidly trying to obtain a

broader view in which any special characteristics might be picked out. The control communities were not the same as those monitored and assessed during the project and it was expected that focus group discussions would be able to capture the most important points in the shortest time.

Finally, injury of the main team member responsible for the final report caused the time frame to be completely revised and a delay of several months in preparing and delivering the final report.

5 Context

5.1 Reforms in administration and representation

Since 2001 there has been a strengthening of local government. Government structure in Mozambique has four levels: central, provincial, district, administrative post and the locality. For the current report the three lowest levels are the most important; the district, territorially and administratively sub-divided into administrative posts which in their turn are sub-divided into localities. The District is headed by the District Administrator assisted by a Permanent Secretary. Whereas in the past each line ministry had its own directorate at the district level (e.g., the District Directorate for Public Works, for Environment, for Planning), today, these are integrated in four District Services:

- Planning and Infrastructure (planning, environment, public works, transports and communication),
- Economic Activities (agriculture, industry and commerce, tourism),
- Education, Youth and Technology (education, youth and sports, and science and technology),
- Health, Social Services and Women (health, and women and social action).

These services are staffed by technicians who report to the District Administrator and to the provincial tier of their respective line ministries.

At the Locality level there are two closely interlinked kinds of political power. The State is represented by the Locality Head and traditional power by community leaders officially recognized and remunerated under Decree 15/2000 these include traditional leaders such as *régulos,* their assistants*,* and purely political leaders. At local level and without official recognition there are village leaders.

The Decree attributes limited privileges to recognized traditional authorities and community leaders in terms of representation and incentives such as a salary and a uniform with responsibilities such as community mobilization and local tax collection. The decree was seen as a way of promoting community participation in governance and of cooptation of local leaders into the local government system.

In 2003, the LOLE (the local government Act) was approved identifying a new de-concentrated structure for province and district governments and establishing the district as a budgetary unit. The regulations of this Act were passed in 2005.

The LOLE, enabled Local Consultative Councils to be established at four levels linking the district government and communities. Thus Village (*Povoação*), Locality, Administrative Post and District Consultative Councils were gradually established throughout the country. At all levels the Local Consultative Councils are mixed government / civil society institutions.

Local governance focuses attention on the district. The district is perceived as a "development pole". Local government consultations with civil society through local consultative forums are a key component in the preparation and implementation of the district's social and economic development plans. These consultative forums are governance institutions designed to a) ensure local issues and priorities in local development planning are made by a representative group of people, and b) to provide an institutionalised mechanism to link government and civil society (local community leaders, NGOs and private sector partners).

Where these forums include capable members in adequate numbers from representative communities, the implementation of local economic development initiatives can be effective and district planning can be made and monitored freely. In practice, assessments[3] have shown membership by an excessively large proportion of people nominated by the local government authorities rather than elected by communities.

In summary, since 2001 there have been significant phases of reorganization of local government which has tried to de-concentrate State power to the local level, a parallel informal reinforcement of political influence over a few key decision-making mechanisms, the formal integration of sectors into various district services, increased local control over budgeting and planning, and over the mechanisms for consultation.

5.2 Main development policies

5.2.1 Food production

In 1996 the World Food Summit in Rome undertook to reduce hunger by half by 2015. In 1998 the Government of Mozambique approved a strategy for the country to reach this goal. The Food Security and Nutrition Strategy and Action Plan 2008-2015 is the follow-up to the 1998 strategy.

The Government's current medium term programme establishes meeting food needs and creating jobs as key ways of reducing absolute poverty and have become the central objectives of the country's economic and social development planning scenarios These national plans focus on implementation of the Food Security and Nutrition Strategy.

The Strategy and Action Plan aims to strengthen access to resources and means of production and prioritises improving food, health and housing for all who are unable to meet their basic needs. It emphasizes the development of local food production to cover the nutritional needs of all.

[3] Analysis of Experiences Relating to Community Participation and Consultation in District Planning in Mozambique, Sal CDS and Massala, 2009.

5.2.2 Agriculture and rural development

The Agrarian Sector Strategic Development Plan 2010 – 2018 (PEDSA, 2010) prioritizes food crops and animal production to address food security needs within an accelerated agricultural sector growth plan to contribute to national efforts in reducing poverty and hunger. PEDSA´s vision for 2025 is to contribute to strengthening food security and the income levels of agricultural producers through sustainable strategies in a competitive environment while ensuring social and gender equity.

The Rural Development Strategy (2006 – 2025) calls for multi-directional collaboration, including the rehabilitation and development of economic and social infrastructure in rural areas.

5.2.3 Marketing

One of the objectives of the Trade Policy and Strategy of 1998[4] is to contribute to the growth of agricultural production in order to supply the internal market and attain food security.

One of its principles is improving marketing by improving supply conditions focusing on quantity, quality, diversity, delivery and price. Its priorities include the rehabilitation and expansion of the rural trade network, marketing family sector crops and promoting food security.

5.2.4 Participation in local development

The Government of Mozambique recognizes the importance of local economic development and the Local Economic Development (LED) methodology as a sustainable process for reducing poverty at the local level. The ILO provided technical assistance for the creation of Local Economic Development Agencies - ADEL (*Agências de Desenvolvimento Económico Local*) in the provinces as entities supporting strategy formulation and local economic promotion activities. Mozambique now has ADELs in Sofala, Manica, Maputo, Nampula and Zambézia provinces.

In this approach, community participation has a fundamental role in building sustainable development, emphasizing participation by women as key household members.

[4] Approved by the Council of Ministers in Resolution Number 25/98 of 1st July 1998.

6 Changes in the socio-economic characteristics of case study roads

6.1 Trade and markets

6.1.1 Trade and markets per road

6.1.1.1 Mocuba – Nipalaga Road (Dugudela)

Since the road begins in Mocuba Municipality in Pedreira neighbourhood, located at the junction with the national road N1 to Quelimane market, a demand for markets might be expected. However, according to interviewees and focus groups, after rehabilitation, no new markets were built along the road, and only a few informal commercial activities prevail, concentrated in the first communities at the beginning of the road.

In Cubeliua, about 28 km from Mocuba there is also a seasonal market: according to respondents, it only functions when the agricultural sales season starts.

At the time of field work, there were eight traders in Cubeliua with different goods, who, according to those interviewed, had been compensated by the construction company currently constructing the new upgraded tarmac road, after their stalls were destroyed when the road was widened.

Around Cubeliua there are some points of sale of vegetables and dried fish along the road, established by people daily sustenance as their priority.

Agricultural production all along the road is purchased by local merchants from Mocuba, who operate in the two markets at the far ends of the road. They, in turn, resell the crops in Mocuba. However, the prices are very low, which leads the producers to carry goods by bicycle to the Mocuba market, to sell their products, thereby achieving better prices without intermediaries.

Figure 12: Upgraded seasonal stall in Cubeliua market

6.1.1.2 Bive - Maganja Road (Damião)

This road makes the connection between the districts of Mocuba and Maganja da Costa and, although there is an alternative route, links Maganja da Costa and the national road. In the local context this road facilitates an important flow of forestry products. Along the road, there are three forestry concessions of reasonable size. For example, one of these has an area of 45,000 ha and two sawmills.

Parallel to this road, there is another one, from Maganja to Mocuba. This one is more frequented by transporters making the connection between the District of Maganja da Costa and the national road.

Up to two years ago the producers used to drive to the District market by bicycles, to sell their agricultural products. It was quite costly, as they only could carry small quantities of products at a time.

Given these difficulties, in the last two years a new marketing system was developed on the road, led by a group of merchants who operate in Mocuba. They apparently are mainly of Asian origin and who have negotiated with local leaders to purchase the local produce such as maize, beans and vegetables. At harvest time, they send trucks to collect the produce already purchased and concentrated at points on the road (Figure 14).

This system functions with two types of intermediaries: on the one hand, the leaders and their families (in Damião, for example, the one who buys in the produce is the leader's son), and on the other hand, the "Bangladesh merchants" as they are called by local communities. Although generally unhappy with these arrangements, the producers do not have the capacity to transport their own products to market.

Along the road there is a single market in Macuia serving the village.

Between Damião which is 35 km from the start of the road, and Mapira 10 km further on, there is considerable production of firewood and charcoal that is sold by the roadside to the owners of bakeries in Mocuba.

Figure 13: Selling charcoal beside the road.

6.1.1.3 Alto Benfica - Derre Road (Maticula)

On the Alto Benfica-Derre road, Mocuba traders hire local people to buy agricultural produce in a similar fashion to that explained above. These local purchasers concentrate the produce in their homes (they live along the road) for one or two weeks, and then the traders go there to collect it.

According to discussion groups, Mocuba traders began to use this marketing system after road rehabilitation. In addition, in the space of 10 years, new markets have appeared, such as Guja and Mpoto, and Majaua,for example.

Such markets exist in almost all villages, Alto Benfica, Maticula and Derre being the most important, the last one attended by traders and buyers from Maticula, Milange and Morrumbala, and also some from Malawi.

Along the road there are informal commercial activities, with fixed stalls for sale of food products such as dry cassava, dry fish and vegetables, clothes, and hand crafts, and to buy maize for resale mainly in Mocuba.

Figure 14: Intermediaries' collection points for agricultural produce.

6.1.1.4 Mugulama - Ile Road (Muaziua)

There are almost no vehicles circulating on this road as most heavy vehicles try to avoid the very steep hills the road crosses. The main transporters are cyclists although some trucks do reach certain key points for loading produce at either end of the road.

The farm gate sale of agricultural produce is almost solely made to "*ringuistas*", cyclist transporters who buy maize and citrus fruit (Figure 15) from producers and from two markets along the road. Citrus was introduced by ADRA in 2002. *Ringuistas* appeared on the road after its rehabilitation, in response to the demand for transport of local produce. They buy and resell to intermediaries who are camped in markets at the far ends of the road in Mugulama and in Ile district capital, where they come to buy produce and resell it to wholesale markets in Nampula province and city.

For the communities of Macucune and Mutetereia, which are situated less than 10 km from Ile district headquarters, producers sell directly to "Bangladesh buyers" who have set themselves up there. Until two years ago, the main buyers were women from Maputo, to whom the producers preferred to sell the maize because, they were considered 'good' buyers. However, with the increase in maize production in the province, this group of women now prefers to buy it in the districts closest to Quelimane.

"Bangladesh buyers" not only buy directly from producers, but in some places contract local *ringuistas* to buy maize from inaccessible communities.

Vieriua is an example of a village constrained by difficult access due to the steepness of the road. All trading is carried out villagers is at the local market or in Ile headquarters. The people transporting the produce are *ringuistas*, since the buyers do not have access to the village.

Along the road there are three markets: one in Mulevane (Muaziua) and two in Vieriua. In one of the places a weekly fair also takes place. At all these locations goods are transported by bicycle and motorcycle.

Along the road, there are three shops and many stalls, but most of them are closed.

Figure 15: Ringuista.

6.1.1.5 Mocubela - Bajone Road (Nialene)

There are four main permanent markets, two of which are in the middle section of the road: Alto Mutabide and Tagana. The other two are at the ends of the road, one at the headquarters of the Administrative Post of Mocubela and the other at Bajone. Apart from being permanent, Mocubela, Alto Mutabide and Bajone markets also have weekly fairs and are very busy places.

In terms of produce, at Bajone and Tagana there are warehouses of coconuts that belong to local producers. Alto Mutabide is the location where high concentrations of peanut buyers come from Maputo, Beira, Inhambane and Nampula.

In Nialene there are two fairs - on Saturdays and Sundays, frequented by local people.

Between Nialene and Mocubela there are several carpentries along the road, two of which belong to lumber operators with annual cutting licences. Transporters acquire timber doors in this area to market in Maputo city and elsewhere in the country.

Figure 15:Taking crops to the market on Mocubela-Bajone road.

6.1.2 Agriculture and sales of crops

The markets along the roads are largely driven by agricultural production and animal husbandry. Part of the produce of these activities is sold and the money generated is used to buy commodities and essential manufactured goods. Agricultural production and livestock rearing are the main livelihoods activities of the people living along the study roads.

Family agricultural production is basically for subsistence. Most families use rudimentary techniques to produce food crops (maize, cassava, groundnuts, beans, sorghum, millet, sugar cane and vegetables), essentially for household consumption and for sale.

Comparing the 2001 and 2012 data shows that maize, cassava and pigeon peas are clearly still the crops grown by most families and groundnuts in Nialene on the Mocubela-Bajone road). The substantial rise in the percentage of households in Nialene who say they grow pigeon peas (rising from 19% to 71%) should also be noted.

Table 3 summarises the main crops grown by the households surveyed in each study community.

The crops grown by more families tend also to be sold by more farmers. The exception is cassava that is produced essentially for household consumption. Comparing the percentage of families who say they sell these crops in 2001 and 2012, the situation is as follows:

- Except for Muazíua (Mugulama-Ile road), the number of families who say they sell maize has risen in all communities. In Muazíua the percentage of families who said they sell crops in general has fallen, probably as a result of the fact that the road is not accessible to trucks in the rainy season.
- In Damião (Bive-Maganja road), the percentage of families who said they sold pigeon peas tripled.
- In Nialene there was the substantial rise in the percentage of families who said they sold groundnuts and pigeon peas; in the latter case the rise was considerable (from 19% to 71%).

Table 3: Percentage of households that produced and sold crops in 2001 and 2012.

Crops	Communities									
	Dugudela		Damião		Maticula		Muaziua		Nialene	
	% HHs that produced	% HHs that sold*	% HHs that produced	% HHs that sold *	% HHs that produced	% HHs that sold *	% HHs that produced	% HHs that sold *	% HHs that produced	% HHs that sold *
2001										
Maize	100	72	95	55	100	75	78	100	57	8
Groundnuts	56	80	0	0	10	50	25	100	62	46
Cassava	100	11	86	11	100	10	100	15	86	17
Rice	17	33	29	0	20	50	5	0	19	50
Pigeon peas	83	67	90	26	65	62	85	82	19	0
2012										
Maize	87	82	84	77	89	86	54	56	38	46
Groundnuts	24	60	24	40	21	23	29	11	73	76
Cassava	65	39	84	43	89	39	94	29	75	53
Rice	44	18	21	39	37	13	19	0	16	30
Pigeon peas	73	83	81	82	95	97	92	60	71	53
***Jugo* beans**	2	0	2	0	0	0	6	0	10	17
Cowpeas	38	21	2	0	21	15	8	40	19	25
Butter beans	0	0	0	0	0	0	25	50	2	100
Sweet potato	2	100	3	0	13	0	0	0	0	0
Vegetables	0	0	2	100	2	0	0	0	0	0
Sorghum	2	0	8	60	21	8	43	15	14	33
Millet	2	100	0	0	2	0	3	0	2	100
Sugarcane	5	67	11	29	10	17	3	0	2	0

Note:* (% of families who produce each crop); the section in white refers to crops that were not covered during the 2001 survey,

Most of the land along most of the study roads is appropriate for maize production. Exceptions are Nialene where the soils are sandy and also some areas of Dugudela on the Mocuba-Nipalaga road. Maize is grown to feed the family and for sale to obtain an income to maintain and develop households. It makes an important contribution to household food security and is an important source of income.

Pigeon pea is another crop grown by most households along these roads that is now more important than in 2001. According to the household survey more households are now growing pigeon peas. In

Maticula, Muaziua and Nialene the percentage of families who said they are growing and selling pigeon peas is higher than those who said they are producing and selling maize.

Groundnuts, shown in Table 3 as a crop produced and sold by a large percentage of households in Nialene, were introduced as a farming alternative on the Mocubela – Bajone road by the NGO ADRA as the soil along the road is sandy and not very productive.

Figure 16: Groundnuts trading on the Mocubela-Bajone road

All roads saw a rise in the percentage of families who said they sell cassava, but the overall low figures indicate that it continues to be a crop that is essentially used for household subsistence.

Table 4 is derived from Table 3. It shows the percentage of the total population engaged in selling the five most important crops. Small changes (less that 5%) are probably due to sample errors and should be neglected. Large changes (over 10%) may well be significant. Thus it seems that there is an overall increase in the sales of cassava, whereas the trade in pigeon peas declined in Muaziua but increased in Damião, Maticula and Nialene.

Pigeon pea is not the only crop where trade declines in Muaziua. Trade shows a general decline in this community, where the percentage that sold crops went down in three out of five cases. In reality only Nialene and to a lesser extent Damião, show an across-the-board increase in the percentage of households that commercialize crops.

Table 4: Change between 2001 and 2012 in the percentage of households in a community that sold a certain crop

Crop	Dugudela	Damião	Maticula	Muaziua	Nialene
Maize	-1	12	2	-48	13
Groundnuts	-30	10	-0	-22	27
Cassava	14	27	25	12	25
Rice	2	8	-5	0	-5
Pigeon peas	5	43	52	-15	38

Crop	Dugudela	Damião	Maticula	Muaziua	Nialene
Number of crops with significant growth	1	3	2	1	4

Cotton is a crop that is produced exclusively for cash. It is not cited in the table but it is grown on the Alto Benfica-Derre road. The Maticula community leader explained that the company OLAM currently provides credit to farmers' groups to finance inputs and buys the harvest. These groups are currently farming 282 ha of cotton. The negative trend in the commercialization of food crops may be the result of this intervention promoting cotton.

Table 5 shows the main producing fruit trees that the survey households said they owned in each study community.

Table 5: Percentage of surveyed households owning productive fruit trees (2012)

	Communities				
Fruit Trees	**Dugudela**	**Damião**	**Maticula**	**Muaziua**	**Nialene**
Banana	33	52	52	56	32
Pawpaw	32	54	56	94	37
Coconut palm	44	19	27	5	88
Mango	79	64	67	92	56
Avocado	0	6	0	0	0
Pineapple	19	14	41	35	35
Cashew	81	64	56	78	78
Orange	25	32	68	16	16
Lemon	16	13	63	10	10

The table shows that:

- Cashew and mango trees are the most common fruit tree species in the area;
- Citrus is not very common except for in in Maticula (on the Alto Benfica – Derre road);
- Coconuts are particularly common close to the coast, in Nialene (on the Mocubela – Bajone road) and pawpaw in Muaziua (on the Mugulama – Ile road);
- Contrary to the results of the previous study, when the Nialene community had the greatest and the Maticula the smallest variety of fruit, Maticula now has the highest percentage of households producing citrus fruit, pineapple, mango and pawpaw, possibly due to the fertility of the soil, but it might also be associated with the development of markets for fruit, which, in its turn, may be a result of road rehabilitation.

6.1.3 Revenue from the sales of crops

Table 6 shows the volumes of products sold and the associated revenues per community and road. It makes clear that the community with the lowest production, lowest share of commercialized production and the lowest sales revenue from the commercialization of food crops is Muaziua whereas Maticula is the community with the highest production, highest commercialized share and the highest revenue from sales. This image is consistent with the results of the analysis in Table 3.

Table 6: Quantities of crops produced and sold by surveyed households in 2012 and the revenue generated

Crops	Communities														
	Dugudela			Damião			Maticula			Muaziua			Nialene		
	Qt prod. (kg)	Qt sold (kg)	Calculated Revenue (Mt)	Qt prod. (kg)	Qt sold (kg)	Revenue (Mt)	Qt produced (kg)	Qt sold (kg)	Revenue (Mt)	Qt produced (kg)	Qt sold (kg)	Revenue (Mt)	Qt produced (kg)	Qt sold (kg)	Revenue (Mt)
Maize	17,540	5,656	19,250	17,830	2,080	59,585	25,503	18,670	112,090	5,860	840	6,235	3,190	910	9,690
Cow pea	618	61	550	20	0	0	215	80	700	300	32	970	200	32	970
Butter beans	0	0	0	0	0	0	0	0	0	1,745	510	15,540	60	20	600
Pigeon pea	5,340	3,160	17,695	8,820	1,680	73,150	25,780	20,610	223,400	4,960	1,150	16,540	3,840	830	8,520
***Jogo* beans**	20	_	_	99	_	_	_	_	_	85	0	_	250	2	99
Groundnut	1,950	630	6,350	1,665	270	5,220	975	90	1,450	1,040	70	350	11,750	3,170	58,608
Cassava	13,450	4,380	6,500	14,500	870	14,410	18,560	7,245	11,450	16,491	779	9,820	13,070	1,630	1,435
Sorghum	50	0	_	345	60	430	1,190	50	180	2,243	222	1,380	320	60	950
Millet	120	20	400	0	_	_	150	0	_	40	0	_	100	20	300
Rice	2,073	202	1,130	1,020	100	2,540	2,390	190	1,050	610	0	_	980	120	2,850
Sugar cane	120	20	600	100	100	100	50	0	_	0	_	_	0	_	_
Sweet potato	100	100	99	0	_	_	200	0	_	0	_	_	0	_	_
Vegetables	0	_	_	180	30	900	99	0	_	0	_	_	0	_	_
Total	41,381	14,229	52,574	44,488	5,189	156,235	75,112	46,935	350,320	33,374	3,603	50,835	33,760	6,794	84,022
Rank	3	4	2	4	2	4	5	5	5	1	1	1	2	3	3

In the last season maize was the crop produced most by survey families in Dugudela and Damião. In Maticula similar quantities of maize and pigeon peas were said to have been produced. In Muaziua and Nialene cassava was produced most although in Nialene a lot of high value groundnuts were also grown.

As regards the income earned from the sales of crops, in the last season the sale of pigeon peas and maize provided surveyed households with the largest income, except for those in Maticula and Dugudela where the highest incomes came from selling respectively pigeon peas and butter beans.

Box 1: Estrada Bive-Maganja, Damião.

Figure 17: Vitorino Alberto`s house

Vitorino Alberto is 36 years old and lives in Damião. In 1997 he provided labour on the road.

When the road works were finished he stayed with the company and worked on other roads. He was able to save from his salary and build a house of fired bricks and with a corrugated iron roof. He also acquired fields.

The road continues to be important to him. He buys maize from his neighbours and sells this on to Mocuba.

6.1.4 Animals and the trade in animals

Raising animals is of complementary importance for household subsistence. In addition to helping to enhance the family diet their sale is a source of income outside crop marketing periods or in emergency situations (Scott Wilson, May 2001).

Table 7: Percentage of survey households keeping at least one animal in the last 12 months in 2001 and 2012

Animals	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
2001					
Goats	11	10	10	5	10
Pigs	61	43	25	19	5
Chicken	94	76	100	76	91
Ducks	6	5	0	5	19
2012					
Goats	3	0	0	14	0
Pigs	24	19	2	30	0
Poultry	54	68	76	81	76

Note: The 2001 data in this table were taken from a set of tables containing data in the Phase 4 Report (Scott Wilson, 2001)

A comparison of data from the 2001 and 2012 household surveys presented in Table 7 reveals the following:

- Keeping poultry, goats and pigs is an important component of family subsistence in the study communities;
- However, with the exception of Muaziua, the percentage of households having livestock appears to have decreased between 2001 and 2012, in particular with regard to goats and pigs. It is unclear what the reason for this decline might be.

Poultry is an important source of cash as can be seen in Table 8 where in all study communities, around 30% of the surveyed households with poultry, sold them. Part of the poultry is probably sold on the local market. This would explain why Muaziua study communities have the largest percentages of households that sold their animals even though it has the least passable road.

Table 8: Percentage of surveyed households who kept and sold animals in 2012

Animals	Communities									
	Dugudela		Damião		Maticula		Muaziua		Nialene	
	Kept	Sold	Kept	Sold	Kept	Sold	Kept	Sold	Kept	Sold
Goats	3	0	0	0	0	0	14	44	0	0
Pigs	24	57	19	17	2	100	30	32	0	0
Poultry	54	35	6	26	76	27	81	44	76	34

The difference between Muaziua and the other communities may be related to duration of inaccessibility of the road, which would make people either more self-reliant, or would reduce the probability of animals being affected by epidemics.

Figure 17: Animal trade on Alto Benfica-Derre road

6.1.5 Markets and marketing of crops and livestock

Income is generated by selling crops and animals at the farm gate, at the road side, in village markets or at district and even regional markets. Table 9 shows household preferences when selling their crops.

Table 9: Surveyed households' preferred location for selling their crops

Sale location / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Farm gate	32	73	51	46	51
Beside the road	71	6	24	44	52
In the village market or closest market	14	17	78	97	73
Fair	0	32	25	43	37
Admin. Post headquarters	5	0	0	0	3
District capital	51	18	8	2	0
Provincial capital	3	0	3	0	3

According to the table many households prefer to sell their crops at the farm gate and beside the road. This preference seems to be associated not only with internal household characteristics, but also with the existence of alternatives. In the communities that have markets (Maticula, Muaziua and Nialene), these are the preferred option.

Markets, important points especially for placing agricultural crops, exist on all other roads although on a different scale on each.

There is an informal trade network on most roads, with markets and fairs located at certain strategic points on the roads, some permanent and others seasonal. In some cases they are real embryonic development centres for commercial activity in areas with agricultural potential, as in the case of Alto

Mutabide market on the Mocubela-Bajone road. Most products - mainly agricultural crops, are moved through these markets.

In the study communities, however, there are only markets and fairs in Maticula, Muaziua, and Nialene which has two fairs a week. For most farmers in the remaining communities the solution is to sell at the farm gate and beside the road.

A significant part of the produce is not sold to final consumers but to traders, who resell them either to other intermediaries at the end of the road for example on the Mugulama-Ile road, or in the various markets in towns. Producers only occasionally manage to get to the main centres themselves and find a more profitable buyer to whom they can sell their crops directly.

The study households' preferred locations for selling animals are also at the farm gate, beside the road or in fairs. In Dugudela, 16% of the interviewed households cited the district capital as a location for selling animals, which on the one hand points at the underdevelopment of rural markets and fairs and on the other to the relevance of roads for the trade in live animals (Table 10).

Table 10: Surveyed households' preferred locations for selling their animals

Sale location / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Farm gate	14	35	32	35	46
Roadside	32	30	16	30	29
Village market	5	11	21	21	25
Closest market	0	3	2	14	14
Fair	0	30	25	32	35
Post headquarters	0	0	0	2	2
District capital	16	2	2	0	0
Provincial capital	0	0	0	2	0

6.2 Income and income generating activities

The previous sections focused on agriculture as a driver of the economy. In this section we deal primarily with income generating activities in general. The objective is not so much to quantify income, but to see to what extent over the last decade income generation has diversified.

The road rehabilitation saw the engagement of about 15,000 people as temporary workers. This has changed their mindset and wage labour is now a more acceptable option for income generation. The Project also recruited women, who are now also participating in the labour force although this was not previously seen as appropriate (see also chapter 7.3). There is still some work on roads, but contractors now tend to recruit labourers independently and take workers from one community to another.

Table 11 shows the main income activities of the study community households in 2001 and 2012. It shows that the number of income generating activities in the various communities has increased, and

that this number, which varied between 4 and 5 in 2001 now ranges between 7 and 9. The number of income generating activities is the lowest in Muaziua, which is the community that also in other aspects shows the least development.

Another important change is the commoditization of labour. Working in neighbours' fields, known locally as *ganho-ganho,* was not very usual in 2001 (Phase 4 Report, Scott Wilson, Feb. 2001). Now, according to the discussion groups, this is now quite common for men and women and has also expanded to the study communities. The household survey also found that in all communities there were heads of families and their wives working in a neighbour's field.

Table 11: Main income generating activities of households in 2001 and 2012 in each study community

Income Activities	Communities									
	Dugudela (Mocuba-Nipalaga)		Damião (Bive Maganja)		Maticula (A.Benfica-Derre)		Muaziua (Mugulama-Ile)		Nialene (Mocubela-Bajone)	
	2001	2012	2001	2012	2001	2012	2001	2012	2001	2012
Sale of a field produce	X	X	X	X	X	X	X	X	X	X
Production/sale of coconuts									X	X
Sale of small animals	X	X	X	X	X	X	X	X	X	X
Informal trade reselling produce		X	X	X	X	X	X	X		
Production and sale of traditional drinks	X	X	X	X				X	X	
Production and sale of burnt bricks		X								
Extraction and sale of white sand		X								
Production and sale of crafts			X			X	X		X	
Sale of small industrial services		X		X		X		X		X
Sale of firewood and charcoal	X	X	X	X		X				
Fishing and sale of fish										X
Working in neighbour's fields		X	X	X		X		X	X	X
Work in forestry concessions				X		X				X
Work on the road	X		X	X	X		X		X	X
Work outside the village		X						X		X
Total	5	9	8	9	4	8	5	7	7	9
Tendency		4		1		4		2		2

Note: The 2001 data in this table were taken from a set of tables containing data from the Phase Four Report (Scott Wilson, 2001).

In the 2001 impact assessment the production and sale of charcoal and firewood was found on the Mocuba – Nipalaga and Bive – Maganja roads (Scott Wilson, May 2001). Now this also occurs on the Alto Benfica – Derre road. The data in the above table illustrate that these activities used to only take place in Dugudela and Damião but are now also carried out in Maticula.

As reported in the previous assessment (Scott Wilson, May 2001), some 86% of households said they did not have any non-agricultural income activity to complement family agriculture and the sale of crops. The situation was particularly serious in Dugudela, Maticula and Muaziua. This has now changed.

Before rehabilitation there were very few or no small industries on almost all the roads. Today, in addition to being more common they now include other branches of activity due to growing demand, as reported by some respondents. Grain millers and fired brick producers, among others, are actors who have appeared in recent years in response to significant demand. In the case of fired bricks the demand comes from Mocuba. They have been joined by bicycle mechanics, carpenters, tailors and owners of video cinemas, which have also risen in number.

Figure 18: Carpentry shop on Mocubela-Bajone road

Figure 19: Crafts on Alto Benfica-Derre road

Figure 20: Mill on Alto Benfica-Derre road

Figure 21: Bicycle workshop on Mocuba-Nipalaga road

This situation along the roads extends to the study communities, where some of these structures also appeared following the road rehabilitation. In Maticula, for example, there are eight mills, in Damião eight carpentry shops, in Muaziua a video cinema and in Nialene there are six carpentry shops and five bicycle workshops (Figure 21).

Craftwork (Figure 19) and the production of local beverages, tailoring and the production of wooden doors are other non-agricultural activities that existed at the time of the previous study (Scott Wilson, May 2001), and that continue and have expanded. The fact that it is now easier to transport products to the closest towns or even to Maputo such as in the case of the sales of wooden doors along the Mocubela – Bajone road, appears to be an important stimulating factor.

6.3 Access to goods and services

6.3.1 Changes in infrastructure by road

6.3.1.1 General

This section will outline the results of surveys made in 2001 and in 2012 to provide an idea of the types of structures found along the roads and the main changes that have taken place.

Table 12 below shows a summary of the results at the two survey periods.

Table 12: Services and facilities along study roads (within a 2 km strip on either side of the road) in 2001 and 2012

Facilities/Services	Mocuba-Nipalaga		Bive Maganja		A.Benfica-Derre		Mugulama-Ile		Mocubela-Bajone	
	Comunity studied: Dugudela (378 inhabitants)		Comunity studied: Damião (1,864 inhabitants)		Comunity studied: Maticula (5,198 inhabitants)		Comunity studied: Muaziua (7,453 inhabitants)		Comunity studied: Nialene (3,509 inhabitants)	
	2001	2012	2001	2012	2001	2012	2001	2012	2001	2012
Social infrastructure and services										
Health post	0	0	0	1	1	1	0	1	0	1
Maternity clinic	0	0	0	1	0	0	0	0	0	0
School	2	5	8	14	5	9	6	7	2	5
Adult literacy	Wi	0	Wi	3	Wi	1	Wi	0	Wi	1
Hand pump	Wi	4	Wi	2	Wi	15	Wi	14	Wi	13
Water tank				1						
Wells	Wi	1	Wi	3	Wi	15	Wi		Wi	11
Commercial infrastructure and services										
Grinding Mill	0	2	Wi	3	1	17	Wi	6	Wi	0
Traders	14	26	14	39	13	18	4	36	15	31
Canteen	Wi		Wi		2	2	Wi	4	1	2
Market	Wi	2	Wi	2	2	8	Wi	3	2	5
Weekly fairs	Wi		Wi		1	1	Wi	1	Wi	3
Agriculture stores	Wi	2	Wi	2	6	6	Wi	2	Wi	9
Carpentry	Wi	1	Wi	2	1	4	Wi	1	Wi	13

Facilities/Services	Mocuba-Nipalaga		Bive Maganja		A.Benfica-Derre		Mugulama-Ile		Mocubela-Bajone	
	Comunity studied: Dugudela (378 inhabitants)		Comunity studied: Damião (1,864 inhabitants)		Comunity studied: Maticula (5,198 inhabitants)		Comunity studied: Muaziua (7,453 inhabitants)		Comunity studied: Nialene (3,509 inhabitants)	
Bicycle workshop	Wi	5	Wi	4	Wi	0	Wi	3	Wi	8
Tinsmith	Wi		Wi		Wi	0	Wi	0	Wi	
Tailor	Wi	1	Wi		Wi	4	Wi	0	Wi	4
Inn	Wi	1	Wi		Wi	1	Wi	0	Wi	
Cultural infrastructure and services										
Video cinema	Wi	5	Wi		5	5	Wi	2	Wi	3
Church	Wi	22	Wi	27	33	39	Wi	15	Wi	5
Mosque	Wi		Wi		Wi		Wi		3	17

Wi –Without information

In the sections 6.3.1.2 to 6.3.1.6 each road is described with respect to main changes and the physical characteristics of the infrastructure and other buildings found along the roads. The sections contain also short summaries of the communities along these roads that were studied (Box 2 to Box 6).

6.3.1.2 Mocuba – Nipalaga Road (Dugudela)

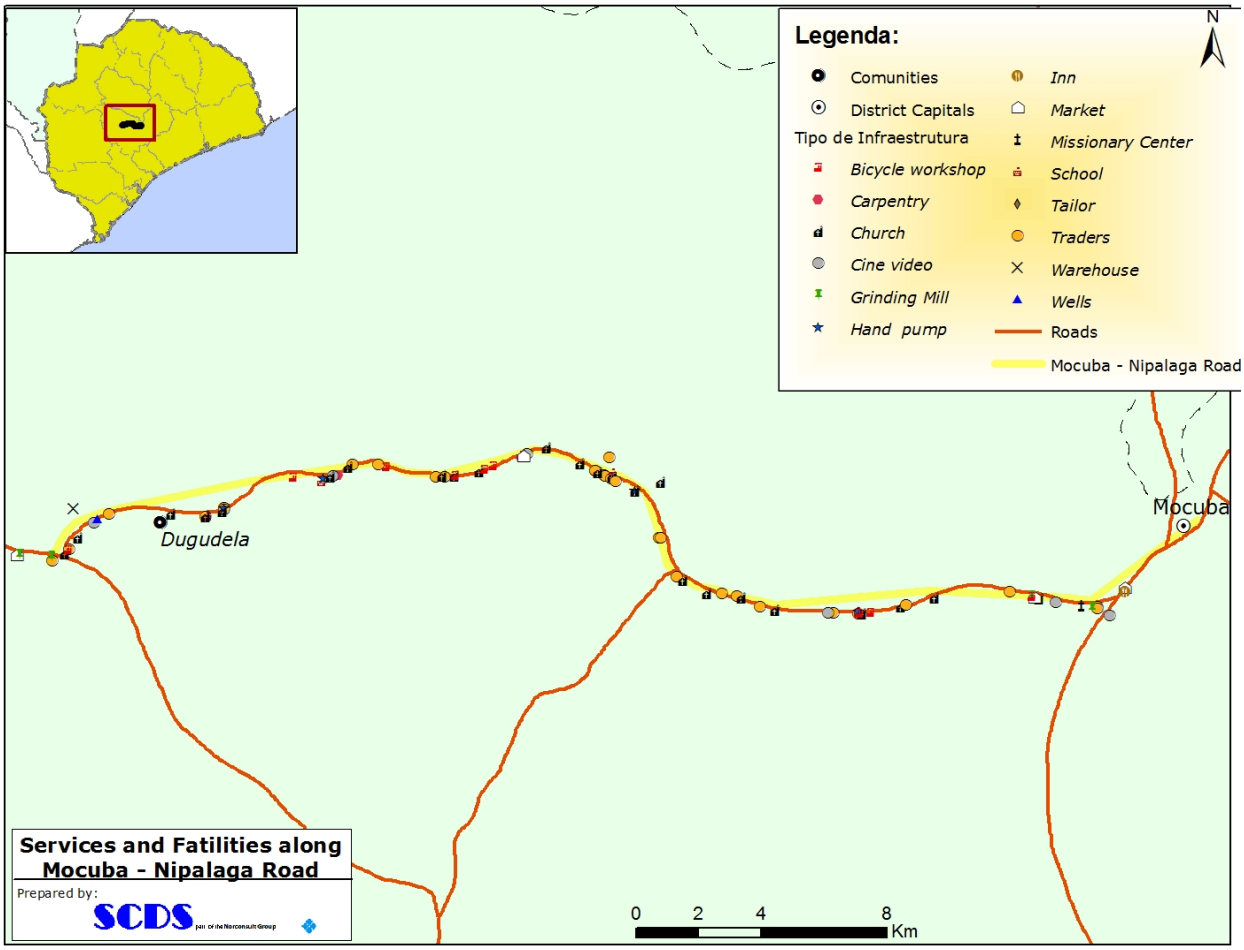

Figure 22: Map of facilities along Mocuba-Nipalaga road

The available data on infrastructure and other buildings shows that between 2001 and 2012 there has been an increase in the number of schools (two to five) and vendors (14 to 26) and there are some small businesses and small industries along the road (five cine-videos, one bar, five bicycle mechanics, one carpentry shop and one tailor). It should be noted that the five bicycle mechanic services at the beginning of the road, are located in an area strongly influenced by Mocuba town (Figure 22).

The road presents three distinct zones of population clusters. The beginning of the road passes through the neighbourhoods of Derruba and Pedreira. This last one is within the city of Mocuba, and presents some characteristics of urban settlement, even benefiting from electricity.

These two neighbourhoods contain most of the infrastructure of the road, including a market and a terminal for transport of passengers and goods, which is situated at the intersection with the N1 road in Mocuba city. These facilities serve producers along the road. Water supply is through point source boreholes and wells. Along the first part of the road, most of the houses are made of fired brick with

roofs of corrugated iron, unlike most of the rest of the road, where the houses are predominantly made of local natural unprocessed materials - adobe and grass.

The second group of settlements is in the middle section of the road, approximately 28 km from Mocuba, and Dugudela the community studied on this road, is part of it. Here the clusters are much more dispersed and characteristic of rural areas, with most houses made of local natural unprocessed materials, and some infrastructure on the side of the road such as schools, churches and informal traders. These structures are also mostly made of local materials, and many of them temporarily in-operational, especially in Cubeliua, since they are part of a seasonal market that functions only in the agricultural marketing season.

In Mebudana there is an alternative short-cut access route to the N11.

There is no health centre along the road and residents have to travel to Mocuba or Namanjavira to obtain health services.

Box 2: Dugudela, study community

Dugudela is the community that was studied along the Mocuba-Nipalaga Road. Dugudela has 170 households with 378 inhabitants - 78 men, 150 women and 150 children. Dugudela has very few social services. There is a first level primary school. Pupils who want to continue their studies to second level - EP2 have to move to Namanjavira or to Mocuba. There is a single hand pump for water supply. Both the school and the pump were built before the road rehabilitation. The closest health services are in Mocuba 29 km away and a health centre in Namanjavira 22 km away. There is no mill.

On the roadside or near the doors of houses close by, there are small stalls made of temporary materials where households sell little piles of tomatoes, onions, salt and sugar to meet their daily expenses.

Residents travel to neighbouring communities (3 to 10 km from their village) to buy their basic essentials. Goods in the closest market in Mebudana are much more expensive than in Mocuba. They are sometimes double the price.

Figure 23: Market on Mocuba-Nipalaga road

6.3.1.3 Bive – Maganja Road (Damião)

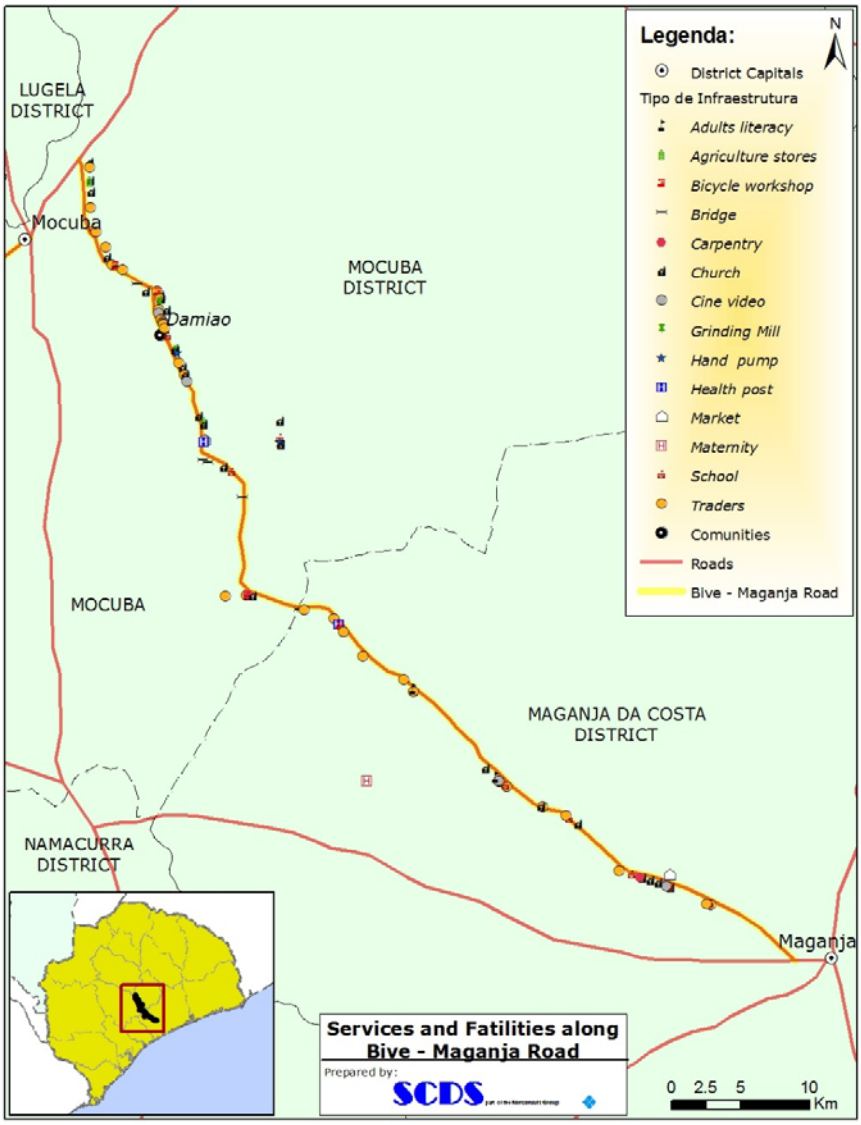

Figure 24: Map of facilities along Bive-Maganja road

Along Bive-Maganja road there has been an increase of infrastructure. The number of health posts has increased (from zero to one), schools (from eight to 14), and trade stalls (from six to 39). The existence of four bicycle mechanics is also suggestive of a fair number of bicycles using the road.

In the first five kilometres of the 88 km road from Bive to Maganja, there is some infrastructure linked to private productive activities such as old sisal plantations, and to a logging camp (Figure 24).

Mocuba substation with high voltage transmission line bays is in the village of Matebe, around 10 km along the road.

Along this road, most of the houses are made of sun-baked mud bricks or sticks with clay binding. There are many houses that are used seasonally during the planting and harvesting periods by Mocuba residents.

Access to infrastructure and services along the road is fairly limited. The highest concentration of infrastructure is in Mapira, in the middle section of the road.

In relation to water supply, in the first 45 km of road up to Mapira, there are two sources of water to serve more than six villages, and one of them belongs to a Health Centre in Macuia (the national standard updated in 2012 is that one hand pump should serve around 300 people or approximately 60 families).

The Health Centre in Macuia was built in 2003, and there is an operational ambulance bicycle. The only market on this road is also in Macuia.

There are several primary schools distributed along the road in buildings constructed from local materials.

Box 3: Damião, study community.

In Damião there is a first level primary school (EP1) made of local materials, with very few pupils. Students have to sit on the floor and the roof covering falls down whenever it rains. Teachers only work in the mornings, because they live in Mocuba and in the afternoon they go home. The closest EP2 is in Mocuba. Most pupils are male, as, according to the local informants, many girls drop out because of early marriage and sexual harassment by teachers.

There is only one hand pump providing potable water in Damião. This, together with another one, serve a distance of 43 km along the road. As a result, many rely on unimproved shallow wells and the Licungo River for water.

In Damião there are also four bicycle workshops, four informal traders and seven churches.

Figure 25: Stall on Bive-Maganja road

6.3.1.4 Alto Benfica - Derre Road (Maticula)

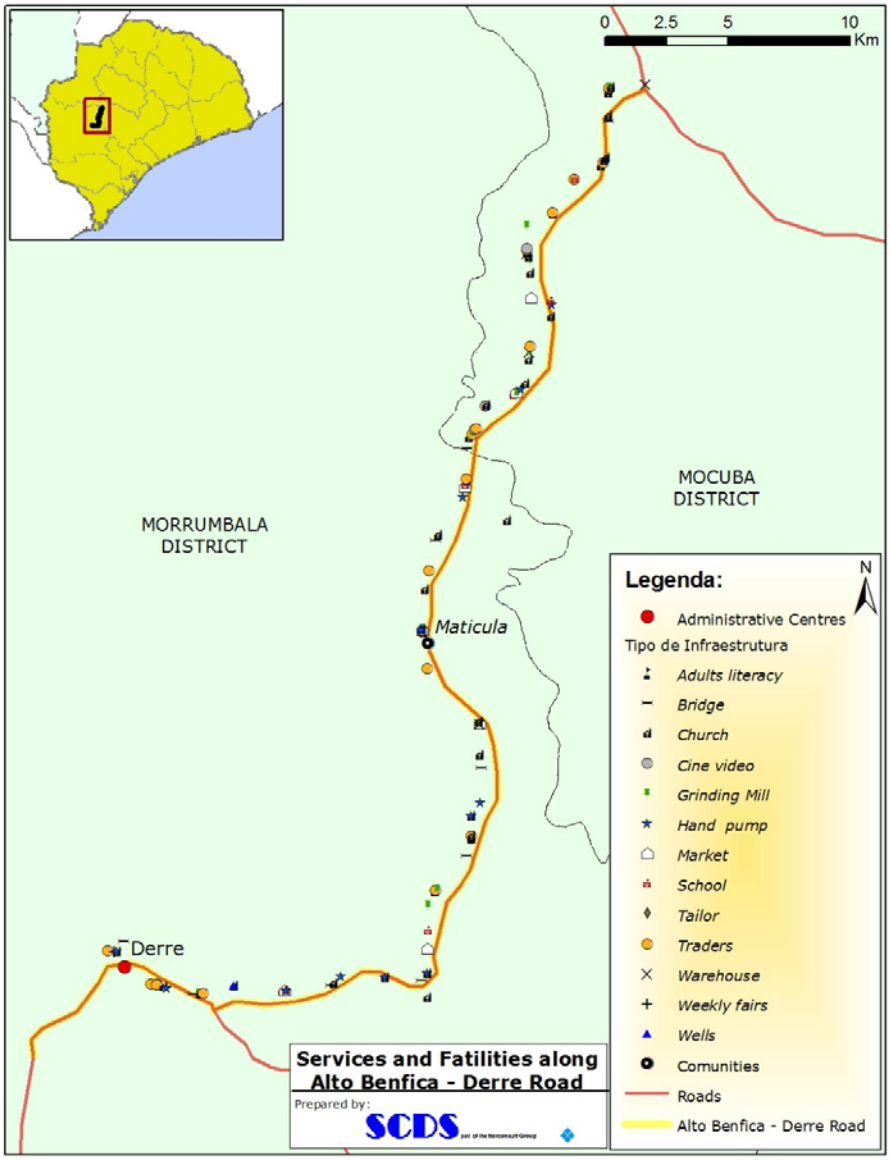

Figure 26: Map of facilities along Alto Benfica-Derre road

The Alto Benfica – Derre road has a significant number of new infrastructure and other structures. There is an increase in the number of schools (from five to nine), grain mills (from zero to 15), traders (from 13 to 18) and shops (from zero to two). These changes indicate a substantial improvement in access to basic services.

There is also an increase in the number of markets (from two to eight). The presence of a weekly fair, small businesses such as tailors (four), carpentries (four) and bar indicates a certain economic dynamic along the road (Figure 26).

It appears that a large proportion of the land is occupied along the road, used for housing and for cultivation.

There is less development in areas not close to the roadside. In Maticula, for example, although there are five schools some are made of local materials that are in very poor condition.

This road has three distinct zones based on the type of development encountered. The beginning of the road is located at the headquarters of the Alto Benfica Locality. Along this first part of the road, there is a concentration of infrastructure including a market, a passenger and freight transport terminal and a warehouse for local farmers. Most of the houses on the roadside are made of sun-dried bricks, with corrugated iron roofs, unlike most houses on the other roads in the study.

In the middle section of the road houses are denser, crops in the fields are mainly cassava and pigeon peas, and there are various markets and traders. The houses continue to be constructed with sun-dried bricks but most have grass roofs in this area.

Box 4: Maticula - study community

Maticula has 6,830 inhabitants in 1,254 households, 189 of which are headed by women and 32 by children. Due to the in-migration of various families from Milange, where, local leaders say there is a shortage of land, the number of families has been rising and new residential areas have appeared.

There are five primary schools (EP1). Only one school is constructed of permanent materials; the other four are made of local natural materials. Most students are boys. Most girls do not go to school, or if they do, frequently leaving when they are around 15 years old to get married.

The most accessible health units for this community are in Derre or in Alto Benfica. To reach these, interviewed people reported taking about four hours.

There are eight mills, four carpentry workshops and a market, which, is reportedly the largest on the road in terms of movement of goods and visitors and in terms of the number of permanent market stalls. There are 16 permanent stalls built of cement and with corrugated iron sheet roofs. Some woodcutters with timber extraction licenses are based in the village.

Maticula has two water pumps but they are insufficient for everyone and some families have to collect water from streams and traditional open shallow wells on riverbanks in the dry season.

Figure 27: Permanent market stall on Alto Benfica-Derre road

The final part of the road is the section close to Derre. Houses along this part of the road have the same characteristics as those at the beginning. In Derre there is a weekly fair that takes place every Thursday that is of regional importance.

To get access to health care, the residents of villages along the road have to travel to Derre or Alto Benfica where there are health units.

The relatively high number of hand pumps on boreholes and wells were mostly built by World Vision after rehabilitation of the road, and are visible close to the road. Communities in the interior must still collect their water from traditional wells and streams.

6.3.1.5 Mugulama - Ile Road (Muaziua)

There is a new school, a new health centre, six grain mills and 14 hand pumps for water (most not working) suggesting an improvement in access to basic services along this road. The existence of one permanent and two seasonal markets, and one weekly fair, and of small businesses, including two cine-videos, three bicycle mechanics and one carpentry also supports the image of economic development.

Most of the roadside is however, not inhabited. A large part of the area along the road is covered by forests and is mountainous and the villages are concentrated in more flat areas or on less steep slopes. Settlements are in clusters along the road and the houses are almost all made of local materials.

Trading infrastructure is concentrated in the first seven kilometres of road from Mugulama, where there is a seasonal market with around 21 traders, of which three are permanent. The remaining traders work only during the agricultural marketing periods (Figure 28).

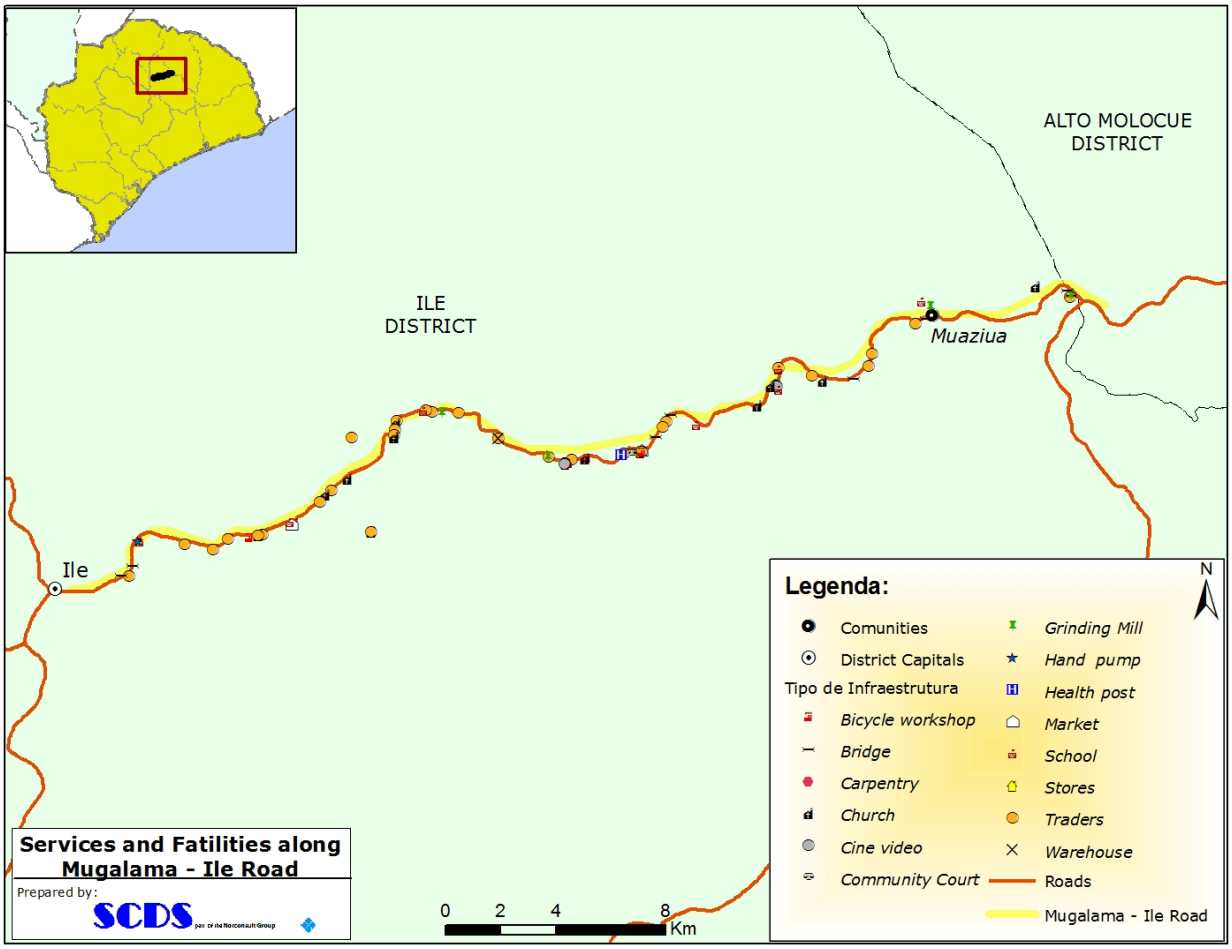

Figure 28: Map of facilities along Mugulama-Ile road.

Schools are located in the villages of Muaziua, Vieriua, Mutetereia and Macucune (Figure 29). In Vieriua, 13 km from Ile there is a health centre that has been built in recent years. There are some hand pumps for water, most of which are damaged and in-operational. Water is generally collected from rivers, springs and shallow hand-dug wells.

Box 5: Muaziua, study community

Muaziua has about 7,453 inhabitants and two primary schools: a first level one (EP1) and a full primary school – EPC which were reported to be too far away for many potential pupils to attend. To reach the schools takes from one to three hours on foot, which is too far for small children to undertake on a daily basis. There are many problems of attendance by teachers, and in both schools students can pass two weeks without lessons.

Most of the students are boys as girls also tend to leave and marry when they are around 16 years old. A large proportion of boys was also said to leave school at around 17 years to look for work, mainly on farms or as market vendors.

The closest secondary school is in Ile, where housing is more expensive and students have to board.

The closest health units are in Vierua or Mugulama that require about four hours by foot or two to three hours by bicycle to reach. Alternative transport is rare since there are very few vehicles on this road, due to the steepness of its inclines. Local informants reported that women often give birth to their children on the road.

Although there are two hand pumps for water in Muaziua, wells and small rivers are the most frequently used sources.

Figure 29: School on Mugulama-Ile road

6.3.1.6 Mocubela - Bajone Road (Nialene)

Local development on this road appears tangible, reflected by the increase in basic services facilities: a health unit, schools (increase from two to five), hand pumps on boreholes (13) and wells (11) for water, traders (increase from 15 to 31) and shops (from one to two), and also by the important increase in agricultural warehouses (from five to nine) and markets (from one to two) and by new small businesses such as cine-videos (three), and other economic activities in much higher numbers than on other roads (four tailors, 13 carpentries and eight bicycle mechanics).

The road starts at the headquarters of the administrative post of Mocubela in Machona village. There are more houses at both ends of the road than the middle, although in general there are less in Bajone than Mocubela. Machona village has influenced the growth of infrastructure around it, including two bars, a number of traders, a passenger transport stop and a permanent market that functions as a weekly fair every Thursday, used by traders from Bajone, Maganja, Pebane and some other neighbouring areas.

There are other scattered clusters mainly close to the streams crossed by the road (Figure 30). From Mocubela to Complicado River there are five Catholic/Protestant churches, though interestingly, from the Complicado River to Bajone, there are 17 mosques recently constructed along the road. Some of these mosques have community wells without pumps have been built to supply the local population.

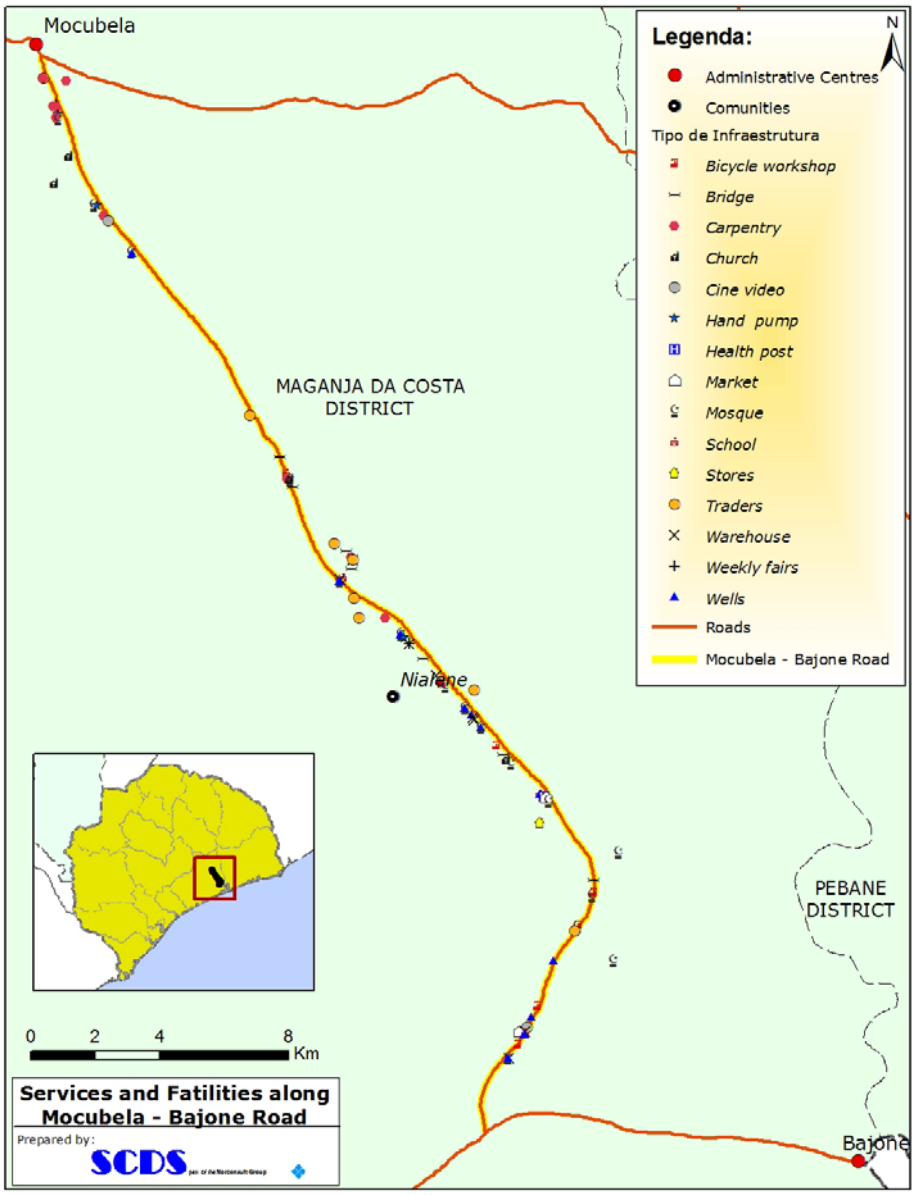

Figure 30: Map of facilities along Mocubela-Bajone road.

At the end of the road near to the coast, the area is mostly occupied by large coconut palm plantations initially planted by the ex-State companies of Madal, Morroa, and Zambézia. Much of the land used by the former of Zambézia Company is currently used by family sector producers.

The mobile phone network covers part of the road.

Most of the houses in the area are made of local materials with palm leaf roofs. Many houses along the road especially in Essida and Nialene are used seasonally. They belong to residents from the coast who use them during the sowing and harvesting agricultural seasons.

Along the road there are also a significant number of carpentries, thirteen were counted and their products were seen in many transport vehicles.

There are several hand pumps for water but many people continue to use the traditional wells and streams as their main sources of supply. Interviewed people explained that the safe water sources are located very far from their houses.

There are two major permanent markets in Alto Mutabide and in Tagana, in addition to the two at the ends of the road; one at the Mocubela Administrative Post Headquarters and the other at Bajone, which function as weekly fairs on Thursdays and Fridays respectively.

In Nialene there are also two weekly fairs; on Saturdays at Madula and on Sundays at the Locality headquarters. These fairs are smaller markets only frequented by local people and traders.

Box 6: Nialene, study community

Nialene has 3,509 inhabitants in 1,088 households.

Nialene depends on the Locality headquarters for most public services except for one full primary school with annexed classrooms and hand pumps on boreholes for water supply. The catchment for the school extends very far and many children living beyond this cannot attend the school. There are children that take up to three hours to get to school on foot. Girls also tend to leave school after the age of 16 to get married. After primary education children rarely move on to secondary education.

The nearest health centre is in Bajone about 18 km away, which local informants considered too far away for their use. They also referred to a lack of medicines at this health unit when they did go. Many people mentioned alternatives as health centres outside Maganja da Costa district, in Pebane district: Magiga some 20 km from Nialene, Ratata four hours from Nialene by bicycle, or Tapata three hours from Nialene, also by bicycle. At the time of fieldwork a health centre was being built in Alto Mutabide.

The village has 12 mosques and six churches within its reach.

There are also six carpentry workshops, five bicycle workshops and two weekly fairs in the area; one in the Locality headquarters on Sundays and another in Madula on Saturdays with mainly local vendors.

There are water pumps and community wells in the mosques, but people live dispersed and they take between twenty minutes and two hours to get to these, so they prefer to use traditional wells and streams as their primary sources of water supply. However, in the dry season, the traditional wells dry up, and people are forced to use surface water from permanent streams or walk long distances to the hand pumps.

Figure 31: Mosque on the Mocubela-Bajone road

6.3.2 Access to services at the household level

Table 13 and Table 14 show the location and time spent by survey households in each study community to access health services, education and water:

Table 13: Location of the closest health centre used by surveyed households, by community

Closest Health Unit / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
In the community	0	0	0	0	0
In the nearest village	13	100	19	89	66
In the Locality headquarters	0	0	6	11	2
In the Administrative Post headquarters	46	0	51	0	33
In the district capital	41	0	24	0	0
Total	100	100	100	100	100

None of the communities studied has a health post. However, Damião, Muaziua and Nialene have a health post in the nearest village that seems to meet the needs of residents in these communities (100% of respondents in Damião, 89% in Muaziua and 66% of respondents in Nialene said they use these services). In Maticula too, 19% of respondents said they use the services of the nearest health post. Most of the remaining respondents said they use services in the administrative post headquarters or the district capital.

Table 14: Time declared by surveyed households to reach the health unit, by community

Time taken / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Up to 30 minutes	0	32	0	0	0.0
From 30 minutes to 1 hour	24	22	14	8	36
From 1 to 3 hours	49	29	52	32	15
Over 3 hours	25	11	33	60	49
Total	100	100	100	100	100

Most respondents in Dugudela, Maticula, Muaziua and Nialene said they take close to three hours or more to reach the health unit while people in Damião said they take between 30 minutes and an hour to reach the nearest health unit.

Respondents in all study communities said they take an average of 30 minutes to reach a first level primary school. Only in Muaziua did people say they take an average of roughly half an hour to get to second level primary or a full primary school. For the remainder, second level primary education is on average one hour or more on foot away and secondary schools two hours or more (Table 15).

Table 15: Average time taken by survey HHs to get to school, by community (minutes)

Education level / Time (minutes)	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
1st level Primary School (EP1)	14	30	24	24	30
2nd level Primary School (EP2)	59	50	56	30	118
Complete Primary School (EPC)	71	60	61	32	118
Secondary School	182	114	181	155	271

It is important to understand how households manage to obtain drinking water. Table 16 provides information on the main source of drinking water for survey households in each study community.

Table 16: Percentage of families by main source of drinking water, by community in 2012

Types of source / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Rainwater	0	2	2	2	0
River/stream/pond	0	0	25	0	22
Open well	0	94	24	98	57
Community well with hand pump	100	5	27	0	21
Community borehole with hand pump	0	0	22	0	0

All respondents in Dugudela said they had access to water from a community well with a pump. It should be noted that according to community leaders, Dugudela is a relatively small community with 170 households.

In Damião and Muaziua over 90% of the surveyed population collects its drinking water from an open well and in Nialene over 50% also collect water from an open well. The large proportion of people without access to safe water supplies is thus a cause for continued concern.

Households noted their improved access to fuel as benefit arising from road rehabilitation, resulting from the multiplication of stalls and markets where people have started to have access to new kinds of products, including fuel.

Table 17 summarises access to fuel sources and types by respondent households and the respective use. Note many families use more than one fuel source depending on fuel availability and access to money over time.

Between 98% and 100% of the surveyed households use firewood for cooking, and between 65% and 77% use batteries and/or candles for light. Some households in Dugudela, Damião and Muaziua use charcoal for cooking, but the percentage is very small (2% in Damião, 5% in Muaziua and 21% in Dugudela).

Table 17: Percentage of surveyed households by type of fuel used for cooking and illumination on each road in 2012

Fuel / % families	Communities									
	Dugudela		Damião		Maticula		Muaziua		Nialene	
	Cooking	Light	Cooking	Light	Cooking	Light	Cooking	Light	Cooking	Light
Firewood	100	11	98	2	100	21	98	43	100	29
Charcoal	21	0	2	0	0	0	5	3	0	0
Paraffin	0	6	0	2	0	0	0	2	0	0
Batteries/Candles	-	70	-	67	-	78	-	65	-	71
Solar panel	0	8	3	37	0	30	3	32	0	33

The use of solar panels for lighting is reported to be predominant for around 30% of surveyed households in all communities except Dugudela, where only 8% use these.

According to the discussion groups in addition to these sources of light, grass continues to be burned for illumination by households on all the roads especially when people have little money.

6.3.3 Access to Modern Production Technologies

The results from the survey suggest that modern agricultural inputs such as improved seeds, fertilizers and pesticides are fairly widely available in Zambézia. The only community where a significant portion of the respondents stated that these products cannot be bought in the district is Dugudela (Table 18), a finding which possibly reflects their access rather than availability.

Table 18: Availability of modern inputs at district market according to the respondents (2012)

Available at district market:	Community				
	Muaziua	Nialene	Maticula	Damião	Dugudela
Improved seed	98%	79%	81%	81%	43%
Fertilizer	98%	81%	81%	81%	29%
Pesticides	81%	78%	81%	79%	29%

Despite the alleged availability, household survey data show that the use of modern technologies in the study communities is very low and most cases nil (Table 19). The exception is the Muaziua community, which uses various technologies.

Table 19: Percentage of surveyed households that reported using modern technologies

Technologies / % families	Communities				
	Dugudela	Damiao	Maticula	Muaziua	Nialene
Use of improved seed	2	0	6	3	0
Use of fertiliser	0	0		6	0
Use of pesticides	0	0	0	3	0
Use of plough/animal traction	0	0	0	2	0

It is not fully clear to what extent these data reflect the real situation as to new technologies. As will be shown in section 6.4 there are several agencies working on the distribution of seeds and other agricultural technologies in the areas served by the roads.

6.3.4 Access to knowledge about STI/HIV-AIDS

According to data from the household questionnaire and discussion groups, community authorities and families on all the roads are aware that STI and HIV-AIDS exist in communities and can affect anyone irrespective of their position or function in society.

The proportion of survey households who said that they had heard of STI/HIV-AIDS is very high at over 95% in all study communities, as shown by Table 20.

Table 20: Knowledge of STI/ HIV-AIDS according to the HH survey

Awareness / % respondents	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
% heard of STI/AIDS	95	97	100	100	100
% saying they know ways of avoiding AIDS	83	98	91	95	91

The table shows that in Dugudela the percentage of people who say they know there are ways of avoiding STI and AIDS is lower than in other study communities even though it is one of the highest risk communities because it has a tradition of male migration. This clearly indicates the availability of information about these diseases in communities along the roads and the possibility of avoiding them.

Table 21 shows how information on these diseases is provided.

Table 21: Sources of information and knowledge about ways of avoiding STI/HIV-AIDS among the respondents by community

Awareness / % respondents	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
How people heard about these diseases					
Radio	65	59	40	29	40
Friends	18	10	22	10	6
Activists	0	1	2	5	0
Health Post	16	30	37	56	54
Ways of avoiding diseases					
Abstinence	0	2	0	3	3
Condoms	*43*	*54*	*40*	*52*	*49*
Faithful to a single partner	46	37	51	34	41
Limiting number of partners	0	2	0	2	3
Avoiding sex with prostitutes	0	0	0	5	2
Avoiding sex with people with many partners	0	5	3	0	2
Avoiding used razor blades	0	2	0	2	0
Don't know / no answer	11	0	6	2	0

- People in general in Muaziua and Nialene get their information mainly from the health post.
- The radio is the main source of information in Dugudela, Damião and Maticula, indicating that health units still have limited influence in these areas.
- Of those people who said they knew about these diseases, there is the widespread idea that sexual transmission is the only way they are transferred. Prevention in this respect gives people assurance that they will not contract the virus or the disease.
- It is of concern that some 11% of respondents in Dugudela did not answer or reported not to know how to avoid STI/HIV-AIDS, suggesting the need to spread more detailed information on behaviour to avoid them.
- People are unaware of the road's possible influence on the prevalence of the disease. They believe that its existence is completely independent of the road. Information on ways of transmitting and preventing SDI/HIV-AIDS still needs to be broadened in communities on all the roads.

6.3.5 Access to basic essentials and durable goods

Table 22 shows household use of consumption goods in 2001 and 2012 in order to verify the extent to which increased purchasing power has given them access to basic essentials.

- According to the table, the purchase of maize flour seems to be something new on almost all the roads. In Damião on the Bive-Maganja road, the number of households who said they buy maize flour was almost double the 2001 figure.
- The percentage of households who said they bought salt and soap fell sharply in all study communities.

- In Dugudela on the Mocuba-Nipalaga road, Damião on the Bive-Maganja road, and Maticula on the Alto Benfica-Derre road the percentage of households who said they bought sugar and clothes fell considerably, as did the consumption of cooking oil in Dugudela and Maticula.
- In Muaziua on the Mugulama-Ile road and Nialene on the Mocubela-Bajone road the percentage of families who said they bought sugar, clothes and oil rose, as did the purchase of oil in Damião.
- Although the percentage of households in Maticula who said they bought some products fell, these seem to have been replaced by new products;
- In addition, according to the discussion groups in all communities candles and batteries are new types of acquisitions. In this respect, details on use of fuel sources can be seen in the chapter on access to infrastructure and services.

Table 22: Percentage of surveyed households in 2001 and 2012 purchasing basic essentials

Basic essentials/ % families	Communities									
	Dugudela		Damião		Maticula		Muaziua		Nialene	
	2001	2012	2001	2012	2001	2012	2001	2012	2001	2012
Maize flour	-	7	14	24	-	6	-	6	-	58
Oil	44	12	10	22	25	22	10	22	5	23
Salt	94	14	90	21	80	23	86	18	33	25
Sugar	11	10	24	21	25	22	14	19	14	24
Soap	94	14	86	22	80	21	90	22	71	22
Clothes	61	2	33	17	35	25	10	22	24	33
Milk		2		13		20		11		53
Matches		14		21		21		22		22
Bread		2		31		14		19		35
Tea		0		0		0		67		33
Rice		11		20		21		18		29
Paraffin		13		0		25		38		25
Candles		6		10		42		20		22
Batteries		11		22		25		18		24

Note: The 2001 data in this table were taken from a set of tables containing data from the Phase Four Report (Scott Wilson, 2001)

These data lead us to believe that staple food security may have decreased in Nialene in particular where 58% said they purchase maize flour.

Table 23 shows household ownership of durable goods in 2001 and 2012:

Table 23: Percentage of surveyed households according to the ownership of durable goods in 2001 and 2012

Assets / % families	Dugudela		Damião		Maticula		Muaziua		Nialene	
	2001	2012	2001	2012	2001	2012	2001	2012	2001	2012
Tools										
Hoe	100	84	100	98	100	84	100	100	100	95
Machete	72	15	86	19	85	22	95	23	90	21
Axe	83	22	62	17	55	22	91	21	86	21
Sickle	6	8	10	20	0	24	19	27	19	20
Spade		4		61		4		17		13
Fish hooks		-		-		-		-		100
Fishing net		-		25		-		-		75
Canoe		-		-		24		-		2
Household/Personal Goods										
Bicycle	83	43	71	67	60	13	76	65	57	65
Aluminium Pots	72	10	67	25	45	21	52	19	19	26
Paraffin Lamp	67	2	76	2	15	3	52	5	62	5
Radio	72	43	57	75	35	44	86	51	24	59
Chair	39	46	52	64	10	41	76	54	24	56
Table	39	33	33	85	10	38	62	56	0	57
Wristwatch	22	14	19	38	35	37	29	35	5	43
Cell phone		2		13		6		5		21
Motorbike		3		6		13		32		29
TV/DVD		3		3		15		50		29
Solar panel		18		6		24		-		53

Note: The 2001 data in this table were taken from a set of tables containing data from the Phase Four Report (Scott Wilson, 2001)

It appears that ownership of hoes has more or less remained the same with a small percentage fall possibly due to the responses of incoming traders.

The percentage of households who said they had acquired machetes and axes, two important agricultural tools, fell significantly, whereas ownership of a sickle rose possibly indicating and increase in cultivation of rice.

As regards other durable goods, except for Dugudela there was a rise in the percentage of households who said they owned durable goods that could be considered basic essentials, such as a chair and table, and also convenience goods such as a radio and a watch. In Dugudela bicycle ownership fell by half and in Maticula by about two thirds. In Dugudela it may be a sign of less recent expenditure and possibly less disposable incomes, but in Maticula a fairly high number of households seems to have invested in expensive goods such as motorbikes, TV/DVD and solar panels indicating that there are still households with fairly significant disposable incomes.

Data on Nialene in 2012 and 2001 show that the percentage of households with almost all goods rose. The exception of paraffin lamps may be due to the generalized use of torches with batteries.

Cell phone ownership is difficult to interpret, for although their use is penetrating into rural areas, the lack of network coverage and electricity limits the usefulness of ownership. Thus, they are owned either by heads of household or other members who travel to areas where there is a network or live near people who have solar panels where they can charge the phones. People in the remotest areas are well aware of any locations with reception, and the hours when this is usually available. No specific cell phone towers or other communications infrastructure was recorded along the roads studied.

There are towers and cell phone coverage in and around Mocuba town and also radio and television media that some families have access to. The very tall antennae installed on their houses being a testimony to this.

Where network coverage extends - cell phones were said to be used for arranging meetings, to call taxi transport such as bicycles and motorbikes and in emergency situations. Awareness and use of cell phones appeared to be widespread where there was coverage and aside from network coverage limitations the conditions of access are flexible enough to include even those with very little disposable income.

At the time of the field study Movitel, the new third operator was installing posts for its fibre-optic cable along the Alto Benfica-Derre road with the aim of reaching into Morrumbala District.

6.3.6 Access to land

Table 24 summarises the number of households with plots of land for cultivation in 2012. It shows that, with the exception of Muaziua, on the Mugulama-Ile road, the land use pattern of over 50% of households in the study communities is one to two plots, but in Muaziua around 60% have at least three plots. The land is cultivated quite intensively, in two seasons in Muaziua and just one season in the other communities, and is rain fed, thus totally dependent on the climate.

Table 24: Households according to the number of fields cultivated and the average number of fields in the surveyed communities in 2012

Nº fields	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Percentage of households with one field	37	16	11	11	18
Percentage of households with two fields	30	48	41	27	33
Percentage of households with three fields	21	27	30	25	27
Percentage of households with more than three fields	13	10	18	37	22
Total	100	100	100	100	100
Average n° fields per household	2.3	3.1	2.6	2.6	2.2

The different ways of accessing land reflect local dynamics in the rural space, for example, demand for land by the private agricultural sector and by households engaged in subsistence agriculture, population movements, customary rights and local practices governing access to land, to mention just some of the more obvious factors.

Table 25: Percentage of surveyed households by form of access to land

Types of access to plots of land	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Inherited	16	51	84	94	73
Rented	0	5	8	5	5
Bought	19	59	10	16	37
Occupied	67	2	5	0	2

Table 25 summarises how the households interviewed in the study communities gained access to the plots they are currently using.

Analysing the pattern of access to land on each road, it was found that:

- Households in Maticula, Muaziua and Nialene said that over 70% of plots of land are inherited. Households in Damião also said that around 50% of the land is inherited while in 59% of the remaining cases plots are bought. According to community leaders and discussion groups, before its rehabilitation the road was just a track and there were few houses close by. Following rehabilitation of the road many of the households who lived far away moved and started to live by the roadside. This could be the reason why a large percentage of households bought land.

- Most of the land in Dugudela was considered occupied as natives of the area and inherited and purchased land is minimal. This anomalous result may be due to the overlap of concepts of occupation and inheritance, and it is likely that the two be considered as almost synonymous in this case.

- In Nialene 37% of families have purchased land, possibly due to the lack of land in Bajone Administrative Post resulting in various families moving to Nialene to grow groundnuts among other reasons.

Despite the consultant's efforts with the Provincial Geography and Cadastral Services and the District Economic Services, it was not possible to obtain concrete information on natural resource extraction concessions and licences along the study roads.

Although no land conflicts were reported, this is a distinct possibility within a few years as the dynamics of agricultural commercialization on some roads has been causing an influx of households from further away seeking farmland close to the rehabilitated roads. Some examples illustrate this demand:

- On the Mocuba-Nipalaga road, households are moving closer to the road, mainly at the beginning and in the middle section of the road.
- On the Bive-Maganja road, Mugulama and M'ripa are recent settlements that have appeared in previously uninhabited areas, following rehabilitation.
- On the Alto Benfica-Derre road, according to Maticula leaders there has been an influx of families from Milange District who have settled around the community and along the road, allegedly due to lack of space for agriculture and in search of fertile soil in Maticula.
- On the Mugulama-Ile road, following rehabilitation Vieriua village emerged some 13 km from Ile district capital. It is a settlement of approximately 250 houses belonging to families from the interior and located around a market that appeared during rehabilitation of the road.
- On the Mocubela-Bajone road, families coming from the interior to the roadside have created new residential areas and the expansion of existing inhabited areas. According to local leaders, aruond 440 families settled in Essida in 2011. Namitaca, one of the Essida areas, reported the influx of families from the interior to live close to the road. In Nialene too, a new neighbourhood has appeared comprising people from Nacuda Locality in Bajone Administrative Post.

6.3.7 Access to other resources

In addition to land and water, and the timber sector that will be covered in the following chapter, other resources are exploited by communities and play a crucial role in their subsistence, including as important sources of income.

Table 26 summarises the percentage of survey families that use specific natural sources.

Table 26: Percentage of surveyed households using different natural resources

Natural Resources / % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Grass	98	100	97	100	100
Bamboo	100	100	100	100	100
Poles	100	100	100	98	100
Palm leaves	-	-	-	-	2
Clay	68	100	95	98	64
Bricks	70	97	100	92	46
Timber	78	68	84	65	40
Firewood	100	98	100	98	100

From Table 26 it can be seen that the percentages of households using natural resources are very high in all communities, although Nialene has the lowest percentage use of resources not easily found locally.

These high percentages together with the common use of land for rain fed crops indicate the level of community dependence on natural resources and their vulnerability to the climate and continued access to these resources.

Some key informants complained of licenses awarded to extract timber that did not pass through the district structures and therefore the extraction of timber by various operators has an unknown legal status. Licenses are awarded by specie with transport permits for this emitted by the forestry services at district level. Transport of wood without a travel permit is liable to a fine and confiscation of the wood. This results in trucks loaded with timber often passing along small access roads and travelling at night in order to avoid forestry inspection points.

Timber may be used by local communities for non-commercial ends without any legal certification. In the past year, in recognition of the rapid increase in uncontrolled deforestation taking place in the country, and in particular in Zambézia, local leaders have been encouraged to protect and manage community forest areas in an informal manner. This is the so-called 'one leader – one forest' campaign.

The longest term efforts at forest conservation and management have involved community based natural resources management approaches such as has been in operation around Derre Forest Reserve for the past decade. Unfortunately, this Forest Reserve, located just south east of the study road starting at Derre trading centre, is testimony to the pressures of demand for wood products overwhelming any protection either by communities or the government. The forest is a now minor fraction of its original formally registered size.

6.4 Agencies of change

The main change agent is the local population itself. It is this group that, by using the opportunities offered by improved access as a result of road rehabilitation, can exploit new markets and income generating activities as well as access new services to improve its living conditions. However, part of its potential to do so is dependent on the actions of third parties. One is the government, which plays a key role in the creation of new infrastructures for education and health care. Others are the private sector and NGOs.

In addition to family agriculture the private commercial agriculture and timber sectors have a certain presence on the Bive-Maganja, Alto Benfica-Derre and Mocubela-Bajone roads.

The three forest concessions (Nelson, Rossil and Somadeira) on the Bive-Maganja road, two sawmills and the unlicensed operations undoubtedly are causing significant changes in the area. On the negative side these may be the initiation of environmental degradation and jobs for local lumber cutters providing the illegal timber to the transporters.

However sawmills and forest concessions should also be a source of employment if there were not certain restrictions on hiring local labour. Unskilled workers are the only ones hired locally to cut, drag and load logs on trucks on a seasonal basis. Skilled labour, even though the specialist skill required is

minimal, such as lorry and tractor drivers, technicians and size and weight recorders tend to be recruited from beyond the roads, in Mocuba or Quelimane.

By law, timber extracting companies must pay some compensation to the communities in the areas where they operate from. This is a community benefit amounting to 20% of the license amount that should be channelled back to local communities. However, there was no information available that helped to understand the real situation. According to discussion groups in Maticula one operator with an annual timber cutting licence replaced the roof of a local school substituting local materials with corrugated iron sheets.

In addition to timber companies, in Bive-Maganja a private company is starting to produce around 10 ha of pineapples, beef cattle and pigs and this represents a possible source of local jobs on the road, albeit for only a limited number of workers.

Prior to rehabilitation there were three active coconut plantation companies on the Mocubela-Bajone road, Madal, Boror and Moroa. According to local leaders, of these three Madal still controls areas from its offices in Bajone, though the other two are no longer active. The unskilled workers employed by Madal were recruited locally. However, they are very few. Local leaders also said that there were two operators with annual wood cutting licences on the road, with yards in Nialene.

On the Mocuba-Nipalaga road there is a contractor laying asphalt, Mota Engil Lda. According to respondents many people have been recruited to work on upgrading the road. However, the employment is temporary and according to local leaders all labour, including unskilled labour was recruited from elsewhere, away from the road.

Interviews and discussion groups revealed that some institutions and NGOs have worked or are working on the study roads and/or in the study communities with activities and influence of some importance for analyzing the development of the communities living along these roads. Their entry and work with local communities may have been brought about in part by the improved access after road rehabilitation.

Table 27 summarises their activities.

Table 27: NGOs and their activities with communities along the study roads

Institution	Type	Location	Main activities
World Vision	NGO	Mocuba-Nipalaga Road	Support for needy children. (Supply of school materials, clothing and food kits)
			Registration of children
		Alto Benfica-Derre Road	Registration of children and nutrition (improved porridge)
			Food security (promoting peasant associations and credit co-operatives)
			Construction of:

Institution	Type	Location	Main activities
			-1 complete primary school -1 secondary school -6 hand pumps on boreholes
			Livestock promotion
			Registration of children
			Promoting sewing machines
			Training traditional birth attendants
ADRA	NGO	Bive-Maganja Road	Agriculture
			Traditional birth attendants
			Nutrition (improved porridge)
			Sanitation (construction of washing areas/bathrooms)
			Community councils
		Mugulama-Ile Road	Promoting cashew trees
		Mocubela-Bajone Road	Promoting maize
			Promoting cashew trees
			Mother and child health and nutrition
			Sanitation (construction of latrines)
			Construction of boreholes
			Promoting groundnuts
ADPP	NGO	Bive-Maganja Road	Literacy
			Health Council
			Traditional birth attendants
			Immunisation
Agumoniua	NGO	Mugulama-Ile Road	Sanitation (building washing areas, bathrooms and holes for waste)
			Family planning
			Training birth attendants
			Nutrition (improved porridge)
Samaritano	NGO	Mocubela-Bajone Road	Construction of boreholes
AGRIMO	Company	Alto Benfica-Derre Road	Promoting cotton growing
DUNAVANT /CLUSA	Company / NGO	Alto Benfica-Derre Road	Promoting cotton growing
			Distribution of maize, sesame, cotton and groundnut seeds
OLAM	Company	Alto Benfica-Derre Road	Distribution of seeds and support for cotton marketing

The role of NGOs is key in the promotion of agricultural development and technical innovation and in the promotion of social services such as education and health care. NGOs play an important role in the facilitation of development and the extent to which road improvement may impact positively on communities along it is hence largely contingent on parallel interventions by NGOs and the Government, in the area serviced by that road.

Figure 32: Local road use on Mocuba-Nipalaga road

Figure 33: Local road use on Mugulama-Ile road

Figure 34: Local road use on Mocubela-Bajone road

The movements of people to the roadsides is a rural phenomenon throughout the country. The roads with potentially available land close to the edge of the road have been the main trigger for migration. Families do not move without maintaining access to at least subsistence cultivation areas close to their residences – they may then walk longer distances to other major production areas, especially if they are newly opened up areas, cut out of forests for example. Not all migrants to the roadsides come from the interior. Others move to these roadsides from urban areas or places where they have inadequate land for cultivation.

The possibilities of marketing crops presented by the rehabilitated roads have been an important attraction to the roadsides. However where there are cyclists and motorbikes, and paths they can pass on, the market linkages usually extend beyond the road. No information was directly obtained about the movements of people to the roadside and the potential impacts of this. However the varying levels of economic development, the level of use of roads by pedestrians, and the general character of each road's agricultural and natural resource economy helps gain an understanding of the levels of change being created. In no case has settlement become dense along the roads causing conflicts of over land use. In Zambézia conflicts usually occur only when private sector land use rights acquisition is involved.

6.5 Traffic

Changes in the traffic profile of types of road users, as well as their purpose for using the road has been assessed through traffic counts. Traffic count details were based on the original surveys in the year 2000. Unfortunately the sex and age of pedestrians and cyclists was not registered. However the nature of the loads carried by pedestrians and cyclists as well as some of the social details of communities along the roads has helped provide indirect indicators of women's use of these roads.

Traffic increased as expected on the Bive-Maganja, Mugulama-Ile, and Mocubela-Bajone roads. Traffic decreased on the Mocuba-Nipalaga road – likely to be due to the road works at the time of counting as well as the poor quality of the road extending from this section to the Malawi border. The flow of traffic has remained stable on the Alto Benfica-Derre road.

Table 28: Comparison of traffic counts in 2000 and 2012 for different user types for each of the evaluated roads

Type of transport	Mocuba-Nipalaga		Bive-Maganja		Alto Benfica-Derre		Mugulama-Ile		Mocubela-Bajone	
	24.04.-01.05.00	06.06-09.06.12	04.05.-11.05.00	01.06-04.06.12	28.05.-04.06.00	11.06-13.06.12	24.04.-01.05.00	23.05 - 25.05.12	04.05.-11.05.00	28.06-30.06.12
Pedestrian	201	345	69	388	105	600	78	447	65	300
Bicycle	2,516	237	579	337	890	268	105	656	180	490
Motorcycle	11	52	7	116	3	86	2	47	2	81
Motor vehicle	79	66	18	36	8	7	1	10	9	13
Truck	21	32	4	36	8	15	0	6	3	18
Bus	5	7	0	0	0	0	0	0	1	5
Tractor	0	0	1	0	4	2	0	0	1	3
Total	**2,839**	**739**	**678**	**913**	**1,018**	**978**	**186**	**1,166**	**261**	**910**

The changes in traffic vary according to the type of transport mode. The differences between the roads point at differences in economic activities along each one or at its importance as a transit route.

There has overall, been a significant increase in the number of pedestrians suggesting a much higher population living close to the roads in 2012 than in 2000. Significant changes in the use of bicycles were registered, especially the drop in numbers on the Mocuba-Nipalaga and Alto Benfica-Derre roads, and increase on the Mugulama-Ile road. There has also been a slight increase in public transport to and from Bajone and out of Mocuba to the N1 highway.

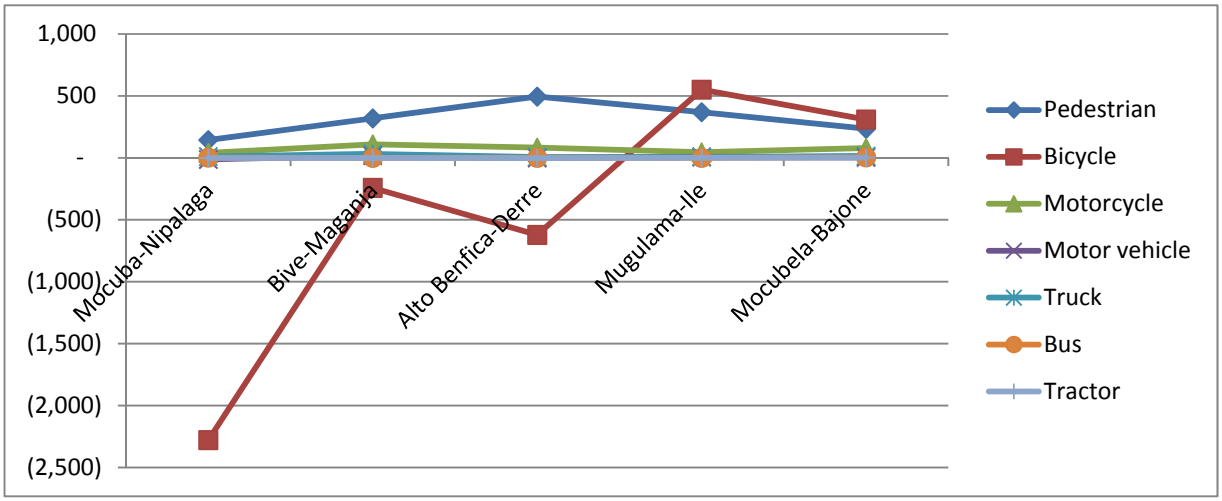

Figure 35: Change in traffic counted between 2000 and 2012 on each of the five evaluated roads

The different means of transport are used for different ranges and for different aims. Pedestrians are typically local people who walk from one end of the village to the other or to a neighbouring village. They may be children on their way to and from school, or women fetching firewood or water. Bicycles

and motorcycles are used over longer distances. They may transport passengers as well as goods and water. The same is true for pickups and trucks, which move from one district to another and between provinces. Trucks can either bring goods or carry commodities such as timber.

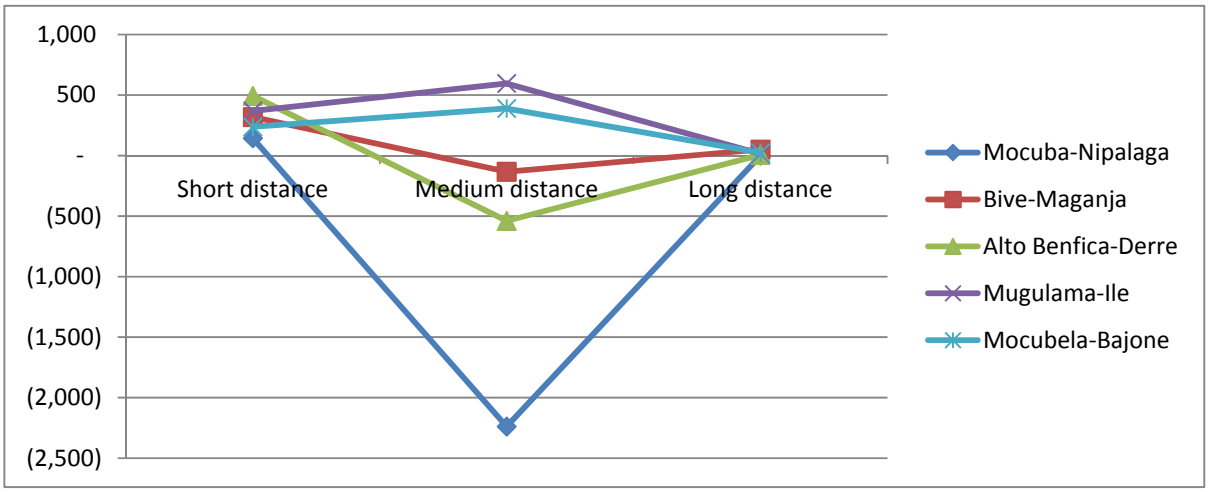

Figure 36: Change in traffic per road according to route range, 2000 - 2012

Figure 36 shows the traffic count data grouped by forms of transport for short (pedestrians and tractors), medium (bicycles and motorcycles), and long distance (light vehicles, trucks and minibuses). It clearly shows that the different roads have different performances and functions. The Mugulama-Ile road is the one which overall shows the largest percentage increase in traffic. However since the road continues to have significant access problems, the dominant forms of transport are pedestrian and by bicycle thereby restricting the volume transported per trip.

The increase in local short range traffic is common in all communities, however very significant differences have taken place with medium range transport. It can be seen as peaking on the Mugulama-Ile road and a little less on the Mocubela-Bajone road. However, medium range traffic has dropped significantly on the Mocuba-Nipalaga road where the inconvenience of the dust and road works is likely to have deterred cyclists and motorbikes from using the road, somewhat less significantly on the Alto Benfica-Derre road and a little on the Bive-Maganja road. The role of bicycles and motorbikes in goods transport is still the most significant for all roads and the negative changes may indicate potential constraints especially since significant increases in long-distance transport, especially on the Alto Benfica-Derre road, do not seem to have been established.

Long haul vehicle use seems to have only increased importantly on the Bive-Maganja road, much of which is associated with extraction of wood, and on the Mocubela-Bajone road for the transport of processed wood products, coconuts and groundnuts.

Each road will be reviewed individually below to understand more about the changes over the ten year period in terms of traffic numbers, and following this, details about the cargo carried on these roads.

6.5.1 Road Profile 1: N 321 Mocuba-Nipalaga

Traffic decreased considerably on this road between 2000 and 2012, especially bicycles - from 237 in 2000 to 2,516 in 201). This may be associated with the dusty local road conditions or possibly the low number of men in the area. Most cyclists are men, and this area is characterized by men trading or working away from home. For example, Dugudela with only 378 inhabitants has only 78 men, and twice as many women and children. If out-migration of men has occurred in the past 10 years, it would explain the current low road use by cyclists.

Table 29 – Mocuba-Nipalaga road traffic between 2000 and 2012

Traffic observation periods		
Type of traffic	**24.04.- 01.05.2000**	**06.06- 09.06.2012**
Pedestrian	201	345
Bicycle	2516	237
Motorcycle	11	52
Vehicle	79	66
Truck	21	32
Bus	5	7
Total	**2839**	**739**

An overall increase in disposable income has resulted in more motorbike users on the road now (52) than in 2000 (11), most of which are used, together with bicycles, as local taxis since the only public transport by minibuses is non-stopping through-traffic from Mocuba to Namanjavira or Milange. There is one public transport stop at end of the road at its intersection with the main highway to Milange, and one beyond the end of the road in Mocuba - a separation of 50 km.

6.5.2 Road Profile 2: Unclassified Bive-Maganja

The level of traffic on this road increased from 678 to 913 since 2000, mainly due to the increase in pedestrian traffic (69 for 388) and a very high rise in the number of motorcycles (from 7 to 116). Only two or three of all these were driven by women. In general their acquisition is based on income advantages, and therefore they are not the exclusive realm of younger men, rather many older men ride motorbikes, it is the younger ones though who provide taxi services.

The number of bicycles on the road dropped, though it is unclear why. It is thought that this may be a result of the long distances between communities where the roadsides in between are only forest, and the use of alternative routes to reach strategic destinations such as the N1 highway, the N325 to Mocuba and alternatives to Mocubela is common.

Table 30 - Bive-Maganja road traffic between 2000 and 2012

Traffic observation periods		
Type of traffic	**04.05.-11.05.00**	**01.06-04.06.2012**
Pedestrian	69	388
Bicycle	579	337
Motorcycle	7	116
Vehicle	18	36
Truck	4	36
Tractor	1	0
Total	**678**	**913**

6.5.3 Road Profile 3: R 652 Alto Benfica-Derre

This road passes through a highly agriculturally productive area with timber resources. The population density along the road is increasing with continuing in-migration of people from Milange seeking land for cultivation.

Table 31 - Alto Benfica-Derre road traffic between 2000 and 2012

Traffic observation periods		
Type of traffic	**28.05.-04.06.2000**	**11.06-13.06.2012**
Pedestrian	105	600
Bicycle	890	268
Motorcycle	3	86
Vehicle	8	7
Truck	8	15
Tractor	4	2
Total	**1,018**	**978**

Changes in traffic intensity in the past ten years show a significant increase in pedestrians (from 105 to 600) and of motorbikes (from three to 86). This surge is also accompanied by a downscaling of the number of bicycles on the road. It may be posited that the cross-border maize trade and work on the roads caused a surge in the purchase and use of bicycles around the year 2000 as these were commonly one of the first investment items purchased. Once the bicycles had concluded their useful life, other priorities caused them not be replaced and the numbers dropped.

6.5.4 Road Profile 4: R 1114 Mugulama-Ile

Although there was a major increase in traffic on this road - from a total traffic count of 186 in 2000 to 1166 in 2012, the movement of vehicles is still practically non-existent. Instead, the circulation of

pedestrians contributed to the significant increase rising from 78 in 2000 to 447 in 2012 suggesting a rise in the local population living close to the road. Most significantly, the number of bicycles using the road increased from 105 to 656 and motorbikes from two to 47.

Table 32 - Mugulama-Ile road traffic between 2000 and 2012

Traffic observation periods		
Type of traffic	**24.04.-01.05.2000**	**23.05 -25.05.2012**
Pedestrian	78	447
Bicycle	105	656
Motorcycle	2	47
Vehicle	1	10
Tractor	0	0
Truck	0	6
Total	**186**	**1166**

6.5.5 Road Profile 5: R 656 Mocubela-Bajone

The traffic on this road has increased considerably, from 261 in 2000 to 910 in 2012. However it is mainly the circulation of people and bicycles on the road that has raised the figures so high, indicating an increase in local population living close to the road since 2000.

Table 33 - Mocubela-Bajone road traffic between 2000 and 2012

Traffic observation periods		
Type of traffic	**04.05.-11.05.2000**	**28.06-30.06.2012**
Pedestrian	65	300
Bicycle	180	490
Motorcycle	2	81
Vehicle	9	13
Tractor	1	3
Truck	3	18
Minibus	1	5
Total	**261**	**910**

Increased circulation of bicycles (from 180 to 490), motorbikes (two to 81) and pedestrians (65 to 300) also denotes a growing local economy among the communities along the road, affirmed by the number of markets and fairs scattered along it.

Traffic counts also included the collection of data on loads which are discussed in the next section.

6.5.6 Traffic with loads

On average, 60% of the traffic on all roads studied was carrying loads. This includes pedestrians. Main cargos are people, manufactured goods and agricultural produce, with a special emphasis on role of pedestrians, bicycles and motorbikes as the main means of transport within the district.

On the Mocuba-Nipalaga, Bive-Maganja, Alto Benfica-Derre and Mugulama-Ile roads pedestrians and cyclists mostly use the road to transport water and to transport agricultural produce (mainly maize) to the markets for sale.

More people use the roads on foot than any other means of moving from one place to another. Their journeys are generally quite short, part of which includes the road use. Many pedestrians transported water, and most of these were women, for whom the road presented an unobstructed and easier route than many of the alternative paths.

On the three roads already mentioned (Mocuba-Nipalaga, Bive Maganja-and High-Derre Benfica), the use of bicycles decreased considerably. This may have been replaced in part by motorcycles, which showed significant increases in numbers on all of these roads, becoming the primary means of transporting passengers.

On the Mugulama-Ile road, as heavy vehicle transport is constrained by steep hills. Contrary to the three previous roads, bicycle circulation has increased considerably on this road over the period. The range of movement of these bicycles is mainly, but not limited to the study road. This is mainly due to the cyclist "ringuistas" who act as transporters and intermediaries taking agricultural produce from farm gates and transporting it to markets.

On the Mocuba-Nipalaga, Bive-Maganja and Alto Benfica-Derre roads, motorcycles are used in most cases on and beyond the extent of these study roads, linking to other roads in the same district. Most of the motorcycle traffic along all the study roads except on the hilly road between Mugulama and Ile, proved taxi services indicating a fairly high demand for the service. Only about a third of motorbikes on the hilly Mugulama-Ile road were loaded at all, evidently a reflection of the effects of the constraining terrain.

There was a large increase in the circulation of pedestrians, bicycles and motorbikes on the Mocubela-Bajone road, indicating the increasingly dynamic socio-economy in different communities along the road, confirmed by the number of markets and fairs scattered along it.

Although not disaggregated during traffic counts, women were the main pedestrian transporters of water and maize flour. Their use of the road for transporting water was prominent on three of the five roads, largely related to location of the water source and availability of water, with the same proviso concerning locations of mills on each road, especially on the Alto Benfica- Derre road.

An indirect indictor of pedestrian school children is also available in the number of pedestrians carrying books. These were almost exclusively primary school children on their way to and from school. Some

children also used bicycles to travel to and from school. The numbers are generally low enough (between 16 – 86) to indicate that no school was located close to the traffic count locations, the closest possibly being located on the Mugulama-Ile road where approximately one third of pedestrians and four percent of cyclists carried books.

Goods vehicle traffic on all roads was used to reach longer distances, however on the Bive-Maganja and Alto Benfica-Derre roads this seems to have had only in-province destinations, whereas the other three were inter-provincial. The Mocuba-Nipalaga road also had goods carrying traffic heading to Malawi. Minibus traffic from Mocuba on the Mocuba-Nipalaga road was also heading to the Malawi border.

Minibus passenger traffic on the Mocubela-Bajone road also grew significantly over the 10 year period. This fairly busy road was the only one with an increase in the use of all modes of transport compared to 2000. Local products especially wooden doors, peanuts (mainly produced on farms in the middle section of the road) and coconuts from plantations closer to the coast are transported out of the area to neighbouring provinces. Traffic is most intense on the days of the agricultural fairs.

Despite the bad condition of the road to Namanjavira and Milange (the road that continues on from the Mocuba-Nipalaga study road), the level of vehicle traffic is the highest of all studied roads, with most use by long haul vehicles most of which carry goods. The proportion of traffic with loads is distinctly the highest among all the study roads (74%).

Aside from people, the only loads carried by vehicles on the Bive-Maganja passenger road are timber and wood. The road has large expanses of forests along it, and local legal and illegal timber businesses provide the material that is being so frequently transported, partly at night to avoid license verification. This road has the second highest movement on traffic on it of all studied roads.

The Alto Benfica-Derre road represents an important regional linkage route supporting trade at this level to Malawi and other provinces, and is a focus for the transport of timber. The registered trucks driving to the provincial capital is indicative of the use of Mocuba as a staging point. Unfortunately the traffic count did not capture all the vehicular traffic on this road due to poor positioning of the traffic count point.

The Mugulama-Ile road has no public transport vehicles using it and goods carrying vehicles are scarce due to the constraining road conditions.

6.5.7 Road Profile 1: N 321 Mocuba-Nipalaga

With reference to the tables below, this road is used in more than 50% of cases for carrying something, mostly as headloads and loaded on bicycles.

About a third of pedestrians (32%) use the road to transport water. The road is an advantage to them and they count on it as a safer (mostly from snakes) route to fetch water. This benefit is mainly felt by women who are the main water collectors in families.

Table 34 - Road traffic and loads - Mocuba-Nipalaga

Transport	% Loaded	Main Loads (%)									
		People	Agric. produce	Goods	Water	Maize flour	Crafts	Books	Animals	Charcoal/ Firewood	Timber
Pedestrian	55.7	0	28.1 (25.9 a)	25	32.3	0	3.6	7.3	1 (100 b)	2.6	0
Bicycle	67	29.6	47.8 (61.8 a)	14.5	2.5	0	1.9	1.3	0	5	0
Motorcycle	69.2	72.2	8.3	2.8	16.7	0	0	0	0	0	0
Vehicle	90.9	88.3	3.3 (100 a)	8.3	0	0	0	0	0	0	0
Minibus	100	100	0	0	0	0	0	0	0	0	0
Truck	87.5	39.3	0	57.1	0	0	0	0	0	0	3.6

Note: **a - % of maize in the agricultural produce**
b - % of birds in the animals transported

Table 35 - Distance range of traffic counted with loads - Mocuba-Nipalaga

Transport	Total Number	Loaded	Range of circulation of the loads				
			% Along the studied road	% Any place in the district	Another district	Another province	Another country
Pedestrian	345	192	99.5	0.5	0	0	0
Bicycle	237	159	76.7	23.3	0	0	0
Motorcycle	52	36	25	75	0	0	0
Vehicle	66	60	0	26.7	68.3	5	0
Minibus	7	7	0	0	100	0	0
Truck	32	28	0	46.4	28.6	21.4	3.6

Pedestrians and cyclists mostly use the road to transport agricultural produce, especially maize, and most of them circulate within the limits of the study road.

However, the main passenger transport is by motorbike, which may have been influenced by Mocuba town where the use of motorbike taxis has reportedly recently become very common. Motorbike use increased by about five times more than in 2000, is used in 75% for transport to other parts of the same district, which may mean that the road is reinforcing or increasing the social and economic network for communities living along it.

Although vehicle traffic has only increased fractionally between the two traffic counts, the road is part of a regional connection in a transport corridor between Nacala and Malawi, and has the local function of enabling goods transport between Mocuba, Namanjavira and Milange. However the road between Namanjavira and Milange is in poor condition and the movement of long-haul trucks from Quelimane and Nacala to Malawi, is currently very low. This may be the reason for the stasis and for the small percentage of trucks registered.

6.5.8 Road Profile 2: Unclassified Bive-Maganja

According to the tables below, a fall in bicycle traffic was registered and pedestrians are the most frequent road users. Around half of both pedestrians and cyclists use the road to transport mainly

agricultural produce, especially maize, and manufactured goods, almost exclusively within the vicinity of the road.

Table 36 - Road traffic and loads - Bive-Maganja

Transport	% Loaded	Main Loads (%)										
		People	Agric. produce	Goods	Water	Maize flour	Crafts	Books	Animals	Charcoal/ Firewood	Timber	Container
Pedestrian	48.2	0	23 (65)a	25.7	30.5	3.7	7.5	8.6	0	1.1	0	0
Bicycle	63.8	10.2	35.3 (72.4)a	25.1	8.4	4.2	0	0	2.3 (80)b	14.4	0	0
Motorcycle	63.8	45.9	12.2 (100)a	20.3	5.4	0	0	0	2.7 (100)b	13.3	0	0
Vehicle	80.6	79.3	0	0	0	0	0	0	0	10.3	10.3	0
Truck	80.6	31.0	0	0	0	0	0	0	0	0	19	1

Note: **a - % of maize in the agricultural produce**
b - % of birds in the animals transported

Table 37 - Distance range of traffic counted with loads - Bive-Maganja

Transport	Total Number	Loaded	Range of circulation of the loads	
			% Along the studied road	% Any place in the district
Pedestrian	388	187	100	0
Bicycle	337	215	99.5	0.5
Motorcycle	116	74	35.1	64.9
Vehicle	36	29	0	100
Truck	36	29	0	100

A similar proportion of pedestrians (30.5%) as on the Mocuba-Nipalaga road, use it to transport water, again benefitting mainly women and their households.

The motorbike is also the main local passenger transport (45.9%) and to locations beyond this road where some of the transport is provided as a taxi service. It appears to have replaced the bicycle as the main means of local human transport.

The transport of logs and wood products is the main reason for the increase by more than three times of vehicle traffic from 2000 to 2012. This transport was all apparently recorded with a destination within the district. If this is so, then this maybe to holding yards in Mocuba before its transport to Quelimane or Nacala. However as explained by the passengers in over three quarters of the light trucks and 30% of the heavy trucks, many of them enter with people employed to load the cut timber, most often under the cover of dark, returning at dawn. During the traffic counts, several of the trucks that passed at night refused to stop.

This road is not used by passenger vehicles as there are no public transport stops along its length. It may be because more than 40 km of it is flanked by forests, with a few breaks for small isolated villages. The

clandestine operations in this area make it somewhat insecure, and with the small clusters of settlement widely separated demand for passenger services is apparently not sufficient.

6.5.9 Road Profile 3: R 652 Alto Benfica-Derre

The traffic on this road, in contrast to the Mocuba-Nipalaga road for example, functions as a focus of local development as well as a regional linkage route. Much of the movement of people and goods on the road involves markets elsewhere in the road (Guja, Mpoto Mocuba, Mpoto Morrumbala, Maticula and Derre).

Table 38 - Road traffic and loads - Alto Benfica-Derre

Transport	% Loaded	Main Loads (%)									
		People	Agricultural produce	Goods	Water	Maize flour	Crafts	Books	Animals	Charcoal/ Firewood	Timber
Pedestrian	57.5	0	22.9 (55.7)a	23.8	27.2	12.2	0.87	12.8	0	0.87	0
Bicycle	46.6	43.2	48.8 (72)a	38.4	12	4	2.4	1.6	0	0	0
Motorcycle	67.4	81	6.9 (25)a	12.1	0	0	0	0	0	0	0
Vehicle	85.7	100	0	0	0	0	0	0	0	0	0
Truck	73	63.6	18.2 (100)a	0	0	0	0	0	0	0	18.2
Tractor	100	100	0	0	0	0	0	0	0	0	0

Note: a - % of maize in the agricultural produce

Table 39 - Distance range of traffic counted with loads - Alto Benfica-Derre

Transport	Total Number	Loaded	Range of circulation of the loads			
			% Along the studied road	% Any place in the district	Another District	Provincial Capital
Pedestrian	600	345	99.7	0	0.3	0
Bicycle	268	125	100	0	0	0
Motorcycle	86	58	60.3	5.2	32.8	0
Vehicle	7	6	16.7	33.3	50	0
Truck	15	11	27.3	0	0	72.7
Tractor	2	2	0	0	100	0

The tables show that the road is mainly used by pedestrians, half of which use it for headloading water, agricultural produce and manufactured goods. Indirectly this re-affirms that the rehabilitated road provides some advantages to women from local communities who benefit from firmer and safer walking conditions.

The use of motorbike taxis and pickups providing transport to people is also found on this road. Although not all motorbikes were used as taxis, a much higher number was recorded than on the Bive-Maganja road for example, and these and local pickups provide an important local passenger transport service.

The road plays a significant role in the transport of agricultural produce by bicycle between farm gate and local buying sites and local markets. This is subsequently collected by trucks once accumulations of produce are large enough.

Timber is collected by trucks which also come into the area with people on board to help load the logs, and often leave loaded with logs via clandestine routes that the traffic counters were unable to monitor. The trucks whether collecting agricultural produce or timber were mainly moving in and out of Quelimane, the provincial capital. It is however likely that the timber was also being transported to Malawi, although this was not monitored as the loaded trucks travelled on other routes.

6.5.10 Road Profile 4: R 1114 Mugulama-Ile

The details of operations on the road can be seen in the tables below:

Table 40 - Road traffic and loads - Mugulama-Ile

Transport	% Loaded	Main Loads (%)									
		People	Agricultural produce	Goods	Water	Maize flour	Crafts	Books	Animals	Charcoal/ Firewood	Timber
Pedestrian	49.9	0	34.5 (28.6)a	18.8	6.2	2.7	4.9	32.3	0.4 (100)b	0	0
Bicycle	53.2	16.6	52.7 (41.3)a	18.3	0.2	3.7	1.7	4	2.6 (100)b	0	0
Motorcycle	38.2	16.7	27.8 (40)a	50	0	0	0	0	5.6 (100)b	0	0
Vehicle	100	70	0	30	0	0	0	0	0	0	0
Truck	66.7	25	75	0	0	0	0	0	0	0	0

Note: **a - % of maize in the agricultural produce**
b - % of birds in the animals transported

Table 41 - Distance range of traffic counted with loads - Mugulama-Ile

Transport	Total Number	Loaded	Range of circulation of the loads		
			% Along the studied road	% Any place in the district	Another Province
Pedestrian	447	223	100	0	0
Bicycle	656	349	55.1	44.9	0
Motorcycle	47	18	11.1	88.9	0
Vehicle	10	10	0	100	0
Truck	6	4	0	0	100

Bicycle traffic and pedestrians represent 56.6% and 38% respectively of road users on this road. Bicycles provide the most significant volume of traffic with over 50% of those counted, carrying loads.

As in the previous three roads, around one third of the pedestrians use the road to transport water, which, in this case may mean that more families have moved closer to the road, and that these benefit from the road providing a potentially firmer and less steep route for the women carriers to collect water along its route. Both bicycles and pedestrians use the road transport mainly to agricultural produce, especially maize. This is the only road where a large proportion (one third) of pedestrians was carrying books, indicating that the traffic counting point was located fairly near a school.

Despite rehabilitation, the road is not yet enabling development of the area. Constraints that have persisted are the steep inclines that heavy truck transporters, many of whom tried initially to use the

road, found sufficient impediments to desist in its use. This was reported by local leaders and discussion groups, confirming the traffic count data.

Since the road is hardly used now by heavy trucks, agricultural produce is collected by "*ringuistas*" the cyclist intermediaries who have become the main marketing agents for agricultural produce in the area. The area of circulation of bicycles is from farm gate to various markets in the district, beyond the limits of this road. Traffic is especially high on Wednesdays when there is a market in Phalane Locality to which neighboring communities and external buyers go.

This road should enable the connection of Ile to Alto Molócue and further, to Nampula Province. However, the 15 km section of the road with difficult conditions has forced transporters to use the main highway to the crossroads to Ile at Nampevo covering more than 67 km of paved road instead of the short cut on the rehabilitated road. Thus, the regional impacts of this road are limited, and instead it has promoted a local development dynamic in which local people on foot and bicycles dominate their own local trade.

6.5.11 Road Profile 5: R 656 Mocubela-Bajone

Bicycles and pedestrians are highly important in the transport agricultural produce and other goods, especially fish products along this road.

Most transport of people is carried out by motorbikes and light vehicles such as pickups, and there is even a minibus service on this route.

Pedestrians and bicycles and to a lesser extent motorbikes are exclusively responsible for transport of agricultural produce – with the exception of coconuts, not only within the road, but for any point in the district. It should be noted that the transport of some agricultural produce is dependent on seasons and agricultural fairs, and the latter were not actually operating during the traffic counts. Reportedly on the days of fairs the levels of traffic also rise and women traders are among the motorbike riders. Traffic counters recalled approximately 12 women among the motorcycles counted.

Table 42 - Road traffic and loads - Mocubela-Bajone

Transport	% Loaded	Main Loads (%)									
		People	Agric. produce	Goods	Water	Maize flour	Crafts	Books	Animals	Charcoal/ Firewood	Coconut
Pedestrian	49	0	46.26 (2.9)a	34.01	0.3	2.72	1.06	10.2	1.36 (100)c	0	0
Bicycle	62.1	12.0	47.1 (6.8)a	23.2 (33.3)b	0.3	1.6	8.7 (85.2)c	1.6	4.5 (85.7)d	0	0
Motorcycle	70.4	61.4	19.3	12.3 (14.3)b	0	0	0	0	7 (100)d	0	0
Vehicle	92.3	83.3	0	16.7	0	0	0	0	0	0	0
Minibus	100	100	0	0	0	0	0	0	0	0	0
Truck	83.3	40	0	6.7 (100)b	0	0	6.7 (100)c	0	0	0	46.7
Tractor	100	100	0	0	0	0	0	0	0	0	0

Note: **a - % of ground nuts in the agricultural produce**
b - % of fish products in the goods transported
c - % of doors in the crafts transported
d - % of birds in the animals transported

Table 43 - Distance range of traffic counted with loads - Mocubela-Bajone

Transport	Total Number	Loaded	Range of circulation of the loads			
			% Along the studied road	% Any place in the district	Another District	Another Province
Pedestrian	300	147	77.6	22.4	0	0
Bicycle	490	310	41.6	58.4	0	0
Motorcycle	81	57	26.3	73.7	0	0
Vehicle	13	12	0	58.3	41.7	0
Minibus	3	3	0	0	0	100
Truck	18	15	6.7	0	0	93.3
Tractor	5	5	100	0	0	0

The circulation of tractors in the area similar to the minibus services, are possible indicators of a greater presence of a wealthier elite in the area, financing these assets.

Water availability from private and public shallow wells is common in the area, and as a result there is little water transported along the road.

The Mocubela-Bajone road has a regional importance for the transport of timber and wood products to other provinces.

According to respondents, heavy truck and minibus traffic is more intense on the days of market fairs. This is when the greatest movement of local produce, especially wooden doors, ground nuts and coconuts occurs. Almost all coconuts collected from this area are exported to markets out of the province.

7 Cultural dynamics and women

7.1 Socio-cultural dynamics

As gender relations are closely linked to the prevailing socio-cultural organization, norms, values and practices, the influences over the roles of women and household members along the study roads will be reviewed.

Figure 37: Woman selling charcoal on the Mocuba-Nipalaga road

Figure 38: Woman taking crops to the market on the Mocubela-Bajone road

Figure 39: Woman working on the Mocuba-Nipalaga road

A review of survey data on households covering the mother tongue of the household head shows the ethnic composition of the study communities and can be seen below in Table 44.

Table 44: Percentage of respondents by mother tongue of the heads of households

Local languages/ % families	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Lomwé	5	0	0	100	0
Manhawa	92	13	5	0	2
Muniga	0	0	0	0	97
Nharinga	2	88	0	0	0
Loló	0	0	94	0	0
Chuabo	2	0	2	0	0
Macua	0	0	0	0	2
Total	100	100	100	100	100

The results in Table 44 show that each community belongs to a different linguistic subgroup. According to local leaders it was understood that the subgroups Manhawa, Muniga, Nharinga and Loló have their

origin in the Lomwé language group, the main ethno–linguistic group in Upper Zambézia, and the one on which this analysis will focus.

Box 7: Road Mugulama–Ile, Muaziua: Anita Missão

Anita Missão is a 42 year old mother of six. Before she lived in Natchopene, but in 1992 she moved to Muaziua to be closer to the school and church. She would have liked to have worked on the road in 1997, but didn't manage to find an opening. Now she lives from the sales of produce from her gardens.

Figure 40: Anita Missão

7.2 Gender and access to land, resources and essential services

The Lomwé are matrilineal. In societies of this kind, inheritance passes from the mother to her daughter and, after marriage, it is the man who moves to the woman's house and works on land belonging to the woman's family.

The Save the Children study "Denied our rights: Children, women and inheritance in Mozambique. Maputo." (2007) clarifies that although women have land use and ownership rights in a matrilineal society, it is increasingly the men who control resources because patrilineal norms have been replacing customary practices, opening space for the power of brothers, sons and uncles to replace that of women as owners of the land and heads of families.

Politics and religion have also influenced this transformation, reducing even further the differences between patrilineal and matrilineal societies.

Such transformation is also visible on the study roads. According to local leaders, custom dictates that after marriage husbands reside and work the fields in spaces granted by their wives' relatives. The land continues to belong to the wife's family and when children are born they have rights over the land.

However, in some study communities such as Dugudela, Damião and Maticula women have limited access to land. After marriage the woman moves to her husband's house, partially reversing the traditional order. Sometimes, if the husband dies, the woman is accused of witchcraft and her husband's family keeps all the property.

Forests hold natural resources actively used by women, but men are almost exclusively involved in the commercialization of forest products of high value, while women's transactions are usually much lower value. As described in section 6.3.1, in 90 to 100% of households surveyed, women collect the firewood for day-to-day domestic use and men are the carpenters, charcoal producers and timber extractors.

Women usually perform the caring and nurturing duties in the household as well as productive work in the fields. In many households women's participation in the sale of agricultural produce or manufactured goods along the roadside is becoming more common. At a larger scale, women on motorbikes moving between agricultural market fairs are active in transactions of various products, often peanuts promoted by NGOs and targeting to a certain extent women as producers.

Women also walk the long distances cited by interviewed individuals and groups to get water for the household, to reach health units - in particular maternity facilities, and grain mills (more on the Alto Benfica-Derre road than the others).

Nevertheless, access to health and education facilities that can specifically benefit women has in fact improved on the roads identified below:

- On the Bive-Maganja road — 3 schools for adult education; 1 maternity facility
- On the Alto Benfica Derre road — 1 adult education school
- On the Mocubela-Bajone road — 1 adult education school

The impacts of this access, particularly the adult education opportunities has seen more women enter into small business activities and the trading of agricultural produce. These are part of structured support projects by NGOs and the private sector (community outgrowers) that also aim to support the greater empowerment of women in income generation and food security.

7.3 Gender and access to education and the labour market

Women's involvement as paid and unpaid labour off their own family plots is indicated in the responses of household heads asked to state whether their spouses worked on the fields of others, were engaged in road building and/or maintenance or worked elsewhere. Table 45 shows the results.

Table 45: Gender and access to education, labour and work on roads in 2012

Description	Communities				
	Dugudela	Damião	Maticula	Muaziua	Nialene
Total nº of households surveyed	63	63	63	63	63
Total nº of household members (excluding the head)	289	313	308	325	284
Total nº of female household members (excl. the head)	144	145	151	160	125
Percentage of female household members	50%	46%	49%	49%	44%
% of household members who can read and write	47%	43%	40%	46%	42%
% of female household members who can read and write	43%	37%	30%	39%	30%
% of household members who worked on the roads	7%	10%	9%	7%	11%
% of female HH members who worked on the roads	2%	2%	0%	1%	2%
% of household members who work off their own farm	22%	16%	15%	10%	15%
% of female HH members who work off their own farm	17%	12%	12%	4%	7%

The results summarized in Table 45 show that:

- In all communities less than 50% of the members of the household, excluding the household head, can read and write;
- In all communities the percentage of women able to read and write is fairly low except in Dugudela, and the proportion of illiterate women in households surveyed by the Project in 2000 has maintained at around two thirds;
- An average of 9% of household members worked on the roads but the percentage of the female household members who participated is only 1%;
- An average of 16% of household members in each community work in activities off their own plots;
- The percentage of women working off their own plots is on average 10%, though lower in Muaziua and Nialene and much higher in Dugudela at 17%.

Even though there has been a conscious effort to encourage women to participate in road works, it is clear that this participation is still much less common than that of men. Women are still constrained by many factors to be free enough and to be accepted to work on the roads and in other forms of off-farm labour. In 2000 the existing burden of household work was one of the most important factors identified by the Gender and Employment Study for married women withdrawing from work on the road. Although women's responsibilities have not changed in the past decade, work on the roads is one of various off farm labour alternatives, and the proportion of women working away from their own fields is closer to that of men than ever before.

Labour participation is highest for both sexes around Dugudela possibly due to the Mocuba-Nipalaga road construction underway and due to the proximity of Mocuba where there are many more labour opportunities than in the rural areas. The higher number of literate women correlates with their greater participation in the labour market in and around Dugudela. The generally unchanging literacy rate of

women in the other sampled communities is however not a defining factor for their increased participation in work outside of their own domestic sphere.

7.4 Participation in society

Women who worked on the roads claimed that working outside the home is now a new reality that opens new perspectives for their development. Most discussion groups endorsed this, claiming that women today have a new attitude to life that became possible not only because of their work on the road but also because of the opportunities created by it when they were able to have a new role in the household as an active contributor to the family income with a wage, and in society, participating in various community development activities.

On the Bive-Maganja road, for example, the Local Community Councils are trained by ADRA in governance, development planning and monitoring. They also raise awareness about individual and collective hygiene, health and nutrition. One of the community councils is in Damião and has 30 members, 19 of whom are women. The quality of their participation is not known, but their dominant presence in this Council and increasing presence in the public sphere at community level is an important reflection of the changes being brought about in rural Zambézia.

8 Key results

Table 46 below summarizes the main findings of the follow-up assessment. The longer term outcomes of rehabilitation of feeder roads in Zambézia have been influenced by at least three important factors: the social and economic viability of the communication link, the appropriateness of the road rehabilitation for local users and additional investment in infrastructure, services and agricultural production.

Rehabilitation of a certain section of a road isolated by bad the sections before or after reduces the benefits significantly. In addition, the conditions required for heavy transport to use a road for transporting goods to market, may require more than surface rehabilitation and bridges, but changes to slopes and even redesign of alignments might be necessary, and without which, the utility of the road is severely constrained.

For road rehabilitation to be successful in promoting development of communities alongside it there must be government of non-governmental agencies that actively invest in the improvement of key facilities along these roads. When access to clean water supplies, schools, health units and markets is still too difficult for those living along the road to use, their development will be much slower than others who do have this access.

Finally, the roads themselves seem to have only influenced the position of women in the longer term insofar as labour on the roads was the initiation of their greater participation in income generation activities. Road construction contractors are still reluctant to employ women as they are considered to be weaker and to be less flexible then men: Women often combine work on the road with their tasks in the household so that they have less energy for a job with a contractor and have to cut corners to make time to respond to both responsibilities. The higher dropout rate of girls than boys from education in the studied communities suggests that in the longer term, these young women will still be constrained in their participation in the labour market. They will not be able to attain better paid jobs due to lower education and professional skills making them less attractive to employers.

Evaluated in a range of one to ten, the main indicators were assessed qualitatively in relative terms and can be seen in Table 47. Although subjective, this assessment is a professional view taking into account the data collected and analysed in the report.

Table 47 and **Error! Reference source not found.** provide a comparative assessment of the main indicators of some of the outcomes of the feeder road rehabilitation. They show that the Mocubela-Bajone road and Nialene community have benefitted most in the longer term from the initial Project interventions. The increase in traffic, access to services and goods, a diversification of income generating activities and a growth of trade and markets and market facilities, as well as an increase in the number of people living along the road all point to its key role in local development. The other roads appear to have fewer positive outcomes local from the road improvements and the Mocuba-Nipalaga seems to have benefitted local communities least.

Table 46: Summary of road characteristics and indicators of change

Roads	Indicators					
	Role of each road	**Settlement**	**Trade and markets**	**Income generating activities**	**Access to services, information and assets**	**Traffic**
Mocuba-Nipalaga	Part of the corridor that connects Nacala and Malawi, connection with N11, and linkage between Namanjavira and Milange. Exports of local produce.	Three main settlement areas: Close to Mocuba: peri-urban, high population density; improved houses and an increase of construction along the road side Half way: rural area with dispersed dwellings and agglomerations in Cubeliua, Murrácua and Mpasso; houses of lower quality material; increase of constructions along the road. Nipalaga:, rural area with dispersed dwellings and signs of emigration.	Market in bairro da Pedreira; and a seasonal market. Seasonal market in Cubeliua.	Income from farming and from off farm labour including small processing industries.	Good access to educational services, but not to health services and little access to water.	High level of through-going traffic but little opportunities for people living along the road to catch transport Total traffic negatively influenced by bad state of road between Namanjavira – Milange and road works.
Bive-Maganja	Connects to N1 and is important for the exports of timber and other agricultural products.	Sparsely populated although there is some settlement close to the road in houses of conventional material as a result of migration of people from the interior to the road side.	One market in Macuia.	Sales of agricultural produce and forest products and wage labour for wood cutters.	One health post in Macuia. There are some primary schools but few sources of drinking water.	Transport of timber is the major road use. No vehicle passenger transport. Most traffic between Maganja da Costa and Mocuba uses an alternative road, but this road still had the highest increase in long distance traffic of all roads.
Alto Benfica-Derre	Part of network connecting to Malawi, regional link Morrumbala to Mocuba, so that produce from this area can be taken to regional and provincial markets.	Growth of settlements in various parts of the road, largely due to the influx of people from Milange.	Various markets along the road for the sale of local produce.	Local produce, some agro-processing, timber, charcoal and firewood, Small industries.	Education and water services exist, health posts not. Increase in the ownership of assets.	Local and regional traffic, including trucks with timber.

Roads	Indicators					
Mugulama-Ile	Planned as linkage to N1 with connection to Nampula and Quelimane. Roads too steep for trucks in part of the year.	Sparsely populated with a tendency of people from certain sections including Muazuia to abandon the area and relocate to Mocuba and Alto Molócue. In Vieriua there has been a growth in the village population.	There are three markets that commercialize local produce New Vieriua market.	Mains sources of income are the sales of agricultural products and labour.	There are schools and water points. There is one health centre. Increase in the ownership of assets.	Mainly local traffic.
Mocubela-Bajone	Not connected to any corridor but very important for transport of local produce out of the area.	Influx of people from Bajone and the coastal area, mainly for peanut production and business.	Several permanent and weekly markets. Buyers come from long distance.	Based on the sales of agricultural produce and carpentries as well as wage labour.	Educational services and water points exist. No health post. Increase in the ownership of durable assets.	Second highest increase in long distance transport among the roads.

Evaluated in a range of one to ten, the main indicators were assessed qualitatively in relative terms and can be seen in Table 47. Although subjective, this assessment is a professional view taking into account the data collected and analysed in the report.

Table 47: Comparative assessment of the impact of road rehabilitation by road by main indicators

Roads	Indicators						Total
	Role	Settlement	Trade and markets	Income generation	Access to services and goods	Traffic	
Mocuba-Nipalaga	5	6	3	3	2	5	24
Bive-Maganja	5	4	8	5	8	7	37
Alto Benfica-Derre	8	7	8	5	8	8	44
Mugulama-Ile	6	5	6	5	8	4	34
Mocubela-Bajone	10	10	10	10	8	10	58

The success of the Mocubela-Bajone road is associated with its location and provision of the connection between commodity producing areas with buyers' markets as well as the presence of governmental, non governmental and private agencies actively promoting development in the area. This situation is similar along the Alto Benfica-Derre road where the main produce marketed is staple foods in large quantities, but the area is more isolated, population density lower, and the presence of intermediary traders probably reduces the benefits to local producers.

The Mugulama-Ile road has had the least impact because it is often not accessible to heavy transport and there has been a decline of people living along it as people migrate to Alto Molócue.

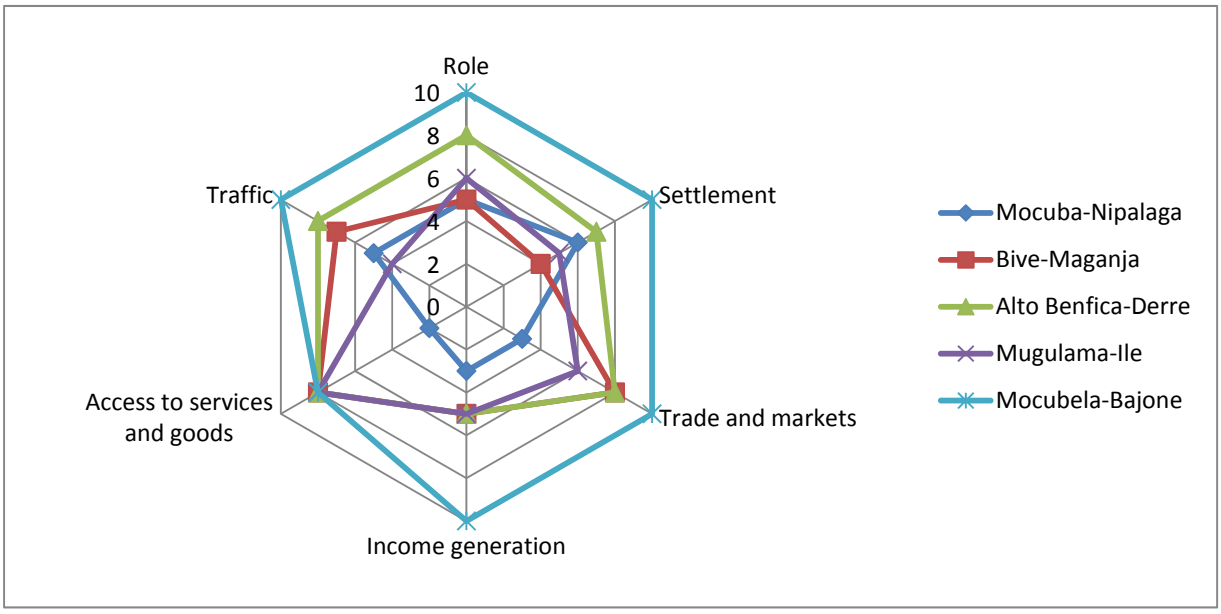

Figure 40: Assessment of the five roads in terms of impacts.

9 Conclusions

Traffic counted on all roads is a very useful indicator of use and economic importance. The traffic profiles have changed over time, with a small increase in heavy transport, almost no public transport and few opportunities for the transport of people except together with goods on open trucks, or on motorbikes and bicycles.

Critical impediments to vehicular traffic such as steep slopes and persisting un-rehabilitated bad sections impeding access to the rehabilitated road have constrained development and have diverted settlement away from the road to more accessible nodes.

Where NGOs and private sector operators have not been able to enter such areas, two key catalysts to social and economic development have not taken up this role. The two roads most affected by these conditions have been Mocuba-Nipalaga and Mugulama-Ile. Further, where alternative routes exist in good enough conditions for use, the deviation of traffic has isolated sections of road and inhibited local development in the same way that through-traffic on the Mocuba-Nipalaga and the exclusive lumber transporters on the Bive-Maganja road also have.

- Full consideration of the function and potential functions of each road in terms of its potential users and route linkages is essential in guaranteeing benefits to the local population.

- Targeting roads for rehabilitation should take into account the potential productivity of an area and make linkages into a network serving production areas.

The relative success of the Mocubela-Bajone and Alto Benfica-Derre roads in stimulating local economic development has been driven by appropriate linkages to markets for locally produced goods.

Rehabilitation of roads that are part of a corridor such as the Mocuba-Nipalaga section designed to carry through-traffic between Milange and Mocuba has minimal influence on local development, except at stopping points. In this specific case, traffic reductions have also inhibited development along this road, due to the poor state of the road link with Milange. All factors impeding access have a highly debilitating effect on local development. However, where market linkages to a highly productive area are constrained such as the steep hills on the Mugulama-Ile road, less efficient alternatives have emerged with the cyclist transporters due to the very high levels of demand and supply.

- Tailoring road rehabilitation so it can incorporate design improvements related to projected use and to the most appropriate users that can trigger local development, may increase the local benefits of rehabilitation significantly.

Road rehabilitation does not automatically lead to improved access to social infrastructures. The improvement of such access depends on the interventions of other agencies to construct schools, health facilities, water points and markets. Government and NGOs have tended at first to build new

infrastructure in areas with good access, usually very close to the rehabilitated roads. In a snowballing effect, these services then attracted more people to live closer to the roads. The distribution of service-providing facilities in itself leads to changes in settlement with seasonal and permanent migration from the interior towards the road side.

- Road rehabilitation undoubtedly contributes to improved access to services, but the benefits extend mainly those living close to the road and within a limited radius, depending on the affordability and availability of transport.

Road works can generate significant temporary employment and a relatively small number of permanent jobs, though opportunities have been more restricted in recent years as contractors hire less local community members in favour of trained longer term labour. The initial temporary employment on the roads did contribute significantly to changing the attitudes and confidence of people who now are more inclined to engage in wage labour and new income generating activities. The project specifically targeted the involvement of women and the significant rise in the proportion of women who engage in wage labour in various activities is testimony to longer term changes. Obstacles to the employment of women are their limited or absent education and negative perceptions of their capacities, as well as their obligations in their own households.

Road rehabilitation leads to an increase in the pressure on natural resources such as land, water and timber and unless there are efforts to protect the resources and local community rights to use them, the outcomes may include lower food security and less livelihoods sources due to erosion, soil fertility loss, unselective wood extraction, and higher competition for resources by outsiders.

On the basis of these conclusions the following recommendations are made:

- Assess the role of a section in the regional transport network before deciding on its improvement. There is little use in investing in orphan roads with no access at the beginning or the end;
- Prioritize roads that open up production areas and link these to local, regional and national markets;
- Take into consideration the inclusion of design changes in road rehabilitation: it may not be enough to invest in surface improvements or bridges if the gradients are too steep for trucks;
- Integrate road rehabilitation works with investments by government and NGOs in social infrastructures, taking into consideration likely changes in settlement patterns;
- To increase the opportunities for women to benefit from labour opportunities offered by road works and by associated induced development it is important that investments are made in the continued education of girls, adult education of women and to investigate and promote areas most suitable for the employment of women in road rehabilitation and maintenance and in other jobs;
- Reduce the risk of uncontrolled extraction and use of natural resources in areas opened up by accompanying road rehabilitation with:

- institutional support to district authorities for licensing and supervising implementation of planned extraction and the control of the illegal logging market;
- financing partnerships with organizations that can build capacity among communities regarding their rights and responsible use, management and monitoring of these resources.

10 Annexes

10.1 Instruments

FOLLOW-UP ASSESSMENT OF FEEDER ROADS PROJECT, ZAMBÉZIA

HOUSEHOLD QUESTIONNAIRE

TO BE COMPLETED BY INTERVIEWER
SURVEY Nº _____ DATE OF INTERVIEW _____
NAME OF INTERVIEWER _____ N AME OF SUPERVISOR _____
DISTRICT _____ COMMUNITY _____
TYPE OF COMMUNITY 1= Dense population 2= Scattered population
COORDINATES Latitude _____ Longitude _____

SECTION I – THE FAMILY 99=Don't know/no answer 00= Not applicable

P1 What kind of family occupies this plot
1= Household headed by husband 3= Extended family
2= household headed by a woman 4= Polygamous family
5= Other. Which?_____

P2 What is the mother tongue of the household head
1=Lomwe 2=Manhawa
3=Chuabo 4=Macua 5=Other

P3 What church do you attend?
1= Catholic 2=Islam 3=Protestant
4=Evangelical 5=Adventist 6=Other

P4 We want to know who is part of the household, that is, who has eaten from the same pot over the last 12 months?_____
(If a polygamous or extended family eats from the same pot count all the people)

Kinship relationship with the household head	Sex 1= Male 2= Female	Age	What is your education level? 1= Cannot read/write 2= Can read/write 3= EP1(up to grade 5) 4= EP2 (up to grade 7) 5= Over EP2	Have you ever worked on the road? Put the nº of months. 0=Didn't work	Has the person worked outside his/her own field over the last 12? 1= Yes 2= No	If yes where did he/she work? 1= In someone else's field in the area 2=On the road 3= In town 4= Outside the country 5= Another situation. Which?_____
P5a	P5b	P5c	P5d	P5e	P5f	P5g

P6 When did this household start to live in this community ?
1= Has always lived in this community
2= Before independence (up to 1975)
3= After independence until the war started (1976, 1977)
4= During the war (1978-1990)
5= After the Peace Agreements (1992)
6= When the road was rehabilitated (1997-2002)

SECTION II – AGRICULTURE AND LIVESTOCK

00= Doesn't apply

P7 How many fields does this household have ?

P7a Inherited	P7b Rented	P7c Bought	P7d Occupied	
				Total

P8 How many pastures does this household have ?

P8a Inherited	P8b Rented	P8c Bought	P8d Occupied	
				Total

P9 What technical means were used in the 2010/2011 season? ..... 1= Yes 2=No

P9a Improved seeds	P9b Fertilizer	P9c Pesticide	P9d Plough	P9e Animal traction	P9f Tractor

P10 Are these available in markets in the district? 1= Yes 2=No

P10a Improved seeds	P10b Fertilizer	P10c Pesticide	P10d Plough	P10e Animal traction	P10f Tractor

P11 Has the household kept animals over the last 12 months ?

Type of Animal	Were they kept over the last 12 months? 1= Yes 2= No	How many animals do they have now ? *(Write the nº of animals)*	How many were sold or exchanged over the last 12 months ? *(write nº of animals)*
Oxen			
Goats			
Pigs			
Chickens/ducks/turkeys			
Pigeons			
Rabbits			
Guinea pigs			
Other Which?_____			

P12 Does the household have fruit trees ? if yes, how many trees?

Type of tree	Do they have this type of tree? 1= Yes 2= No	How many do they have? (nº trees)	How many of productive age? (nº trees)	Type of tree	Do they have this type of tree? 1= Yes 2= No	How many do they have? (nº trees)	How many of productive age? (nº trees)
Banana				Pineapple			
Pawpaw				Cashew			
Coconut				Orange			
Mango				Lemon			
Avocado				Other _____			

P13 How much of the following food crops did you manage to keep and for how long:

Crops	**Kept?** 1= Yes 2= No	**If kept, how much?** (N° de kg)	**How long?** (n° months)
Maize			
Cowpeas			
Butter beans			
Pigeon Peas			
Jogo beans			
Groundnuts			
Cassava			
Sorghum			
Sweet potato			
Rice			
Millet			
Sugarcane			
Vegetables			

SECTION III – FISHING 00= Not applicable

P13B Has this household fished over the last 12 months? What?

Type of fish/shellfish	Have they fished in the last 12 months? 1= Yes 2= No	How much did they catch in the last 12 months? (N° kg)	How much did they sell/exchange in the last 12 months? (N° kg)
Prawns			
Squid			
Crab			
Sololo*			
Grouper			
Croaker			
Small prawns			
Others. Which?_____			

*a type of capenta

SECTION IV – MARKETING 00= Doesn't apply

P14	Where do you usually sell crops? *(Record all who answer)*		
P4a	Farm gate.....1=Yes	2=No	
P14b	Beside the road.....1= Yes	2=No	
P14c	Village market.....1= Yes	2=No	
P14d	Nearest market.....1= Yes	2=No	
P14e	Fair.....1= Yes	2=No	
P14f	Administrative Post headquarters.....1= Yes	2=No	
P14g	District capital.....1= Yes	2=No	
P14h	Provincial capital.....1= Yes	2=No	

P15	Where do you usually sell animals? *(Record all who answer)*	
P15a	Farm gate.....1=Yes 2=No	
P15b	Beside the road.....1= Yes 2=No	
P15c	Village market.....1= Yes 2=No	
P15d	Nearest market.....1= Yes 2=No	
P15e	Fair.....1= Yes 2=No	
P15f	Administrative Post headquarters.....1= Yes 2=No	
P15g	District capital.....1= Yes 2=No	
P15h	Provincial capital.....1= Yes 2=No	

P16	Where do you usually sell your fish? *(Record all who answer)*	
P16a	On the beach..... ....1=Sim 2=Não	
P16b	Beside the road.....1= Yes 2=No	
P16c	Village market.....1= Yes 2=No	
P16d	Nearest market.....1= Yes 2=No	
P16e	Fair.....1= Yes 2=No	
P16f	Administrative Post headquarters.....1= Yes 2=No	
P16g	District capital.....1= Yes 2=No	
P16h	Provincial capital..... .... 1= Yes 2=No	

P17	Prioritise the 3 most rewarding ways of selling crops. *Record (1,2,3)*	
	Farm gate.....	
	Beside the road.....	
	Village market.....	
	Nearest market.....	
	Fair.....	
	Administrative Post headquarters.....	
	District capital.....	
	Provincial capital.....	

P18	Prioritise the 3 most rewarding ways of selling animals.*Registar (1,2,3)*	
	Farm gate.....	
	Beside the road.....	
	Village market.....	
	Nearest market.....	
	Fair.....	
	Administrative Post headquarters.....	
	District capital.....	
	Provincial capital.....	

P19	Prioritise the 3 most rewarding ways of selling fish.*Registar (1,2,3)*	
	On the beach.....	
	Beside the road.....	
	Village market.....	
	Nearest market.....	
	Fair.....	
	Administrative Post headquarters.....	
	District capital.....	
	Provincial capital.....	

P20 Crops	Did your household **grow** this crop in the 011/012 season? 1 = Yeas 2= No	What was your r **production** of this crop in the 010/011 season? 0= No harvest yet 1= 1kg 5= 5 Lt can 10= 10 Lt can 20= 20 Lt can 50= 50 kg bag 90= 90 kg bag 100= 100 kg bag 88= Other. Specify. 99= Don't know		Did your household **sell** part of this production? 1 = Yes 2= No	If sold, **how much**? 1= 1kg 5= 5 Lt can 10= 10 Lt can 20= 20 Lt can 50= 50 kg bag 90= 90 kg bag 100= 100 kg bag 88= Other. Specify. 99= Don't know		At what **price** did you sell 2010/2011 campaign? 1= 1kg 5= 5 Lt can 10= 10 Lt can 20= 20 Lt can 50= 50 kg bag 90= 90 kg bag 100= 100 kg bag 88= Other. Specify. 99= Don't know	What quantity do you still have to sell? 0= Don't have/Sold 1= 1kg 5= Tin of 5 lts 10= Tin of 10 lts 20= Tin of 20lts 50= Sack 50 kgs 90= Sack 90 kgs 100= Sack 100 kgs 88= Other, specify. 99= Don't know	
		QT	UN		QT	QT	MT	QT	UN
Maize									
Cowpeas									
Butter beans									
Pigeon Peas									
Jogo beans									
Groundnuts									
Cassava									
Sorghum									
Millet									
Rice									
Sugar cane									
Sweet potato									
Vegetables									
Other									

Specify the vegetables:_____

P21 Over the last 10 years have you benefited from any agricultural or livestock promotion activities?
1= Yes 2=No
If yes, specify which _____ _____

P22 How did you transport crops for sale

Transport	Destination	Distance (km)	Time (minutes)
On foot			
Bicycle			
Cart			
Motor bike			
Minibus taxi			
Pick-up truck			

SECTION III – ACCESS TO SERVICES AND RESOURCES

00= Not applicable

P23 Where is the nearest health post?
1 = In the community 2= Nearest village 3 = On this road
4 = Locality headquarters 5= AP headquarters 6 = District capital
Nº kilometres_____

P24 How long does it take to get there?
1=Up to 30 min 2=Over 30 min to 1hour 3=Over 1 hour to 3 hours 4=Over 3 hours.....

P25 How do they get their?
1=on foot 2= bicycle 2=minibus taxi 4=other means
Which?_____

P26 What is the opinion on the service provided there?
1= Bad 2=Reasonable 3=Good.....

P27 How long does it take to get to the following school? :

P27a 1=EP1.....

P27b 2=EP2.....

P27c 3=EPC.....

P27d 4=Secondary.....

P27e How many school-age children in this family do not go to school ?.....

P27f Where does the household get its drinking water ? *(Possibly more than one answer.) Record those who answer. Mark with* O *the main water source)*

P27g Private open well (of the household).....1= Yes 2=No

P27h Rainwater .....1= Yes 2=No

P27i River/stream .....1= Yes 2=No

P27j Lake/Lagoon.....1= Yes 2=No

P27k Pond/swamp .....1= Yes 2=No

P27l Spring .....1= Yes 2=No

P27m Open community well.....1= Yes 2=No

P27n Hand pump community well .....1= Yes 2=No

P27o Hand pump community borehole.....1= Yes 2=No

P27p Community standpipe.....1= Yes 2=No

P27q Other. Which ?_____

P28 Which fuel is normally used for cooking and lighting?

	Fuel	Use? 1=Cooking 2=Lighting 3= Cooking and lighting 4=Don't use	Where do they get it? 1= Informal market 2= Shop 3= Forest/field 4=Other	Where is it located ? 1= Community 2= Nearest village 3=Point on the road 4=AP headquarters 5= District capital
P28a	Firewood			
P28b	Charcoal			
P28c	Paraffin			
P28d	Batteries			
P28e	Candles			
P28f	Solar panels			
P28g	Other			

P29 Answer about the following building materials:

Materials	Are they used? 1= Yes 2= No	Where are they acquired? 1= Informal market 2= Shop 3= Forests/field 4=Other	Where are they located ? 1= Community 2= Closest village 3=Point on the road 3= AP headquarters 4= District capital	How long does it take to get there?(in minutes)
Straw for roof				
Bamboo				
Rods				
Palm leaves				
Clay				
Bricks				
Cement				
Wood				
Corrugated iron sheets				
Paint				
Nails				
Locks and padlocks				
Other Which?_____				

SECTION IV – ACCESS TO GOODS 00= Not applicable

P30 How many of the following articles do you have ? (in working order)

Materials	Owned ? 1= Yes 2= No	Where obtained? 1= informal market 2= Shop 4=Other	Where located? 1= Community 2= Nearest village 3=Point on the road 3=AP headquarters 4= District capital	How long does it take to get there?(in minutes)
Axe				
Machete				
Hoe				
Syckle				
Spade				
Plough				
Hooks				
Fishing net				
Aluminium pan				
Kerosene lamp				
Radio				
Kerosene stove				
Watch				
Chair				
Table				
Cellphone				
Cart				
Canoe				
Bicycle				
Motorbike				
TV/DVD				
Solar panel				
Other ?_____				

P31 do you have access to the following goods?

Goods	Are they used? 1= Yes 2= No	Can they be bought locally? 1= Yes 2= No
Bread		
Sugar		
Milk		
Matches		
Oil		
Soap		
Tea		
Maize flour		
Rice		
Batteries		
Candles		
Kerosene		
Clothes		
Salt		

SECTION VI – EXPECTATIONS

99= doesn't know/didn't answer

P32	Since rehabilitation what is the main advantage the road has brought for this household?			
P32a	Better access to services (health, education,etc).....	1= Sim	2=Não	
P32b	More buyers for crops.....	1= Sim	2=Não	
P32c	Better access to employment.....	1= Sim	2=Não	
P32d	Better placement of crops.....	1= Sim	2=Não	
P32e	Access to more goods to buy.....	1= Sim	2=Não	
P32f	Better able to travel around and circulate.....	1= Sim	2=Não	
P32g	No advantage.....	1= Sim	2=Não	
P32h	Other. which?_____	1= Sim	2=Não	
P33_2	And the main disadvantage?			
P32_2a	Circulation of outsiders.....	1= Yes	2=No	
P32_2b	More crime.....	1= Yes	2=No	
P32_2c	More prostitution	1= Yes	2=No	
P32_2d	More business competition.....	1= Yes	2=No	
P32_2e	No disadvantage	1= Yes	2=No	
P32_2f	Other . Which?_____	1= Yes	2=No	

SECTION VII – STI, HIV – AIDS

99= doesn't know/didn't answer

I have a few more questions I would like to ask. Some are on personal and sensitive subjects, so I would like to remind you that you do not have to answer.

P33 Have you ever heard of STI or AIDS?..... 1= Yes 2=No

P34 How did you hear about them?

1=Radio
2=Through friends
3=Activists (NGO and community)
4= health unit
5= Neighbourhood headquarters
6= Other. Which?_____

P35 Are there ways of avoiding getting AIDS or the virus that causes AIDS?

1= Yes 2=No 3=Don't know

P36 What can a person do to avoid this disease?

1-No sex
2-Use a condom
3-Be faithful to one partner
4-Limit the number of sexual partners
5-Avoid kissing
6-Avoid sex with prostitutes
7-Avoid sex with people who have many partners
8-Do not use old blades
9-Avoid injections
10-Other_____

P37 Can this disease be cured? ..... 1= Yes 2=No 3=Don't know

If yes, how?_____

P38 Do you think that road rehabilitation has increased the number of people with AIDS? 1= Yes 2=No

P39 If a relative has AIDS, will you stay with him/her at home and take care of him/her?..... 1= Yes 2=No

Why?_____

P40 Can you allow a child to play with another one who has AIDS? 1= Yes 2=No

Why?_____

THANK THE INTERVIEWEE FOR HIS/HER PARTICIPATION. SAY GOODBYE TO HIM/HER AND EVERYONE PRESENT IN THE HOUSE. ASK FOR THE NAME OF THE HOUSEHOLD HEAD IN CASE THERE SHOULD BE ANY DOUBTS.

Name of household head .....

10.2 Focus Group Discussion Guide

Households/Women

A – ACCESS TO INFRASTRUCTURE

P1 – Is there a school, hospital and other services in the area where you live?

List the institutions (School, Health Centre, Market, Water Sources, Energy Sources etc.) USE A4 FORMS

P2 – How long does it take to reach these places? On foot?

P3 – Does everyone in the community have access to these services? Why?

P4 – Are your houses the same as in 2003? What has changed? Why?

P5 – Do you think there will be changes in the future? Which?

P6 – What are your main problems with these services?

B – EDUCATION

P7 – How many girls and boys are in school?

P8 – What are the constraints on more girls registering and attending school?

P9 – What has changed in schools since 2003? Why?

C – HEALTH AND HIV-AIDS

P10 – When you are ill where do you go for treatment?

P11 – Where do you get the best results?

P12 – Where do you get information on diseases, how to prevent and treat them?

P13 – Have you ever heard of STI? And AIDS?

P14 – What do you think about these diseases?

P15 – What do you think about people with AIDS?

P16 – Do you think that living close to this road has affected the number of people with AIDS? Why?

P17 – What has changed in health since 2003? Why?

D – TRANSPORT

P18 –What kinds of transport exist now?

FOR PEOPLE FOR GOODS

P19 – Where do people get transport?

Try to understand the distance between residences and fields

P20 – How much do people pay for transport? What do they think of these prices?

P21 – What has changed in transport since 2003? Why?

E – MARKETS

P22 – Where do you buy what you need? How available are they?

Insist on

-consumer goods

-seeds/fertiliser/ agricultural tools

-construction materials

-fuel (for lighting and cooking)

P23 – Has it always been like this? What has changed since 2003? Why?

F – WATER

P24 – What are the main water sources and what are they used for?

PREPARE A MATRIX OF THE MAIN SOURCES AND THEIR USES

P25 – What has changed in water supply since 2003? Why?

G - ENERGY

P26 – What are the main energy sources for cooking and lighting?

P27 – Have they always used these? What has changed since 2003? Why?

H – AGRICULTURE AND LIVESTOCK

P28 – What kind of agriculture is practised in the area?

Verify

- irrigated
- rain fed
- shifting
- mechanised

P29 – What kind of pasture is used?

Verify

- collective
- in association with someone else
- individual

P30 – Where do people practise agriculture?

Verify

- close to their homes

- beside ponds/rives
- low-lying areas

P30 – How many times a year do people cultivate?

P31 – What do they sow in each season?

P32 – Are fields close to the house? How long does it take to get there (more or less)?

P33 – Were there good harvests in the 2011/2012 season? Which crops work produced most? Why?

P34 – Which animals produced most? Why?

P35 – What did people do with the crops they got from their fields?

P36 – What are the main problems preventing good agricultural and livestock production?

P37 – What has changed in agriculture and livestock since 2003?

I – LOCAL DEVELOPMENT

P38 - What development programmes are there in this area today?

P39 – Since 2003 (10 years) have any organisations worked in this area?

P40 – And private companies?

P41 – What good have they done for communities in this area?

P42 – Do you get involved in work with these organisations and companies? Doing what?

P43 – Was your participation worth it?

P44 – Do you participate in community work and events? What kind?

P45 – Was it worth it?

P46 – What is women's involvement in community development activities here?

P47 – Is a positive? Why?

P48 – What are the main problems preventing development in this area? Can you explain?

P49 – What development opportunities are there for women?

J – PROJECT VISIBILITY

P50 – Do you recall the rehabilitation of this road? When was it?

P51 – Has there been more work on the road since then? When? What kind of work?

P52 – Do you think rehabilitation brought development? Why?

P53 – Who do you think has benefited from rehabilitation? Why?

P54 – What has rehabilitation brought about in the lives of families in this community?

P55 – Can you explain if this road is important? What is its importance? For whom? Why?

P56 – Has rehabilitation changed movement on this road? How?

P57 – If it has changed, how?

For the road being rehabilitated:

- Why are they rehabilitating the road again?
- Who do you think will benefit?

Discussion Groups

Community Leaders

A – LOCAL DEVELOPMENT

P1 – What development programmes are there in this area at the moment?

P2 –Have any organisations worked in this area since 2003 (10 years)?

P3 – And private companies?

P4 – What good have they done for communities in this area?

P5 – Do communities usually get involved in work with these organisations and companies? Doing what?

P6 – Has participation been worth it?

P7 – Do you participate in community work and events ? What kind?

P8 – And in this case was it worth it?

P9 – How do women in this area usually get involved in community development activities?

P10 – Is it positive? Why?

P11 – What are the main problems in impeding development in this area? Can you explain?

P12 – What development opportunities are there for women?

P13 – How do people receive information on:

- Local development
- Health and preventing disease
- Life in the community
- Life in the district and the province
- Life in the country

For the road under rehabilitation:

a) **Why are they rehabilitating the road again?**

b) **Who will benefit?**

B – CUSTOMS AND TRADITIONS

P14 – What is the decision-making process in communities in this area?

Within the community and the household

On land, use of the family economy, crops in the fields, division and inheritance of fields

P15 – Was it always like this or have there been changes since 2003? If yes, which and why?

P16 – What are the main rituals and traditional ceremonies in this area?

P17 – How do they influence community life?

P18 – What has been the situation since 2003?

P19 – What are the main traditions governing land rights and ownership in the area?

P20 – What has changed in this respect since 2003?

C – PROJECT VISIBILITY

P21 – Can you remember the rehabilitation of this road? When was it?

P22 – Have there been any more road works since then? When? What kind of work?

P23 – Do you think that rehabilitation has brought development? Why?

P24 – Who do you think benefited from rehabilitation? Why?

P25 – What has rehabilitation changed in the life of families in this community?

P26 – Can you explain whether the road is important? What is its importance? For whom? Why?

P27 – Has rehabilitation changed traffic on the road? How?

P28 – if it has changed, what kind of changes were there?

For the road under the rehabilitation:

- Why is the road being rehabilitated again?
- Who do you think will benefit?

On houses and establishments

(Interview along the road)

1. How long has your family been living here?/Do you work here?

2. Why did you come to live here/set up your establishment here?

3. Where did you come from?

4. Has road rehabilitation changed anything in your life?

5. Do you know other people who moved here because of the road?

6. What do you think is wrong?

7. Do you think this road is important for the development of the region? Why?

9. Have there been any significant changes in socio-economic dynamics on the road over the last 10 years? Which?

Interview with transporters

(Interview along the road)

1. Is there any regular public transport along the road? When?

2. Do you think the prices are accessible for the people using this transport?

3. How long does it take to get to the Administrative Post Headquarters?

4. How much does it cost?

5. How long does it take to get to the District capital?

6. How much does it cost?

7. How long does it take to get to the nearest National Road?

8. How much does it cost?

9. How has public transport evolved between 2003 and 2012? Why?

The interviewee:_____

The interviewer:_____

_____

Interview with market vendors

Access to goods and crops for sale along the road

Basic crop prices at the farm gate and the sale price of stalls

Access to markets

Forms of marketing

Changes in marketing patterns over the last 10 years

Prices of basic essentials

Evolution of prices of basic essentials over the last 10 years

Interview with local informants

(Influential person, Head of Locality, School headmaster/headmistress, Nurse…)

Population

Main ethnic groups and religions

Population movements

Main communications/information channels on development, outside information and local information

Economy

Small industry activities along the roads

Development dynamics

Changes in political – administrative structure over 10 years

Existence of associations

Perceptions of development constraints

Availability of banking, savings and loan services in the area and main changes between 2003 and 2012

Presence of development agents and their movement (entry of some and withdrawal of others) between 2003 and 2012

Importance of the road for the development of the region

Significant changes in socio-economic dynamics on the road

Infrastructure and services

New infrastructure built along the road between 2003 and 2012

Evolution of housing between 2003 and 2012 and tendencies

Evolution of water and energy supply in the community between 2003 and 2012

Location of water sources along the road

Evolution of female school attendance between 2003 and 2012

Location of schools along the road

Distribution of health units along the road

Incidence of HIV/AIDS and STI on the road

Trends in the construction/rehabilitation of houses and small commercial activities along the roads

Trends in opening new roads along the rehabilitated roads and the main reasons

Socio-cultural dynamics

Decision-making process (in the community and the household) (on land, use of the family economy, field crops, division and inheritance of fields) and their evolution

Interview with Institutions

Administrative Post/District Administration/NGOs

Development programmes and prospects in the district/Administrative Post

Main changes over the last 10 years

Institutions/organisations/interest groups operating in the area and their movement (entry of some and withdrawal of others) between 2003 and 2012

Availability of banking and credit services in the area and main changes between 2003 and 2012

Perceptions of development constraints

Private sector. Trends in change and areas of activity

Access to consumer goods, fuel and construction materials between 2003 and 2012

Community involvement in road maintenance

Main changes between 2003 and 2012

Population movements

Average family size

Main ethnic groups and religions

Interview with Construction Companies involved in the Project

Name of Company.....

- What work/works did the company do on this road?
- 2. When? (Year and month/s)
- 3. How were workers for the road recruited?
- 4. And what about the process for recruiting women?
- 5. How were community leaders involved?
- 6. Why are there so few women working on road rehabilitation?
- 7. What can be done to increase the number of women in this kind of work?
- 8. How important is the road for the region's development?
- 9. Have there been any significant changes in socio-economic dynamics on the road over the last 10 years? Which?
- Interviewer:..... Date:.../.../...

Interview - Women (currently or before) working on the road in construction and maintenance.

(Interview along the road)

Interview location: ..... Date:.../.../99

Road: .....

Identification

Name:.....

Age:..... Born in: ..... Resident in: .....

Marital status: ..... Nº children: .....

On work

1 What kind of work/s did you do on the road?

2 When?

3 What was the recruitment process like? (Who provided information, how did you register, how long did it take, etc.)

4 How were traditional leaders (*mwenes* and *mwhanus*) involved in this process?

5 What should have been done to guarantee participation by women?

6 What advantages did you get from work on the road?

7 Did your work on the road change anything in your life and the life of your family? Can you explain?

8 What were your main difficulties? How were they resolved?

9 Would you be willing to work on the road again? Why?

Interviewer:.....

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