

*Intermediate Technology Consultants (ITC)
WSP International*

networking with members of the

International Forum for Rural Transport and Development

*Methodology for the rapid assessment of rural
transport services*

**The rapid assessment of rural transport
services in Luapula Province, Zambia**

Draft Report

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April 2006

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1.0 EXECUTIVE SUMMARY

The study is being undertaken for the Sub Saharan African Transport Policy Program (SSATP), administered by the World Bank. The aim is to develop a methodology for rapidly assessing the nature of rural transport services in sub-Saharan African countries, namely Burkina Faso, Cameroon, Tanzania and Zambia providing information that can assist with policy formulation in these countries.

Kiran & Musonda Associates was appointed by Intermediate Technology Consultants (ITC) UK to carry out the study on Rural Transport Services in the Luapula province of Zambia.

The overall objective was to carry out a rapid assessment of existing motorized and non – motorized transport services and their costs; the demand for transport services for economic requirements as well as for social, health, educational and community reasons, and the regulatory situation. This document discusses the nature of road and water transport services in Luapula province and provides information and ways by which the various services could be improved.

The existing passenger and freight transport services in three districts of Luapula province namely Milenge, Nchelenge and Samfya were surveyed including the provincial routes linking the districts to Mansa – the provincial capital and the market and village hubs serving the rural catchments. The required information and data was collected using data sheets that were designed during the planning phase of the study. The interviews were undertaken by the members of the implementing team (the national coordinator and team leader) to ensure a clear understanding of the wide-ranging issues, discover new ideas, new information and new sources of information.

The terms of reference required the assessment to provide a rapid but valid impression of the existing rural transport service for a wide range of stakeholders in the whole selected area. From the survey and interviews carried out, it could be seen that the methodology developed by the study team was very effective. From the rapid assessment carried out in Luapula Province it was established that:

- o There is very little motorised traffic on most roads and very few motorised rural transport services. Vast areas are located very far away from centres of commerce and social service provision and are beset by accessibility problems e.g. poor roads and no transport service support infrastructure and low economic demand.
- o There are major variations in motorised traffic between agricultural and fish markets in the ratio of 1 to 20 respectively.
- o Traffic is seasonal: very low during the wet season (farming and fish ban period) and high during harvest time and fishing period (March – November).
- o Cost of bicycles in Zambia is very high.
- o People walk and cycle long distances – exceeding 100 km to access goods and services.
- o Lack of transport in outlying areas results in unnecessary deaths and wastage of agriculture produce.
- o Bicycles and small boats are the main intermediate means of transport in Luapula Province and other types of IMT are almost non-existent
- o There is a need to improve rural transport services in Luapula Province and Zambia in general as most areas are far from centres of commerce and social service provision.

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Results of the survey indicate that the stakeholders would like the government to improve the rural transport infrastructure, support promotion of IMTs, improve the canals and waterways

and provide large transport vessels on the lakes, reduce the cost of bicycles and offer incentives and tax rebates for rural transport providers.

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2.0 SURVEY BACKGROUND AND METHODOLOGY

The methodology used in this survey was developed in 2005 by an international team that included the author of this country report. The World Bank's Sub-Saharan African Transport Policy Program (SSATP) contracted the British-based consultancy firm ITC, working in association with WSP and members of the International Forum for Rural Transport and Development (IFRTD) to develop a methodology for the rapid assessment of rural transport systems. The guidelines specified passenger and freight transport for distances of between 5 km-200 km, encompassing much rural transport, but excluding within-village transport, long-distance national transport and international corridors. A multidisciplinary team met in Ethiopia in April 2005 to devise the survey methodology. Four National Experts and the Team Leader implemented the methodology in Burkina Faso, Cameroon, Tanzania and Zambia. The team reconvened in Kenya to review the methodological lessons and national findings.

Rural transport systems operate on hub and spoke systems at several levels. Key hubs are provincial towns, market towns and villages. The various spokes and hubs have characteristic combinations of transport, including trucks, buses, minibuses, pickups and intermediate means of transport (IMTs). The methodology includes a survey of transport types, operators, users and regulators at sampled hubs and spokes, stratified by hub hierarchy and remoteness. The methodology requires one month to implement and provides a rapid overview of rural transport systems, highlighting key constraints, stakeholder views and proposals for improvements.

A region representing about 5% of the country, is chosen where the transport catchments area corresponds approximately to administrative boundaries. Within this area, interviews are held with the regulatory authorities (local government, police) at provincial, district and village levels. Operators, suppliers and repairers of transport devices (motorised and unmotorised) are interviewed and operating costs and fares recorded. Interviews are conducted with users (and potential users) of transport including farmers, traders, employees, household managers, school authorities, pupils, health service providers, patients and marginalised people. Five interviews (at least two with women) are needed per stakeholder category and are stratified for isolation. Traffic counts (including pedestrians and IMTs) are carried out on selected provincial, market and village spokes on market and non-market days.

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The report author (not enumerators) undertook all the semi-structured ('rapid rural appraisal') interviews. As the survey progressed, information from different sources was triangulated and anomalies investigated. The survey guidelines stress the importance of poverty focus and crosscutting gender, safety and HIV/Aids issues. Complementary national level document reviews and interviews were undertaken to ascertain the positions of key institutional stakeholders, the policy and regulatory frameworks and the availability of relevant data. Full details of the methodology and the data sheets used are available in the project inception report (Starkey, 2005). This is available as an additional annex to this report, but for reasons of space has not been included as part of this country report.

In undertaking the methodology in Luapula province the author travelled approximately 3000 kilometres and undertook approximately 50 interviews with a wide range of stakeholders. Traffic counts were arranged on three types of road, with counts on both market and non-market days, in locations where there was a significant market-day effect.

- three provincial spokes [Samfya to Mansa], [Milenge to Mansa] and [Nchelenge to Mansa]

- five market spokes [Samfya to Mpata & Lubwe], [Milenge to Kapalala] and [Nchelenge to Kashikishi & Shabo market]
- five village spokes outside the villages of Shitambuli [Milenge district], Lubwe – Miponda Kasuba, Mpata swamps [Samfya district] and Nsemiwe, Chisenga Islands [Nchelenge district].

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3.0 INTRODUCTION TO THE SURVEYED REGION

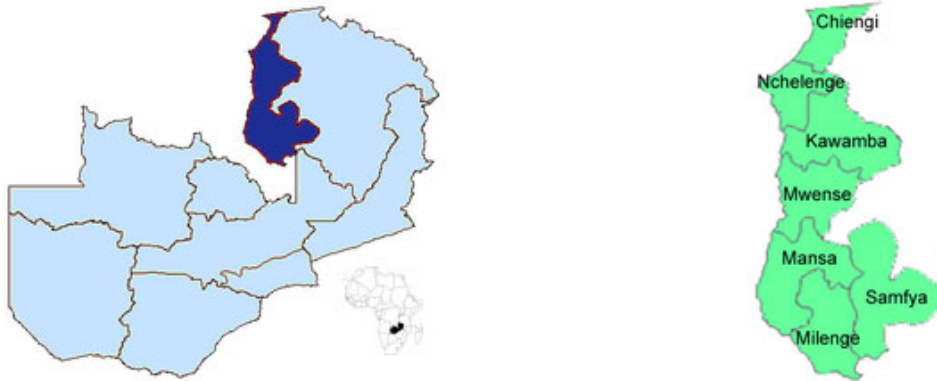


Figure 3.1. Sketch of Zambia showing Luapula Province (left) and sketch of Luapula showing Districts (right)

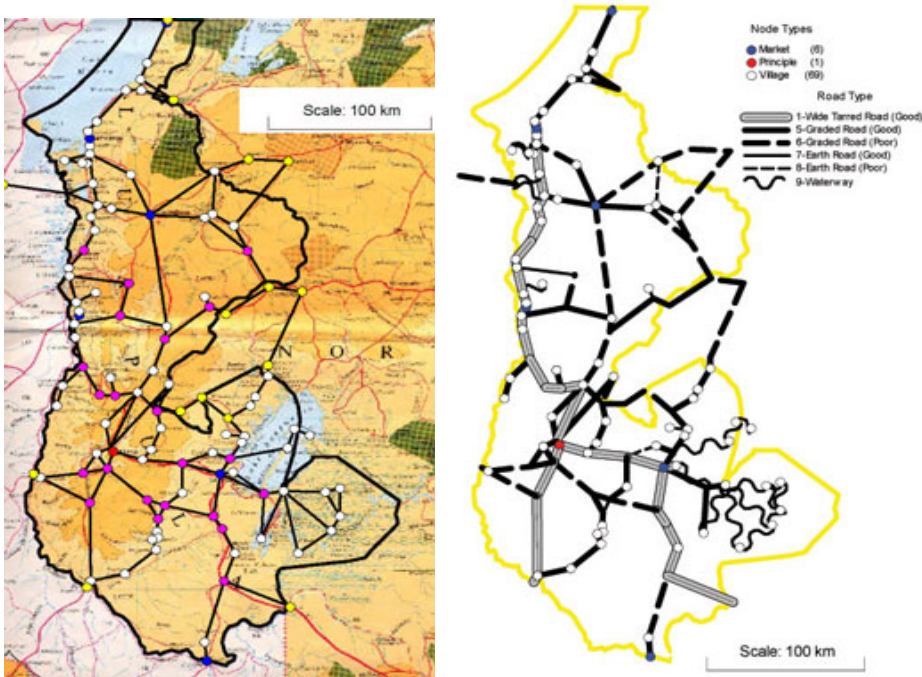


Figure 3.2. Luapula Province showing settlements (left) and the hub and spoke systems of the roads (right)

3.1 Administration and Population

3.1.1 Local Authorities/Administrative Arrangements.

Luapula Province comprises seven administrative districts namely Mansa (provincial capital), Chiengi, Kawambwa, Mwense, Nchelenge, Samfya and Milenge. Five of the seven districts - Samfya, Mansa, Mwense, Kawambwa and Nchelenge are connected to the rest of the country by an all weather class I tarred road. The Chiengi – Nchelenge and Milenge – Mansa town routes and all feeder roads are not tarred and are in poor condition needing urgent intervention. Mansa is administered by a Municipal Council and hosts the provincial government administration headed by a Provincial Deputy Minister. The Council is headed by a Mayor. The other districts are administered by District Council Secretaries and District Commissioners.

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3.1.2 Population and Settlement Pattern.

The population of Luapula Province is just under 800,000 and is concentrated along the lakes and in the Luapula river valley, where fishing is the main source of livelihood. A large part of the province is covered by open water and swamps i.e. lakes Mweru, Bangweulu, the swamps and the Chambeshi and Luapula rivers. Population densities are low. Communities are small but tend to be concentrated along roads, lake edges and rivers. In some places there were over 30 km of non-stop strip settlements with occasional primary schools, village stores and churches.

Table 3.1.2 Population in seven districts of Luapula province

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The seven districts of Luapula province	
<i>District</i>	<i>Population (approximate)</i>
Mansa	179,700
Samfya	163,600
Nchelenge	111,100
Milenge	28,800
Kawambwa	102,500
Mwense	105,700
Chiengi	83,800
Total population Luapula province	775,200

Source: CSO, 2000 Census of Population and Housing

3.1.3 Ethnic and Religious Diversity

There is diversity in languages and traditional practices in Luapula. *The predominant language of communication in Luapula province is Bemba (of Northern Province) – 63% percent use it. The Ushi (16%), Ngumbo (5%), Kabende (4%), Bwile (2%), Unga (2%), Lunda (2%), Chishinga (1%), Shila (0.5%), Tabwa (0.5%) form the majority ethnic groups in Luapula Province.

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The population of the Luapula Province is predominantly Christian, comprising the following types of churches – Catholic, Pentecost, Christian Mission to Many Lands (CMML), United Church of Zambia, Seventh Day Adventist, New Apostle, Jehovah's Witnesses, Anglican, Methodist etc. Between five to eight churches could be found in one village.

3.2 Natural Resources

3.2.1 Land, Terrain and Topography

The region covers an area approximately 50,600 km² with elevation exceeding 1500 m. Open water and swamps cover about 25% of the area and the rest is grassland and forests.

3.2.2 **Climate and Seasonality**

Rainfall is high, ranging from 1100 to 1500 mm with between 80 – 120 rainy days per year (November to late March). Annual mean temperatures range between 22.5 to 25°C. The dry season is between April to October and temperatures range between 18°C - 27°C. In winter, May – July, temperatures range between 6°C - 25°C.

3.3 **Economic Activity**

3.3.1 **Agriculture and Fishing**

Fishing is the main economic activity in Luapula Province and is central to many livelihoods. Arable land is rain-fed generally. Livestock is very limited. Most farmers are small scale or subsistence farmers. There are a few commercial farmers in Mansa, Kawambwa and Samfya.

With two large lakes, rivers and swamps, fishing is the main economic activity between March and November as there is an annual ‘fishing ban’ between December and February. During this period, the province’s most economic activities are at lowest as there are no other alternative economic activities for most people during the ‘fish ban’ period.

The fishing industry generates millions of kwacha annually for the Nchelenge and Samfya Districts. An estimated 60% of the population are involved in fishing. A large number are involved as traders, fish-processors and transporters.

Cassava is the main staple food followed by maize, and production has increased over the last few years due to government support of the sector. There is an increase in the number of cattle, goats and sheep, but livestock farming plays a secondary role in the local economy. The agriculture sector in Luapula Province depends on government support for production and marketing of agricultural produce.

Gardening or farming of vegetables is on a small scale. The province produces about 50% of the national production of cassava and beans but grows very little maize, sorghum, millet, tobacco, rice, groundnuts, sunflower, beans, sweet potatoes etc despite the abundant water.

3.3.2 **Alternative economic activity**

Tourism remains under-exploited in Luapula Province. There are a number of tourist attractions, e.g. the beaches of lakes Bangweulu and Mweru; two waterfalls (one at Ntumba Cushi located 15 km from Kawambwa); lake Chifunabuli in Lubwe (40 km from Samfya). The Bangweulu game management is home to black lechwes, the Lusenga Plain National Park, the Mutomboko ceremony in Kawambwa and Kwanga ceremony in Samfya among other attractions.

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3.3.3 **Average Income**

Household incomes from agricultural produce such as cassava are low because of large distances to the markets. The surveys revealed that household income varies both seasonally and annually due to seasonal variations, accessibility to agricultural inputs and yield. Although annual household income was not ascertained from the survey questionnaires, the income was examined in relation to transport fares to establish the ability of the households to pay for travel and the frequency in which they undertake the trips. Farming income was found to be less dependable since it is seasonal. From the various interviews of households in Milenge, Nchelenge and Samfya - income from farming varies between ZK 50,000 – 150,000 (US\$ 11 to 32) per household, but not exceeding ZK 2,000,000 (US \$ 422) per annum.

Some farmers were found to favour selling or bartering their produce in the village, cheaply or for less favourable terms than transporting their crops to market, which is costly.

Fishing is the major source of income for most households in Luapula, directly or indirectly. Income varies from as low as ZK 150,000 (US\$ 32) to more than ZK 500,000 (US\$ 105) per month. In some cases, it may exceed ZK 7 million (US\$ 1474) per annum.

At the time of the survey, April to June 2005; 1.0 US\$ = ZK 4750

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3.3.4 Service Provision.

The province has a total of 325 government primary and 35 secondary schools. The province has a total of 102 health centres, six hospitals including one specialist hospital at Kabalenge. The rest are rural health centres. The health facilities provide a total of 1600 beds.

3.3.5 Mobile Phone Coverage

Apart from Milenge, the other six districts in the province are connected to the land telephone system. However, the mobile phone coverage is still in its infancy stage. The provincial capital was only connected last year (2004) by the Celtel provider. And recently, at the beginning of May 2005, Nchelenge was connected by another provider, Telecel. Therefore, only two districts out of seven are connected to the mobile phone system. Samfya is expected to be connected in the near future. Apart from the Provincial Capital Mansa, only the fishing towns seem targeted for connection due to the high incomes and increased trading generated by the fishing industry.

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3.3.6 Electricity Coverage

All seven towns in the province are connected to the national hydro power grid. The Musonda falls hydro plant (5 Mega Watts) supplements current electricity supply. The province has additional potential small hydro schemes, which can supply power – Mumbilima falls (326 MW), Kundabwika falls (105 MW), Lumangwe falls (114 MW). The province has sufficient electrical energy to meet current demand.

3.3.7 Seasonality of Motorised Transport

There is little motorised and water transport during the wet season because most roads are rarely passable. On the lakes, it is risky to use the small canoes and banana boats. During the three months that the fish markets are closed, there is very little motorised transport and the whole economy shrinks significantly at this time, with significant hardships for many people.

4.0 SURVEY RESULTS

4.1 Overview of transport policy and framework.

4.1.1 **Transport Policy** The Minister of Communications and Transport launched the Transport Policy on 1st May 2002. This document is designed as a blueprint regarding the general direction of development of the transport sector in Zambia.

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The Government has set itself the following objectives as part of its road transport development process:

- a) Rehabilitation/periodic and routine maintenance of the Core Road Network (40, 113 km) through various funding agencies.
- b) Improve road conditions for truck, main, district, primary feeder roads, tourist roads and selected urban roads.

- c) Institutional strengthening of the construction industry through appropriate approaches.
- d) Create employment opportunities through appropriate road interventions.
- e) Improve road safety as per road safety action plan (reduce road accidents and improve enforcement).
- f) Improve environmental management by building capacity (establish procedures and guidelines).
- g) Improve rural transport mobility through road improvements.
- h) Improve management of community roads through the Road Development Agency.
- i) Strengthen the Department of Maritime and Inland Water Transport in order to monitor compliance with maritime and inland water transport rules and regulations.

4.1.2 Institutional Framework

The Ministry of Communications and Transport is responsible for overall policy – formulation and monitoring of the transport sector. The Ministry has the following departments charged with various responsibilities: Departments of Road Transport, Civil Aviation, Maritime and Inland Waterways and Government Communication Flight.

In order to introduce a co-ordinated approach to development of roads, road transport and safety in the country, the Government through the establishment of Its Transport Policy has created three agencies, which are to manage public roads and road transport on a commercial basis:

a) Road Development Agency (RDA).

The government shall bring all roads under the Ministry of Works and Supply and manage them through a Road Development Agency. This will overcome the problem of roads being developed in isolation without any connectivity through all types of road network namely rural, feeder, district, main, trunk and urban roads.

The Agency is to be charged with the responsibility of developing the entire road network in the country through implementation of programmes approved by the Committee of Ministers on Road Maintenance Initiative (RMI).

Mechanisms shall be devised to encourage private sector investment in the road sector, through commercialisation of roads, Build Operate and Transfer (BOT) concepts and other forms of direct investment of road development such as the introduction of toll roads.

In this case, the function of Roads Department under the Ministry of Works and Supply and Department of Infrastructure and Support Services under Ministry of Local Government and Housing shall be under this Agency. The Agency will undertake programming, procurement, monitoring and overall supervision of all road works in the country.

b) The National Road Fund Agency (NRFA).

In order to co-ordinate all funding to the road sector, Government has established a National Road Fund Agency. This means that whatever resources are meant for the road sector from the Government, co-operating partners or private sector should be channelled to the National Road Fund. The National Road Fund Agency is now responsible for collection, disbursement, management and accounting of the National Road Fund, reporting through Ministry of Finance and National Planning, to the Committee of Ministers on Road Maintenance Initiative. The National Road Fund shall comprise fuel

levy, road user charges, Government funding to Road and Road Transport Sector, donor funding and credits secured for the Road and Road Transport Sector. All funding to the Road and Road Transport Sector shall be channelled and managed through this Agency.

c) **Road Transport and Safety (RTS).**

The Department of Road Transport and National Road Safety Council has been merged to constitute a Road Transport and Safety Agency. This Agency is under the Ministry of Communications and Transport. The Agency is responsible for implementation of policy on road transport and traffic management, road safety and enforcement of laws regulating road transport and safety in the country. In addition, this Agency is responsible for programming, procurement, monitoring and evaluation of road transport regulations and safety programmes approved by the Committee of Ministers on Road Maintenance Initiative.

The three agencies (The Road Development Agency, The National Road Fund Agency and the Road Transport and Safety Agency) have Boards of Directors, comprising private and public sector membership. The agencies report to a Committee of Ministers on Road Maintenance Initiative (RMI) for approval of programmes, policy funding, monitoring progress, accountability and transparency. The Committee of Ministers on RMI also evaluates their effectiveness.

The Committee of Ministers on RMI comprises Ministers of Communications and Transport (Chairman), Works and Supply, Finance and National Planning, Local Government and Housing, Energy and Water Development, Agriculture and Co-operatives, Tourism, Environment and Natural Resources and Justice.

4.1.3 **Legal Framework.**

In accordance with the proposed institutional framework, government has reviewed the various pieces of legislation relating to the transport sector in order to develop a supportive and investor friendly regulatory framework.

Among the pieces of legislation, which have been amended are:

a) **Roads and Road Transport.**

The Roads and Road Traffic Act, CAP 464 of the Laws of Zambia to create the following:

- (i) Road Development Agency
- (ii) Road Transport and Safety Agency
- (iii) National Road Fund Agency

b) **Air Transport.**

The Civil Aviation Act, CAP 444 and the Central African Civil Aviation Act, CAP 451 of the Laws of Zambia to provide for the creation of the civil aviation authority and the regulatory framework for air transport in the near future after studies have been carried out to determine its usefulness.

c) **Railways.**

The Railways Act, CAP 453 and TAZARA Act, CAP 454, of the Laws of Zambia to facilitate the concession of railways and activating the Government Inspector of Railways.

d) **Maritime and Inland Water Transport**

The Inland Water Shipping Act, CAP 466 and the Merchant Shipping (Temporary Provisions) Act, CAP 468 in order to keep them in line with the policy of liberalisation of the economy.

4.2 Views of Key Informants on Policy

Interviews were conducted with the following national authorities to understand the roles, duties and responsibilities of the various Agencies and Government Departments in relation to the transport sector, policy framework, transport strategies, infrastructure, public transport etc.

Table 4.2.1: Overview of Policy and Regulatory Framework relevant to Rural Transport

Designations	Exists	Implemented		Remarks
		National	Survey area	
Policy				
Is there a National Transport Policy? If so does it address rural transport issues?	Yes	*****	*	A national Transport Policy exists but implementation is gradual especially to regions and districts
Is there a Poverty Reduction Strategy Policy (PRSP)? If so, does it address rural transport issues?	Yes	*****	***	Not specific but projects within transport sector funded on basis that key output is poverty reduction e.g. US\$ 2.0 million 10 years RAMP programme (2005 onwards)
Does a Rural Travel and Transport Policy (RTTP) exist?	Yes	*****		Rural Transport Program IMT pilot projects introduced in three districts only. There are plans to extend to five more districts including one district in survey area
Does a road fund exist?	Yes	*****	*****	Annual district funding of infrastructure repairs (road and water)
Does decentralised road funding exist?	Yes	*****	**	All funding is handled by the National Road Fund Agency
Agriculture policies relevant to rural transport	Yes	**		Under new Transport policy only Roads and Road Safety Agencies are responsible
Gender policies relevant to rural transport	Yes	***		Under new Transport policy, RAMP programme addresses transport burdens of rural women. Programme expected to start 2005/6
HIV/Aids policies relevant to rural transport	Yes	*****	*****	Dissemination of information has reached all survey areas up to village level
Environment policies relevant to rural transport	Yes	*****	*****	Now a requirement for an EIA for transport related projects. Activities monitored by district planners
National Development Participatory Program	Yes	*****	*****	All districts in the country and survey area have district situation analysis developed by participation of all stakeholders.
Sector-based Program for transport	Yes	*****	**	National programme for infrastructure maintenance and development in place
Rural Transport Program	Yes	***	**	RAMP programme in place awaiting appointment of Coordinator
Regulatory frameworks				

Freight regulation	No			Completely deregulated.
Freight fare regulation	No			As above
Route regulation	No			Completely deregulated. Only registration of transporters. New regulations underway
Tax incentives	No			None
Freight Safety				
Speed limits	Yes	*****	***	Traffic and Speed controls well set up in all areas for road transport. To a lesser extent for water transport in survey area.
Prohibition of passengers	Yes	*****	**	No passengers allowed on trucks above 3.5 tons capacity. Due to lack of transport in rural areas police not enforcing this rule strictly.
Loading	Yes	*****	***	Well setup control system in place nation wide. Not many controls for water <u>transport</u> , as there are no patrols on the rivers and the lakes.
Axel load control	Yes	*****	*****	Well setup control system in place nation wide by the Roads Development Agency. Additional mobile check points are being established.
Vehicle licensing	Yes	*****	***	Well setup control system in place nation wide.
Driver regulation	Yes	*****	***	As above. For road transport PSV certificate mandatory for public transport drivers
Public transport regulation				
Price fare regulation	No			Completely deregulated. Private sector driven. Serious concerns for passenger transport. New regulations underway
Route regulation	No			Completely deregulated. Only registration of transporters. New regulations underway
Tax incentives	No			Only between 1990 – 95 after privatisation of public transport. Yielded results but no new incentive to address Rural Transport Service
Licensing	Yes	*****	*****	Control system in place nation wide.
Public Transport Safety				
Passenger numbers	Yes	****	*	Regulation in place nation wide. Not strictly enforced in survey area especially water transport as there are no patrols on the rivers and the lakes.
Speed limits	Yes	*****	*****	Well setup control system in place nation wide.
Safety belts	Yes	*****	***	Well setup control system in place nation wide.

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Loading	Yes	*****	***	Well setup control system in place nation wide. Not strictly enforced in survey area especially water transport
Driver regulation	Yes	*****	**	As above
IMT regulation	No			IMTs only available, on organised scale, in very few areas at the moment. New programme – RAMP - will provide some regulation
Safety	Yes	****	**	
Prices	No			Completely deregulated
Vehicle licensing	Yes	*****	*****	Well setup control system in place nation wide.
Incentives	No			
Other Issues				
Vehicle regulation	Yes	*****	***	Type of passenger vehicles and capacity is well regulated and enforced for road transport. Water transport is not well regulated due to lack of public transportation
Import regulation	No			
Specifications	No			Only LHD vehicles restricted but there are exceptions e.g. international organisations, diplomats etc
Vehicle Testing	Yes	****	**	Regulation in place but no infrastructure. Only basic testing is mandatory, annually, for vehicles older than five years
Other operator costs (road tolls and other levies)	Yes	*****	*****	Terminal fees are mandatory at all stations controlled by local authorities
Road safety (infrastructure)	Yes	*****	***	Most rural roads have inadequate road signs
Driver licensing regulation	Yes	*****	****	Well regulated and enforced for road transport.
Local government bye laws	Yes	*****	*****	Regulations in place but not strictly enforced. Most transporters are usually politicians or civic leaders
Local fines	Yes	****	***	Traffic offences only. Not strictly enforced in survey area especially water transport due to lack of public transportation
Terminal fees	Yes	*****	*****	Well regulated and enforced for road transport. Most lucrative source of revenue for most local authorities
Others				
Local road groups	No			Government has banned all such groups. New regulations awaited
Formal Driver / Owner Transport Association	No			Government has banned all such groups. New regulations awaited

Other Issues	No			Government has banned all such groups. New regulations awaited
Informal Frameworks e.g. Cartels				
Informal Driver / Owner Transport Association	No			Government has banned all such groups. New regulations awaited
Public / private competition - does this exist?	No			Transport private-sector driven
Informal road checks	No			Do not exist
Local road groups	No			Government has banned all such groups. New regulations awaited

4.2.1 National Authorities.

National Road Fund Agency

(Informant: Mr Raphael Mabenga, Acting Director.)

Mr Mabenga explained that in the past, the National Roads Board was in the forefront of initiating programmes and projects in the transport sector in general. With the establishment of the relevant Agencies, it was up to the relevant institutions that were charged with the responsibility of management of the RAMP Component, which included Community Transport Infrastructure (CTI), IMT, Canals and Waterways to quickly appoint the coordinator for the project, without whom the project will not start. RAMP is currently managed by the Department of Infrastructure and Support Services (DISS) under the Ministry of Local Government & Housing. The Department of Maritime and Inland Waterways at the Ministry of Communication and Transport was still overseeing the Bangweulu and Mweru Lakes Water Transport Companies.

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Deleted: Mr Raphael Mabenga

RAMP is to be financed through external and internal resources. ZK 475 billion (US\$ 100 million) funding is available over the next 10 years.

Ministry of Local Government & Housing

(Informant: Mr Davies Zulu, Principal Engineer, DISS.)

Mr D Zulu confirmed that the Rural Accessibility and Mobility Programme (RAMP) (2005 – 2007) had not started due to delays in the appointment of the coordinator.

The planning phase (2005 – 2007) will prepare work plans as the basis for funding for the four main components of RAMP, namely:

- Community Transport Infrastructure (CTI) – foot bridges, foot paths, cycle tracks, through community participation etc,
- IMT – ongoing pilot projects in five districts will be supported (promotion of use of donkeys, ox-carts, bicycles etc). The IMT project will be expanded to cover districts in the remaining six provinces. Increase in ownership of bicycles is planned at a cost of ZK 114 billion (US\$ 24 million), including administrative costs, over 10 years.
- Improvement of canals and waterways, provision of boats, boat engines and improvement of marine safety will address the neglect of the large number of rural people in terms of mobility and infrastructure who live in around dambos, swamps, islands and along the rivers.
- Management and coordination – development of a management information system to effectively monitor project implementation and results.

The budget for the planning phase is approximately ZK10 billion (US\$ 2 million).

The Ministry had just received (June 2005) the Draft of the Final Report on the pilot IMT Project funded under ROADSIP I.

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Zambia Social Investment Fund (ZAMSIF) – implementing unit for Community Transport Infrastructure (CTI).

(Informants: Mr Wedex Illunga, ZAMSIF Technical Director and Mr Oliver Makungu, CTI Project Engineer)

They bemoaned the phasing out of ZAMSIF and the placement of the entire RAMP component under the Ministry of Local Government & Housing. They were concerned that ZAMSIF had developed a framework for project identification and implementation, evaluation and monitoring of community infrastructure initiatives, etc., and that the staff capacity, staff retention and lack of institutional learning will affect RAMP (quote: “it takes a long time to re-invent the wheel”.) For example, although IMT was an important component of PRSP it was neglected at policy level. It appeared it was more donor-driven than government’s own initiative, they observed.

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Deleted: Mr Wedex Illunga and CTI Project Engineer,

Deleted: Oliver Makungu

Road Transport and Safety Agency (RTSA)

(Informant: Mr Mwandila, Acting Executive Secretary)

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RTSA’s main objectives are:

- a) Ensure road safety engineering aspects are compulsory in the construction, rehabilitation and maintenance of roads.
- b) Improve the awareness of the need for better road safety behaviour among the road users through publicity and training.
- c) Improve the enforcement of traffic laws and regulations.

He said that Road Safety in rural areas can only improve if government would improve infrastructure, provide incentives to transport operators. RTSA is preparing a policy document for road safety education in schools, establishment of RTSA standing committees in provincial centres.

The RTSA recommends improvement of rural travel and transport by:

- Reducing the cost of fuel in rural areas as it is at times 25% more expensive than in the urban areas.
- Facilitate the introduction/promotion of appropriate motorised and non-motorised means of transport, repair facilities and increased supply of spare parts.
- Provide tax incentives to Rural Transport Operators.
- Undertake coordinated regulation of traffic, public transport, operators etc.

At the moment, RTSA is responsible for licensing of transport operators in the country.

Department of Maritime and Inland Waterways, Ministry of Communication and Transport

(Informant: Mr David Kema, Director)

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Government recognises the importance of water transport to the movement of goods and passengers on lakes, rivers and swamps etc.

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Key Problems and Solutions

Mr Kema regretted that the development of the sector had been inhibited by government’s own neglect and lack of competent management of Inland Waterways. There is lack of handling equipment at harbours and inadequate dredging facilities for canals and rivers.

- Government has planned to provide a barge on lake Bangweulu and two vessels on lake Mweru (2005) and will re-organise management of the two water transport companies. There will be a ‘Lake Captain’ to administer lake safety and a Harbour Master and vessel inspectors to work with Maritime Police. The Disaster Management and Mitigation Unit (DMMU) in the office of the Vice President will assist the procurement of engines for the police boats (already in the country).
- The department is aware that the locally-made banana boats do not meet required safety specifications; however there is no alternative water transport available to travellers and therefore they have been allowed to be used.
- Safety of water transport is very important to avoid disasters experienced in the recent past.
- The department plans to provide properly equipped search and rescue centres on the lakes and will work with the maritime police to enforce safety rules e.g. loading capacities.
Harbours/lakes will need to be equipped with navigation control centres, logging controls etc.
- Cost of fuel in rural areas needs to be reduced to provide incentives to operators.
- There is a need for the National Road Fund Agency to support water transport in the same way they support road transport.
- It seems there is no political will to prioritise water transport.
- There is need for serious approaches in dealing with water transport related socio-economic issues: environmental (weeds and pollution), gender, access to education and health for the inhabitants of the wetlands especially the vulnerable (old people, the disabled, etc).

Ministry of Finance and National Planning (MOFNP)

(Informant: Mr Mulungushi, Director of Planning and Economic Management)

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Mr Mulungushi gave some background to the PRSP and made several points: Zambia was once one of the richest countries in Southern Africa, but the GDP per capital has since plummeted. The country’s development was directed by four National Development Plans, which were followed by free market reforms (that some thought circumvented the need for planning); There has now been a shift from planning for economic stability, to planning for poverty reduction; The PRSP is a condition of the Poverty Reduction and Growth Facility (PRGF) (which is itself a condition for access to donor funds) – Zambia needs a plan for the use of resources; the PRSP provides an overall planning framework. Following a consultative period, PRSP implementation began in 2002.

Mr Mulungushi said that specific resources have been allocated to PRSP programmes to try and ensure it does not become another ‘beautiful document’ that is not implemented.

He said that the PRSP monitoring institutional framework allows all stakeholders to be involved, e.g. NGOs, Donors and also politicians, who at cabinet level have the opportunity to shift resources, source funds, or drop programmes.

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He noted variations existed in capacity levels in the Districts; their needs are to be harmonised so that the focus can then shift to the sub-district level. Certain performance indicators still need further refinement.

He said that there were weaknesses in the system – especially regarding the level of involvement of districts, and that proposals had been made to improve implementation and monitoring, especially for capacity building. He said there was soon to be a survey of views on what needs to be done.

Asked about inconsistencies in activity-based budgeting, especially flow of funds to the districts, Mr Mulungushi answered that the budget is an estimate of both expenditure and revenue. Variances between the estimates and the reality affect programmes, which are a lower priority than interventional debt and salaries. There was much funding disruption caused by Zambia’s governance problems in previous years.

Asked about the possibility of reviving the concept of the district development fund since this would allow Districts direct access to resources, Mr Mulungushi said he believed in the idea – but that it often failed to make it over all political hurdles into the approved budget. He said that in the key sectors of health and education large chunks of funding had been placed with the provinces, and that this process will continue.

Role of PRSP in Transport Sector.

Although the transport sector programmes and projects are not viewed as having a primary aim of poverty reduction, transport is a cross-cutting issue affecting many sector programmes of the PRSP. Most projects within the transport sector are funded on the basis that one of the key outputs is poverty reduction through community participation, increased access to services, reduction in transport costs etc.

A good road infrastructure or improved transport service (road or water) promotes agriculture by increasing access to inputs and markets.

All transport sector programmes and projects should have measures to reduce the spread of HIV/AIDS, prevent displacement of rural communities, and reduce accidents and fatalities among pedestrians.

4.2.2 Regional Authorities

In Zambia, the regional authorities play very little or no direct part in the provision of transport services. In some rural areas, the provincial traffic officers are responsible for the licensing of motor vehicles and transport operators in conjunction with the national officers of RTSA.

a) In Luapula Province, **the Provincial Road Transport Commission** carries out the following functions:

- Examination of vehicles for fitness and licensing.
- Examination of drivers and licensing.
- Collection of levies for driver tests, vehicle licensing (private and public), collection of road tax of ZK 21,600 (US\$ 5) per quarter.
- Approval of transport routes (licensing on application and payment of ZK 117,000 (US\$ 25).
- Regulation of capacity for public vehicles.

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Key Issues in Rural Transport Service.

- Poor state of roads. Only certain routes are preferred by operators.
- Regulation and enforcement of rules is very difficult. Department has no vehicles and is under staffed, is inadequately funded and has no communication facilities.
- There is a need to persuade the transporters to operate on time schedules rather than ‘full load’ basis to reduce waiting time at bus stations and reduce suffering of passengers.
- Comprehensive motor vehicle insurance should be made mandatory instead of the current minimum requirement of the ‘Third Party Policy’ only, which is grossly inadequate for public transport operators. It does not adequately compensate the passengers in cases of accidents or injury or death to the passengers.

b) Financial Organisations.

There are no financial institutions in Milenge and Samfya Districts. In Nchelenge, there is a mobile bank for the Zambia National Commercial Bank (Kawambwa Branch), which mostly facilitates paying out salaries/savings for the council and government employees.

Only the National Savings and Credit Bank have a permanent branch in the Kashikishi Market of Nchelenge District. It provides banking services for government employees and the various traders in Nchelenge.

At the moment, the bank has a credit scheme called ‘Nthandizo’ a local name for ‘Assistance’ and only provides credit to people who are in formal and permanent employment of between ZK 50,000 up to ZK 1 million (US\$ 11 to US\$ 211). It is difficult to recover funds lent to people who cannot be traced (e.g. who are in informal employment).

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The bank facilitates transactions for traders, government institutions, farmers, NGOs etc.

Because of distant location of the bank and unreliable telephone services, there are restrictions as to how much and when customers can withdraw funds. A mobile phone facility has just been introduced (May 2005) in Nchelenge. Bank services are likely to increase and hopefully improve.

4.2.3 District Authorities.

4.2.3.1 Samfya District

(Informants: Mr P Kapoba, Acting Council Secretary and Mr A Mwenya, District Planner)

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The district has a good overview of the transport systems - the availability of motorised transport in the area, seasonality, trends and other issues.

Among the many issues raised here, importance of the fish markets to the inhabitants of Samfya, revenue for council, increasing transport services – buses, light trucks etc to transport fish, produce and passengers. Bicycle ownership was increasing and council is planning to introduce a levy.

Key Problems

- Lack of river crossing structures - culverts, bridges, and embankments - was hindering provision of transport services.
- Due to lack of income generating activities, there were high poverty levels. People could not afford transport costs and resorted to walking or cycling,
- Government should encourage establishment of micro-financing schemes in rural areas to promote and support RTS, especially ownership of bicycles.

- Banana boats are very expensive, people resort to using the cheaper but slow and unsafe dugout canoes. Several villages were two to three days paddling away from the nearest road.
- For water transport operators, economic/sustainable fares are not affordable by most people.
- Government has promised to buy a barge for the lake to improve water transport services and safety on the lake. At the moment, due to lack of communication facilities, it was difficult to provide emergency support to the water transporters.
- There are wooden boats and relatively few canoes (few trees in the area). Fibreglass boats are made in Lusaka and Kitwe and a local source of such boats and repairers should reduce the cost of boats and repair.

4.2.3.2 Nchelenge District.

(Informants: Mr M Mwaba, District Commissioner and Ms F Mtonga, Acting District Planner).

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The team gained valuable information on road and water transport from the District Commissioner and Planner. The district is on the shore of Lake Mweru and also caters for inhabitants on the islands and the swamps etc.

- The islands were previously served by a government operated ferry which has since broken down. Two new ferries are to be built by government with Japanese Aid. A large ferry operated by a DRC Mining Company carries lorries transporting copper to Tanzania. Most transport is by 'banana boat', motorised and non-motorised. To the south of the lake is swampy area on the border with Democratic Republic of Congo which has navigable channels.
- Government must invest in the water transport sector, as it is expensive for private investors to sustain operations due to high poverty levels on the islands, the Commissioner emphasised.
- Motorised road transport was sufficient except to outlying areas on the market and provincial spokes (village spokes) where the road condition was too poor to attract transporters.
- Role of Transport Associations was to provide a link between government and the road and water transport operators as well as assisting enforcement of rules. The government ban on the Associations had created a gap and placed more responsibilities on local authorities.

Trends

- Nchelenge was mostly a fishing economy, but agricultural production of cassava, maize and palm oil, forest resources management and fish farming had increased.
- Price of bicycles is increasing and affects the mobility of rural people. Prices need to come down.
- Cost of fuel in rural areas needs to be reduced.

4.2.3.3 Milenge District.

(Informants: Mr A Chidefa, The Council Secretary and Mr D Kangwa, District Planner).

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Council relied on the local government Act No. 22 of 1991, which defines roles and responsibilities on transport services, etc. to enact byelaws for operation of bus stations, fees and levies for operators.

Mr Chidefu regretted the numerous transport-related problems affecting council and government employees in Milenge such as:

- Collection of salaries from the provincial centre, Mansa.
- Children travelling to secondary schools outside the district – usually consolidation of travel by parents (government/council employees + community) was the only option.
- Employees were spending much money on upkeep in Mansa while waiting for transport.

- Due to inaccessibility of some areas in the district, water transport along the Luapula River was the only means of access to primary school, health etc. Sometimes, deaths occurred due to use of small unsafe canoes.

Some Transport Solutions.

- Provision of reliable transport service to run daily between Milenge and Mansa via Samfya.
- Council to approach some operators and persuade them to start a bus/taxi service between Milenge and Mansa via Samfya if assured of sufficient economic load or passenger numbers. Deleted: sufficient economic
- Mobilise community to increase farming activities to attract traders. Much produce goes to waste due to lack of transport.
- Provide a pontoon on the Luapula River to improve access to Ndola, which is 130 km away compared with Mansa (220 km). Deleted: with Mansa
- **Government to electrify Milenge to encourage investment in the area.**

4.2.3.4 **NGO/Development Programme**

AFRICARE, Agriculture Market Spoke, Malenga – Chembe Road, Milenge.

AFRICARE is supporting poverty alleviation programmes in Milenge under the Forest Resources Management Project with activities such as bee keeping, mushroom growing, chikanda growing and processing. Deleted: c

Transport Problems.

- Roads are in poor state. Transport is scarce.
- Support to production of agricultural crops + fishing in the area is very encouraging, but transport is a problem.
- AFRICARE is currently helping provide transport to the markets, but it is not known what will happen when AFRICARE ceases operations.
- Lack of public transport service hinders or affects any development efforts.
- To assist access to market for the products, AFRICARE is sole buyer of supported produce and then delivers to the markets for re-sale.
- AFRICARE project has achieved a lot over the last two years, but needs government support to help improve transport service.
- Currently, some people cycle to Ndola to sell their produce. Apart from the 3 days travel, they then pay charges to the DR Congo authorities. This system is discouraging the local agricultural and economic development efforts.

Solutions

- Government must repair pontoon on Luapula River
- Help with repair of road infrastructure.

4.2.3.5 **Education – Head teacher**

(Informants: Mrs T Muleya, Acting Head teacher – Kapalala Basic School, Milenge and Mrs Mwelwa, Nchelenge High School)

Accessing Education

- Education supplies are not delivered to schools. Usually collected by school pupils or school has to organise own transport to collect from the district offices.
- Schools only receive ZK 5 million (US\$ 1053) per quarter to cater for all school requirements – infrastructure, travel, stationery etc. Deleted: million(
- Transport costs are expensive, ZK 40,000 (US\$ 8) one-way to Mansa and it takes two days to reach Mansa. Deleted: .00
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- Long travel time affects teaching programme and is costly for low-paid teachers. Lack of transport service affects attendance of school by pupils. Catchments area extends beyond 10 km. In the rainy season, primary school children cannot manage

to walk such distances by themselves due to rains, insecurity, tall bushes over flowing stream crossings or culverts etc.

Solutions

- Government should encourage provision of banking services in the rural areas.
- District authorities should arrange for consolidation of travel journeys, especially at month-end to attract transport operators even once per week or fortnightly. District Education Boards should deliver inputs to the schools to avoid use of child labour. Kapalala school is 15 km from the district office.
- Zoning of Milenge needs urgent attention. Some schools or areas are only accessible through other districts. It should be split into two districts.
- Government should increase number of schools to reduce long travel distances.

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4.2.3.6 **Health Managers.**

a) **Milenge District Health Management Board – MDHMB**

(Informants: Mrs Judith Mwansa, Director and Mr Kalembwe, Manager Planning).

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Problem – Supplies and Access to Health.

- No bank facilities in Milenge.
- Non-availability and cost of fuel is high (no filling station). You need transport to buy fuel. Therefore cost is doubled on fuel.
- District Health Board has no capacity to buy a van.
- One of the clinics under Milenge District Health Management Board (DHMB) is 700 km away and is only accessible through Mansa. Three quarters of total cost is spent on fuel.
- No ambulance service in the district.
- Patients use their own means or hire transport from the council to access the health centres.
- Others use bicycles, canoes or walk to the health centres.
- Serious cases use wheelbarrows or bicycle stretchers.
- Cases of death due to lack of transport are possible, but records focus on disease. Health Officers reach centres using 4 x 4 Land Cruisers. Bicycles for outreach programmes are supplied by the Board.

Accessibility of TB/HIV Patients to Health Centres.

Training of community personnel to help TB/HIV patients is in place. The cure rate of TB patients is low, because of transport problems and tests are only done in Mansa where there is a diagnostic centre. The Health Board is currently working on establishment of a diagnostic centre in Milenge.

Recommendations

- Improve road infrastructure and provide boats to improve service and access to health service.
- Need radio communication. Currently only one health centre has radio for communication. Communications between centres is by letter, usually by hand delivery by patients or other travellers.
- Need to re-allocate health centres among districts e.g. some health centres closest to Milenge are under Samfya, while those furthest are under Milenge e.g. one centre is 700 km from Milenge by road but is only accessible through Mansa.
- The largest health centre is 200 km from Milenge. Need to improve the size of the local centre because the largest is not easily accessible by the MDHMB district.
- Since Milenge was upgraded to status of district, nothing has been done to improve Facilities.

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- District allocations by Donors are based on population and not the actual problems being faced. The current population estimates are also not true. Head count carried out locally gave population of 48,000; however non-local census statisticians gave 32,000, which is 25% less and consequently allocations are low.
- Road maintenance to be carried out with a different approach. Spot improvement not helpful – instead a full rehabilitation on short sections depending on available funds, and to continue when more funding is available until the whole road is repaired.
- Increase bicycles and motorbikes ownership and for out-reach activities.

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Long Term Recommendations

- Training of community volunteers.
- Road maintenance to be done thoroughly not haphazardly as at present.
- Radio communication for all health centres and ambulances is required in Milenge.
- Planning parameters should be raised from the current ones based on population to ones based on real needs and situations. External statisticians only record people living along the main roads or settlements.
- Rural electrification should extend to Milenge. There are lines passing nearby on the main road (Tuta).
- Government to look at distribution of resources based on people’s problems in the actual location.

b) **Nchelenge District Health Management Board (NDHMB).**
(Informant: Mrs E Chisha, Director)

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Problems.

- Distance of 700 km to Lusaka and Ndola is too far.
- Obtaining quotations for supplies is very difficult.
- Type of vehicles NDHMB has (station wagons) restricts what they can carry.
- Hiring of vehicles (vans) is very expensive.
- But sometimes, they have to hire or make several trips due to type and size of vehicles. This leads to wear and tear, increased vehicle repairs and servicing costs.
- Islands are accessed using water transport. The district’s current 25 HP boat engines have all broken down. Getting spares is difficult. 25 HP engines are grossly inadequate. The larger size engines of 85 HP cost K 45 million (US\$ 9474). This is very expensive, but they are most appropriate for the size of lake Mweru.
- Fibreglass banana boats cost ZK 7 million (US\$ 1474). The hot weather, size of lake and strong waves make them inappropriate and dangerous.
- Speedboats are preferred but are expensive and the district cannot afford them.

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Access to Health Centres.

- For some centres, access to the district is difficult.
- There is lack of communication (no radios)
- Access by managers to Kilwa and Chisenga Health Centres on the islands is either by hire of private boats at a cost of ZK 100,000 (US\$ 21) or as a passenger on a small boat, which is ZK 15,000 (US\$ 3) each way.
- Centres have motorcycles but sometime they request assistance from the district (which has two 4 x 4 Land Cruisers) especially for patient referrals.
- Most patients cycle, walk or use a wheelbarrow to reach the health centre.
- Few patients use private vehicles. DHMB assists if transport is available.
- Hospitals charge patients (cost sharing) if collecting them e.g. from Chabilikula, which is 16km away, the charge is ZK 30,000 (US\$ 6) to St. Paul’s Hospital (Nchelenge).

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- From the islands, patients use boats or canoes to reach the health centres.
- MSF (Doctors without Borders) based in Milenge are greatly assisting in collecting patients from all areas using their vehicles and speedboats.

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HIV/AIDS and TB

Patients can access TB drugs and ARVS from six health centres including two operating on the islands.

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- If patients cannot access MSF transport, they have to pay ZK 30,000 (US\$ 6) transport + ZK 40,000 (US\$ 8) for ARVS monthly. This affects patient recovery, especially those who cannot afford it or do not get any assistance from friends or relatives.

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Trends

- Due to ageing of equipment including motorcycles, boat engines and the cost of servicing motorcycles in Lusaka (Honda Zambia) the health service delivery has been reduced.

Solutions

- Repair of vehicles and motorcycles should be done on site. Suppliers should send a repair team to all districts.
- Decision-making: districts should be allowed autonomy to make certain decisions in order to reduce costs.

c) Samfya District Health Management Board (SDHMB).

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No interview was carried out as the Director was out of station and no-one of the staff could agree to give an interview without permission.

d) Chisenga Island Rural Health Centre (RHC)

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(Informant: Mr James Ngosa, Clinical Officer.)

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Mr Ngosa is the only medical person on the island serving 14,115 people plus patients from DR Congo.

Problems: Access

- Radio system does not work (very old).
- A boat engine does not work. Broke down a long time ago.
- No fuel supply on the island – therefore difficult to access motorised road or water transport.
- Poor conditions on the land cannot attract skilled persons like drivers. Two new government vehicles on the island have had no drivers for two years.

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Access to Health Centres.

- Local inhabitants access the Chisenga Rural Health Centre by bicycles, walking. Some walk four hours to reach the centre. During the dry season, some use boats/canoes and then walk 7 km to reach the rural health centre.
- Maternity cases present serious access problems. Some die on the way. Referrals are very difficult as patients have to paddle to Shabo market (three hours journey) and walk another seven km to Chabilikila Rural Health Centre.

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Solutions

- District Health Board should purchase two boats + two engines and improve access to fuel supply.
- Board should provide additional medical staff and logistics.

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e) **Environmental Health Technologist,**

(Informant: Mr M Wapachole, Chabikikila Rural Health Centre, Nchelenge).

- Manages the Information Education Communication Programme at the Shabo market centre located at a major water channel with an interchange between water and road transport.
- Currently, the market has no authority in charge (Nchelenge council denies that the market is under its jurisdiction).
- EHT monitors and trains the traders on food hygiene and sanitation to help prevent transmission of diseases. Water and fish easily transmit cholera, typhoid, salmonella, polio etc.
- EHT cannot access most areas due to non-availability of water transport services.

4.2.3.7 **Village Authority**

(Informant : Village Headman, Nsemiwe Village).

The village headman bemoaned the lack of motorised transport to the area despite increased agricultural production in the area. Nsemiwe Village has about 313 households and they have 84 bicycles.

- There is no public transport due to the poor state of the road.
- The number of bicycles has marginally increased and bicycles provide taxi services to the main road, 16 km away, for a fee of ZK 10,000 (US\$ 2). Most people take the cycle taxis all the way to the district centre (Nchelenge) as rural taxis are expensive and required waiting. Some people including women cycle to nearby Kawambwa (approximately 20 km) or hire a cycle taxi at ZK 15,000–ZK 20,000 (US\$ 3 – US\$4) to buy some groceries or sell agricultural goods.
- To transport very sick people to the health centre, people use the bicycle stretcher (two bicycles connected by two poles supporting the patient).
- Some children have stopped school due to long distances, flooding of river crossings in the rain season.

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4.2.3.8 **Police**

(Informant: Mr E Chabamba, Officer in Charge of Nchelenge District)

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The district police in charge of, among other things, enforcement of water and water transport regulations.

Problems.

- Lack of a government operated vessel means that people have no other means of travel apart from the private motorised and non-motorised banana boats or canoes etc.
- Police do not have boats to enforce regulations on the lake.
- There is a lack of proper harbour facilities and a Harbour Master to enforce safety issues.
- Legalised boats are very few. Most of them do not have life jackets and usually overload.

Trends.

- Boat owners are slowly conforming to regulations set out after the 2004 disaster, when 40 people died. Only two deaths have been reported in 2005.
- Motor vehicle accidents along the roads were increasing especially with the increased number of cyclists.
- There was a lack of awareness of road safety rules.

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4.2.3.9 **Water Transport Companies**

- a) **Bangweulu Water Transport Board (BWTB)** operates under the Department of Maritime and Inland Water Transport of the Ministry of Communications and Transport.

The Manager Mr Najon Bwalya highlighted the following:

- Operates one vessel only and provides freight and passenger transport between Samfya and Mbabala, Chishi and Chilubi Islands.
- Population and economic activities between Samfya and Chilubi island district is increasing. More transport services are needed. Number of tourists to the island has increased. More deaths have been recorded on banana boats, although the numbers of boats have increased.
- Bangweulu Company also regulates transport on small boats but have turned a blind eye to safety issues due to the companies failure to:
 - (i) Meet transport needs for all travellers.
 - (ii) Their own vessel cannot meet the same minimum safety requirements e.g. radios, compass, fire extinguishers, life jackets, life boats etc.
- There is no transport association for water transport, but government through the District Development Coordinating Committee (DDCC) provides some regulation.
- Water transport demand reduces during the fish ban period and peaks between March and November.
- With funds, it would be better to replace the current (1958) vessel, provide smaller boats and accommodation for tourists.
- Mobile cell facility would improve communication and facilitate provision of emergency help to operators and passengers.

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- b) **Mweru Water Transport Board (MWTB).**

Operates under the same department as Bangweulu Water Transport. The company has no ferry at the moment. The government has promised to purchase two ferries this year.

The company regulates water transport on lake Mweru. Currently, this is limited to licensing, loading capacity and safety standards. Lake Bangweulu, the Mweru Water Transport Board (MWTB) also turns a blind eye to the safety issues, as this would interfere with vital transport needs of the travellers. The company has no qualified inspectors either.

MWTB in many ways is experiencing the same problems as BWTB and needs similar help.

4.2.4 **Transport Associations**

At the moment, there are no Transport Associations throughout the country – whether for road or water transport services. Government banned all associations after some well organised violent confrontations between rival associations of transporters, drivers and conductors (call boys), which occurred in Lusaka and Copperbelt more than a year ago.

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Currently all transporters operate on individual basis, they decide their own routes etc. The only requirement is that they should be licensed and registered with the RTSA. For water transport, no registration is necessary. The only requirement is to operate a passenger banana boat and pay a loading fee of ZK 3,000 (US\$ 1) per trip to Mweru Transport, charges ZK 10,000 (US\$ 2) levy per trip. There is no bye-law requiring registration of bicycles in the four provinces although the councils are considering introducing a levy.

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Recently in June 2005, new guidelines were finalised on operations of Transport Associations which will operate as boards. The boards will comprise representatives from markets, local authorities, consumer association, chambers of commerce, farmer’s representatives and other stakeholders.

It is hoped that the new arrangement will assist in improving transport service provision as it will address both transporters and passenger's problems.

Transport operators are also keen to get the association established so that they can make representation as a group to government and other stakeholders. Absence of a Transporters association has made it difficult for transporters to be heard when airing their grievances especially on allocation of routes and setting fares in view of recent fuel increases.

4.2.5 **Donors**

(Informant: Mr Davies Makasa, Transport Specialist, World Bank Country Office, Zambia)

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Mr Makasa stated that the World Bank was supporting the road sector in Zambia based on the Transport Policy adopted by government. In particular, the World Bank was supporting the ROADSIP II Programme and the Rural Accessibility and Mobility Programme (RAMP) component – designed to address issues of rural infrastructure and mobility through IMT and CTI. Improving rural infrastructure will help fight poverty and related issues of HIV/AIDS and gender by increasing opportunities for their effective participation in the economic and political life of the country. Improvement of rural road/water infrastructure will promote agriculture, access to education, health and markets for both farm inputs and produce.

4.3 **Road network and road condition in survey area**

Table: 4.3.1 Estimates of the road distance and type in the Luapula Province ¹

Road type and general condition	National km	Provincial km	Local km	TOTAL km
Wide tar (good)	250	330	35	615
Wide tar (poor)	0	0	32	32
Engineered (good)	0	0	158	158
Engineered (poor)	0	0	2093	2093
Total	250	330	2318	2898

¹ *Estimated based on Road Development Agency information and field observations.*

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According to the Road Development Agency, there is a total of 2250 km of road network of feeder roads. More than two – thirds is in poor condition, less than 10% is in fair condition and the remainder is in good condition. The 330 km tarred road linking Samfya, Mansa, Mwense and Nchelenge and 250 km of the Mansa – Serenje link to Lusaka is in very good condition.

It is obvious that the feeder road infrastructure in the province is getting worse. This has led to significant increases in transportation costs and reduced transport services on most rural routes. Government has embarked on rehabilitation of priority roads to reverse the deterioration.

It was clear from responses obtained during the survey that the main problems on the roads in the areas are:

- Poor riding quality – bumpy, rough, uneven,
- Slippery when wet, uncomfortable and vehicles get stuck,
- No river or stream crossings (no culverts or bridges or unsafe). In Milenge district, lack of road crossings forces the district administrators and health workers to travel more than 730 km via Mansa to access a health centre, which is only 60 km from Milenge,
- Roads too narrow (at times due to lack of vegetation control).

During the survey it was discovered that the rural road network in the province is not very good for vehicle accessibility and this has reduced the road transport services. Most people

interviewed complained that there are fewer vehicles using the roads than before and that public transport was very scarce. If available, it is very expensive. People mostly walk and cycle long distances including journeys exceeding 100 km.

4.4 Other Transport Types

4.4.1 Water Transport.

In Luapula Province, wide river beds and lakes make water transport the most appropriate mode through the use of canoes and boats.

Unfortunately, there is no organised transport service on either of the lakes Bangweulu and Mweru. Although the Bangweulu Water Transport Authority provides an irregular services between Samfya and the three main islands - Chilubi, Chishi and Mbabala. Most travel is by dugout canoe and 'banana' boats – made from fibre glass.

The water transport service has declined over the last few years due to privatisation of the transport sector and the failure by the government to offer incentives to the private sector in the provision of water transport service similar to ones offered to the road transporters.

There are government attempts to improve services on both lakes but there is no clear evidence that this will be before end- 2005.

Box 1: Declining water transport service

There is much pressure on the local authorities in the affected areas to come up with a lasting solution to provision of water transport services especially on the lakes. 'Government spends so much money to repair roads for all users, why can't they prioritise water transport services in the same way they treat roads?' a woman from Chisenga Island on lake Mweru asked.

4.4.2 There is a small amount of international traffic (copper-bearing trucks from DR Congo) passing through the province between Nchelenge – Mansa and across the Luapula river through Central and Northern provinces to the port at Dar es Salaam in Tanzania. There is also some cross-border trading, but generally on a small scale: mainly individuals transporting things by small boat or bicycles, or taking things by bus or rural taxi to a border crossing point or ferry.

4.5 Existing Transport Services in the Survey Areas.

4.5.1 Overview of types and volumes of traffic.

In Luapula Province, there is an inadequate transport system, which is clearly a major constraint to rural mobility thereby increasing rural people's problems of accessing social services such as schools, health care, agricultural inputs and outputs. The result is increased isolation from economic and livelihood development. The general trend indicates marginal improvements. The cost of transport has continued to increase but the cost of travel for the rural people of Luapula is much higher (especially in the absence of choice and high fuel prices), forcing most people to walk or cycle long distances to work or attend to other socio-economic activities.

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The majority of households in each of the survey areas indicated primary travel (beyond the 5 km or one hour distance) to the market and provincial towns, Rural Health Centre (RHC), church, school, attend a wedding or funeral, visit relatives etc. The common mode of village spoke (up to 20-50 km) travel was consistently shown to be walking and head loading followed by cycling depending on the availability of bicycles in the village. In some cases it involved a combination of walking or cycling to the nearest road junction and catching a rural taxi. For water transport, the principle mode of travel on the village spoke is non-motorised canoes and boats.

Bicycles appeared to be a common asset in most village households, though most were used by men to transport heavier items or to establish priority use over women. Of the households surveyed the majority of the bicycles were in a state of disrepair, with no means to pay for spare parts like brakes and maintenance e.g. replacement of tyres and tubes. It is not unusual to find a bicycle without brakes and with deflated tyres on a long journey, exceeding 10km and carrying a heavy load.

A number of people in the villages use their bicycles as ‘cycle taxis’ and are hired out for various activities, including transport of goods to and from markets and collection of agricultural imports.

Surveys revealed that households cycle longer distances for social or market trips of particular importance i.e. more than 100 km. In Samfya the cost of hiring a bicycle for the 48 km return journey from Mpata – Samfya is ZK 10,000 (US\$ 2) for the 125 km journey to Mansa is ZK 25,000 (US\$ 5).

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a) Samfya Districts.

The district is on the shore of lake Bangweulu. There are very few shops and no business facilities. People normally go to Mansa to buy necessities – about 80 km away. There are many bicycles. Transport is in abundance, especially during the fishing season. There is a regular mini-bus and rural-taxi service between Samfya and Mansa. Light and heavy trucks are usually hired by traders to transport fish and cassava. Within Samfya and between the market and village spokes, people usually walk and cycle to go to school, clinic/hospital, to get supplies, to have meetings and to sell fish or agriculture produce.

Traffic on the provincial spoke (Samfya – Mansa) is more or largely consistent during the weekdays as there is no market day that would affect it. On a typical weekday, there would be more than 10 trucks, six minibuses (20 seats or less) between Samfya and Mansa, 17 rural taxis, 18 private/Govt/NGO vehicles, 130 male and 20 female cyclists and approximately 200 pedestrians of which 25% female.

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On the fish market spoke (Samfya – Mpata), there would be more than 5 trucks, 01 minibuses (20 seats or less), nine rural taxis, four private/Govt/NGO pickups, two motorcycles, c. 85 male and 33 female cyclists, and approximately 250 pedestrians – 40% or more of them female.

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On the agriculture - market spoke (Samfya Turn off – Lubwe), there would be about three trucks, two minibuses (20 seats or less), two rural taxis, four private/Govt/NGO pickups, 48 male and 31 female cyclists, about 75 pedestrians – 50% of them female

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On the village spokes the following transport takes place:

- Fish market (between Mpata and the swamps) - there was on average, 30 medium sized boats and 14 small passenger boats.
- Agricultural market (between Lubwe and Miponda Kasuba village) – there were 14 female pedestrians and 16 female cyclists; and 21 male pedestrians and 49 male cyclists on bush tracks.

b) Milenge.

Milenge was only designated as a district in the late 90s. Apart from a few government administration offices, there are no shops, business facilities like banks, post office etc. There is no fuel station. The district lies 74 km west – off the main provincial spoke (Tuta road) linking it to Mansa (a total distance of 220 km).

There is no motorised public transport to this district centre and small market hub, just some government vehicles. There had been a truck operating three times a week. Fares to the main road (74 km) were about ZK 25,000 (US\$ 5) and ZK 45,000 (US\$ 9) to the provincial town. However, the lorry had broken down last year and was still un-repaired. A local businessman had recently bought a truck, but for reasons of profitability he now deployed it out of the district on a tar road with customers carrying fish. Due to a bridge out of action, it was not possible to drive directly from the district town to the north of the district. The only route by road required passing through the provincial centre Mansa with a total journey distance of about 700 km. There are no safe ferries for crossing rivers in the district and the use of ‘banana boats’ or canoes for crossing with bicycles was considered unsatisfactory and unsafe; however there was no alternative at present. Last year, a canoe crossing the river capsized and four people drowned.

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Due to problems of transport, bicycle taxis are important for ferrying people and goods to the main road (74 km, ZK 15,000, US\$ 3). It is also not uncommon for people to walk this distance. For people who use their own bicycles, a house at the junction provides safe parking for bicycles, for a small fee. It is not unusual for people to cycle all the way to the provincial centre for salaries: 160 km by track, over 200 km using the main roads. The nearest town is not actually the provincial centre but Ndola, a town in the Copperbelt, and men regularly cycle 130 km through tracks that pass through DR Congo. About ten people a day cross the river with their bicycles on the official ferry, but many others cross at other points. At a conservative estimate, there would be over 10,000 trips a year of this kind.

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The local authorities have recently acquired a lorry and established an association to allow collection of fares from passengers. They are interested in ways of establishing a regular transport service, perhaps on a community participatory basis.

Traffic on the provincial spoke (Milenge – Tuta road) is more or less consistent. There are no market days. On a typical weekday, there are less than five 4 x 4 government or private vehicles on the spoke, about 40 cyclists – 25% of them female and about 100 pedestrians split between male and female.

On the agriculture - market spoke (Milenge – Kapalala), there were about 47 male and four female cyclists, about 120 pedestrians – 40% or more of them female; whilst on the agriculture - village spoke (Kapalala – Shitambuli village) there were five female and 15 male pedestrians, four female and 23 male cyclists on bush tracks.

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c) **Nchelenge**

The district lies 240 km north of the Provincial Capital, Mansa. The town is on the shore of the large lake Mweru. The lake has islands. Most travel to the islands is for fishing and to Mansa, Lusaka and the Copperbelt to transport fish and cassava.

Kashikishi market in Nchelenge is the fish-trading hub. The district has motorised transport in abundance – it is well served by trucks, buses, rural taxis (mini-buses, pick ups, light trucks) private and government vehicles. It has relatively well-off

fishermen and fish traders who own bicycles. On a typical day, there are more than 400 bicycles (20% female) between Nchelenge and the Kashikishi fish market.

The district is served by more than 10 (20+ seater) buses (three of them luxury buses between Nchelenge – Lusaka) and the rest to Mansa and the Copperbelt, more than

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ten three tonnes or heavier trucks, 15 rural taxis etc. Most rural taxis travel to nearby towns e.g. Kawambwa, Mwense, Mununga, Chiengi etc.

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On the fish market spoke (Nchelenge road – Shabo market), there were approximately three trucks, two minibuses (20 seats or less), one rural taxi, c. 155 male and 39 female cyclists, approx 265 pedestrians – 50% of them female.

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On the market (agriculture) spoke between Nchelenge/Mulwe and Nsemiwe village, there were two trucks, about 55 male and 19 female cyclists, about 100 pedestrians – 45% of them female.

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On the village spokes the following transport takes place:

- Fish market (between Shabo market, Chisenga Island and the swamps) - there were more than 100 small boats serving the islands and the swamps to transport passengers, cassava, firewood and other necessities.
- Agricultural market (between Nsemiwe and other villages) – there were about 34 male and seven female cyclists, about 132 pedestrians – 55% of them female.

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4.5.2 Transport Types on Different Spokes

(refer to Tables 4.5.2.1 & 4.5.2.2 in Appendix for traffic data)

a) Traffic counts

There are effectively two distinct transport systems in Luapula province. One related to fish marketing, and another related to agriculture and service provision. Where there are fish markets, there is motorised transport (rural taxis and light trucks) and there are national buses to the towns near the fish markets. Where there are no fish markets, there is very little motorised transport at all, even on major spokes to the district hubs.

In addition, there are transport interchange and fish market hubs for water and road transport in Samfya (Lake Bangweulu) and Nchelenge (lake Mweru). These are villages at the edge of the lakes or waterways, where boats bring in fish and vehicles came for the transport of buyers and fish.

In the entire study area, only one of the places visited, Shabo market in Nchelenge district, had regular market days; it was therefore necessary to replicate traffic counts on market and non-market days. Elsewhere, traffic was similar throughout the week but with major seasonal differences, the closed season for fishing greatly affecting transport.

Therefore the traffic counts were carried out ensuring we had examples of all spokes with fish-market traffic and without fish-market traffic.

Table: 4.5.2 Traffic counts

Spoke	Traffic counts	
	Methodology	Luapula
Provincial	2	3 (2 fish spokes)
Market	3	5 (2 fish spokes)
Village	5	5 (2 fish spokes)

With this data, it is possible to disaggregate the overall summary table into two summary tables, one with fish (at all levels) and one without fish (at all levels) and there are clear differences between the two.

4.5.3 Overview of the capacity of the transport fleet

Using the data collected from the traffic counts on the different roads Table 4.5.3 was constructed. It shows the the approximate transport fleet operating in Luapula province. The highest fleet of motorised transport is that belonging to government, NGOs and private vehicles, followed by trucks (both below and above 3.5 tons capacity). The number of motorbikes is negligible. The most common means of transport used was bicycle followed by foot. The least used means was the boat as the lakes and rivers are confined to certain areas and do not easily link to other modes of transport. No carts were recorded. This, however, was not surprising given that no cattle were seen in the survey area.

Table: 4.5.3 Estimates of the transport fleet operating in the Luapula province

Transport type	Estimated numbers	Unit value (USD)	Overall value (USD)	Unit capacity No/ kg	Overall capacity No/ kg
Trucks	46	12,650	581,900	0	0
Buses (+20 seats)	12	12,650	151,800	30	360
Minibuses	61	7,500	457,500	16	976
Rural taxis	62	7,500	465,000	16	992
Govt, NGO and private	93	35,000	3,255,000	5	465
Motorcycles	12	3,000	36,000	2	24
Carts					
Bicycles	78,900	100	7,890,000	2	157,800

Figure 4.5.1 Distribution of grouped transportation modes in the survey region and their number according to the Fish spokes

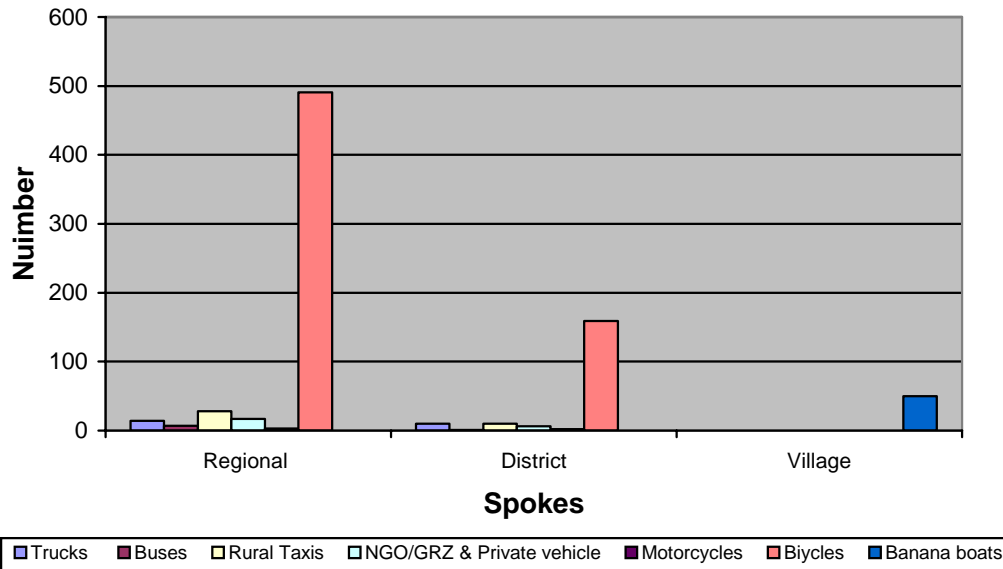


Figure 4.5.2 Distribution of grouped transportation modes in the survey region and their number according to the Agricultural spokes

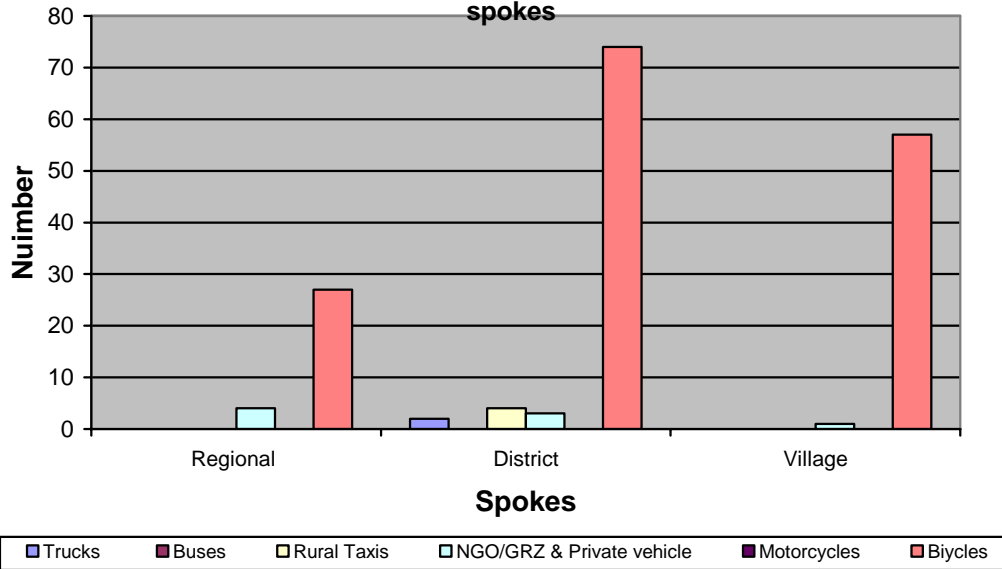
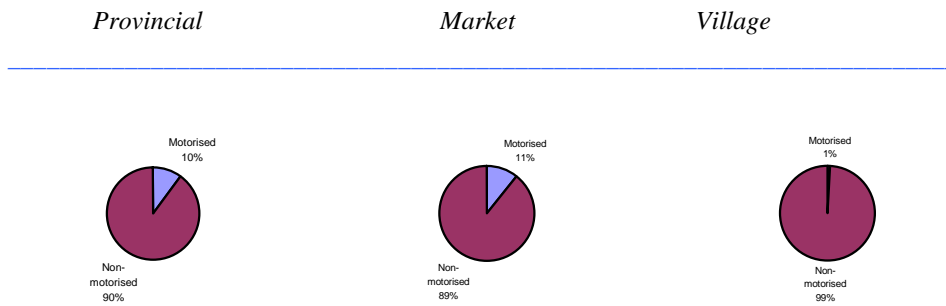


Figure 4.5.3 Pie charts showing the proportion of vehicle movements with motorised and non-motorised transport on Agricultural spokes



Two groups: numbers of all motorised vehicles and all non-motorised

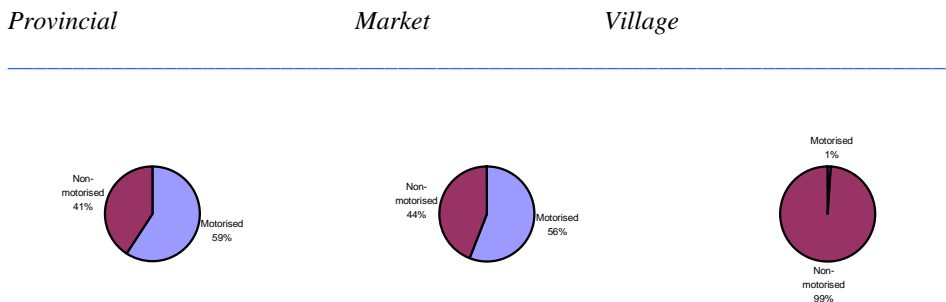
Figure 4.5.4 Pie charts showing the IMTs operated by women on the different agricultural spokes





Two groups: women operators vs male operators of cycles

Figure 4.5.5 Pie charts showing the proportion of people travelling by motorised and non-motorised transport on Agricultural spokes



Three groups: Vehicle passengers (all), Male pedestrians and Female pedestrians

4.6 Demand for Rural Transport Services

4.6.1 Overview of demand and satisfaction information

Transport services in rural Zambia are shown to be driven largely by a demand and supply relationship. Private transport operators are not willing to travel on bumpy, uneven or roads which are in very poor condition for long distances exceeding say 50km in order to satisfy the transport requirements of the rural people at low fares.

During the survey it was evident that there is simply not sufficient demand for transport services on a regular basis to warrant the provision of a cost effective service (coupled with the high cost of fuel, maintenance and repair). In addition it takes a long time to transport very few passengers, in some cases, at low returns when they could earn more income if operating on a market or provincial spoke.

All of the transporters surveyed were found in district centres or in towns on market or provincial spokes. Very few operated on any of the village spokes in which the surveys were undertaken.

In addition, most bus or taxi stations in the market centres were found to have numbers of vehicles waiting to be fully loaded before moving off, so as to maximise load capacity (both

people and goods). Surveys of transporters showed that loading times ranged from two hours to a few days. The average loading time of sample transporters was two hours in Kashikishi and Samfya, four hours in Milenge. The majority of these transporters operate from the market centres and undertake journeys to other market centres. Where there is reduced demand for the service, a longer loading time can be expected to maximise viability of the service.

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Box 2: Poor Transport Infrastructure

Transport infrastructure appears to be a significant concern for most households surveyed in the Province. The lack of access to social services, markets and agricultural inputs was shown to affect the sustainability of livelihoods and contributes to poverty. Impassability in the rainy season particularly affects incomes as traders cease to buy produce from the village.

Dissatisfaction with the government's attitude over road maintenance and its impact on mobility and accessibility was repeated throughout the areas surveyed. "The government has the responsibility to repair the roads. As a community, we have no capacity to undertake such tasks", said one participant in Shitambuli village, Milenge District. Others explained that MPs only visit during election campaigns and are therefore oblivious to the severity of the road condition and its adverse impact on service provision and income generating capacities. Villagers are convinced that sustained road rehabilitation would lead to increased traffic flow and reduced transport fares because of increased competition and profitability of transporters .

4.6.2 Specific cases of demand and satisfaction information.

Mobility of the rural people, especially in the village spokes, is a good indicator of their income levels.

The following key issues in rural transport which needed to be explored were collected through individual and group discussions during the visits to the various areas:

o Farmers

Milenge and Samfya (Lubwe).

Key Problems:

The farmers surveyed have no problems with rains and yields are normally high. They grow groundnuts, cassava, finger millet, maize, beans, sunflower, and sweet potatoes. They cannot manage to take out produce loads on their heads for distances beyond 5 km. Currently they walk or hire bicycles for transport. Some farmers are relatively better-off and have bicycles, big fields and can afford to hire vehicles. During the harvest season, the farmers travel at least once a week. They pay up to ZK 40,000 (US\$ 8) to transport a 50 kg load of produce. For shorter distances (less than 50 km), they pay fares of between ZK 10,000 (US\$ 2) and ZK 25,000 (US\$ 5).

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Transport is unreliable. Roads are poor and impassable during the wet season. Once in a while, traders come and buy their crops for cash. They do not normally come with big trucks, because of the poor roads. As a result, the farmers sell their produce cheaply to the traders e.g. a 50 kg bag of oranges cost ZK 15,000 (US\$ 3).

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At times, they consolidate their loads and then hire transport to the market town. Alternatively they walk or hire bicycles to the main road and then get on the rural taxis. But they may have to wait for long periods or even days before they get transport.

If telephones were available, they could consolidate loads and call for transport. This would encourage production and reduce expenses. At the moment, they spend up to

50% of the income on transport expenses inclusive of overnight stay, meals etc. During harvest or fishing season, transport costs are high due to competition for the service.

The ministry promised to provide cattle so that farmers could operate ox-carts. This would improve transportation of farmer's produce to the markets. The roads need to be repaired. At the moment, crops are wasted in most areas. Farmers in Luapula Province need to shift to livestock farming so that during the fish ban, they can still have food or slaughter the animals for trading.

o **Traders**

Fish traders

(Informants: Mr Mordeguy Kamfwa and Mr Cosam Mwansa – Mpata, Samfya)

Key Problems:

Both interviewees live in Mansa and are fish traders. They buy their fish from Mpata village (Samfya district) a major interchange between water transport (to and from the large swamp area) and road transport. The village is 48 km from Samfya.

The two fish traders hire boats to collect fish from the swamps. They normally travel by mini-bus from Mansa to Samfya then by rural taxi-pick up to Mpata. They hire boats to collect fish. With pre-arranged trucks from Mansa, they transport the fish 125 km away to the market in Mansa. They make this journey between two and three times a week.

Transport cost per trip for the two passengers + freight (up to 1 ton) is ZK 500,000 (US\$ 100). This is very expensive. They have to hire a rural taxi because there is no regular transport service between Samfya and Mpata. They are forced to hire because they trade in fresh fish with very little shelf life since there are no freezing facilities at Mpata. Sometimes, they hire a bigger truck and then consolidate their loads with other traders.

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Availability of a mobile phone facility would help plan transport. Sometimes, the fish goes to waste due to lack of transport (e.g. pre-arranged vehicle breaks down). About 50 – 75% of income is spent on hiring transport. The journey takes three-five hours.

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Problems affecting their business are:

- Insufficient boats available for hire for purchase of fish.
- Use of the rural taxi is unsuitable for fresh fish business, as it does not operate on 'time schedule' basis.
- Lack of access to finance makes it difficult to pay cash for transport hire as well as pay for the fish.
- Poor state of roads – no regular taxi service available on the Samfya - Mpata spoke.
- Pre-hired vehicles sometimes breaks down and fish is wasted or arrives at the agreed time, but finds very little fish has been purchased due to lack of boats at Mpata.

The transport service can be improved by:

- Construction of an ice plant and provision of storage facilities for fresh fish at Mpata.
- Improved road condition.
- Availability of credit schemes for financial support.

- Increased availability of boats on the river/lake. At times hired transport makes an empty or half full return journey due to lack of boats to purchase sufficient fish. This is costly.
- Provision of bus shelters and waiting facilities.

o **Students**

Group of female secondary school students from Shitambuli village, Milenge.

Key Problems:

The school is about 13 km away. They normally walk to school, starting off at around 05.00 hours and return late afternoon. There is only one bicycle per household, which is used by the men to exchange or trade agriculture produce with second hand clothes and chitenge or sell for cash in Ndola, 130 km away – a journey which takes three days either way.

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The students would like to cycle to school but cannot afford to buy a bicycle unless cost was reduced from ZK 400,000 to say ZK 100,000, (US\$ 84 to US\$ 21). Even if they cultivated a small field, agricultural inputs are expensive and it is difficult to sell the crops.

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Boarding facilities are available, but the dormitories are in deplorable state with no doors, windows etc.

They are normally tired in class due to the long distances they walk.

o **Health Users**

(Informant: Mrs Margaret Chileshe from Shitambuli village (35 km from Milenge))

Key Problems:

- Health centres are few and far between for the majority of people.
- She was cycling to Kapalala Health Centre in Milenge with a baby on her back.
- She explained that the area is demarcated into zones and could only attend the Kapalala Health Centre. She said some people travel 80 km to reach the same clinic.
- There is no ambulance.
- Patients walk, cycle, use wheel barrows or canoes (from the islands or swamps) to reach health centres.
- Some patients die at home or on the way due to childbirth complications or lack of transport.

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o **Employees**

(Informants: Teachers – Ms C Kabwe, Shanyemba School, Nchelenge District – 25 km and Mr Duncan Mabonga, Mulundu Community School, Kawambwa).

Key Problems:

Ms Kabwe was visiting parents and Mr Mabonga was collecting his salary from Nchelenge. They both own bicycles and cycle 9 km and 76 km respectively to get access to motorised transport. Mr Mabonga makes the same journey once a month or more if necessary. He cycles 76 km to get to Kawambwa, then takes a rural taxi to Nchelenge 40 km distant. Waiting time varies from two-five hours for the mini-bus to take a full load. A cycle taxi between Kawambwa and his school costs ZK 25,000, (US\$ 5). Both interviewees complained that transport was unreliable and cost excessive.

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Availability of mobile telephone services would ease travelling problems. They both would avoid undertaking unnecessary trips. Mr Mabonga at times finds that some meetings or workshops have been postponed. He is forced to go back or stay overnight or even longer depending on the length of the postponement.

They both spend between 10 - 25% of their monthly income on transport costs to collect their salaries from Nchelenge District. During the fishing season and timber harvest time (April – November) transport increases, but gets very low during the fish ban and it becomes expensive. Bicycles could be an alternative, but are expensive.

They both agreed that improvement of the road infrastructure and reduced bicycle prices to affordable level would assist improve transport services and access to health services. Additionally, improved road infrastructure would also reduce cyclist accidents and encourage increased private or public transport services.

o **Excluded people – old, handicapped, socially marginalized.**

(Informants: Mumba Mwashwa (Milenge) and Paul Kaoma – Nsemiwe village (Nchelenge), Mr Able Mwape, a retired person – Shitambuli village (Milenge)).

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Key Problems:

Mumba is severely disabled and cannot walk. He was collecting his weekly allowance from the Department of Community Services assisted by his cousin. Kaoma has a walking stick. Neither can cycle. Mumba makes the 3 km journey once a month. Kaoma gets a cycle taxi to the main road (12 km at a cost of ZK 10,000 (US\$ 2)) to get to motorised transport. Most people take cycle taxis all the way to the district centre (an extra 16 km), as rural taxi services are expensive and require waiting (one-three hours). In case of illness, someone has to cycle to the health centre located on the main road for an ambulance to come.

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Availability of mobile telephone service would improve communication and access to health services. For Mumba, it would help cut down unnecessary travel as it is very uncomfortable sitting on the bicycle carrier (without any cushion) and riding on a bumpy and uneven road for a two-four hours journey. Mumba has no means of income. Any form of transport is unaffordable. Kaoma earns approximately ZK 30,000 (US\$ 6) per month from charcoal burning activities and spends up to 50% of his income on transport.

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Lack of transport at times results in unnecessary deaths and wastage of agriculture produce. ‘We are forced to sell our produce at low prices to the traders who come to our village’, he said. Many retirees who have returned to their villages also complained often their retirement packages are not paid for years and they have to undertake numerous trips to the various districts of their last employment and Lusaka to follow up on retirement benefits. When paid, the monthly payments are so little that they cannot manage to meet their travel expenses. This increases poverty levels.

Provision of electricity and improvement of the road infrastructure would encourage transport providers, traders and local farmers to invest in the village.

o **House Managers – Milenge.**

Informants: Group of women, Mrs Jane Mutela (8 in household), Evelyn Bwalya (10 in household), F Kunda (11 in household) and N Kabengele (8 in household).

Key Problems:

There are no maternity services in Milenge. Pregnant women are forced to give birth at home. ‘We need transport to attend church service, anti-natal, under five and medical treatment at the clinic and take children to school. We have to walk because

we cannot afford bicycles. We have one bicycle per household used by our husbands to go to Ndola (130 km) or Mansa (220 km) to sell our produce and buy necessities for the families’, they said.

They typically travel three to five times a week a distance of 5 to 15 km. They have not noticed any trends in transport services in Milenge. They have heard that the council has bought a light truck, which will provide transport services. ‘The new vehicle will not change anything. The council cannot help us – it will only be used by council employees and the councillors’, they complained.

They also complained that Milenge lags behind in roads, many other things like a secondary school, shops etc. ‘We cannot eat all our produce. We need to sell some to earn money to pay for school fees, medical treatment, buy clothes and other necessities. We have water problems, but we are surrounded by the Luapula River’, they added.

During the wet season, transport is even more difficult due to bad roads. When dry, the situation improves a bit. Bicycle taxis are very uncomfortable and accident-prone on the bad road. The hire cost of ZK 15,000, (US\$ 3) to the main road is very expensive.

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They stated: “We can improve our situation ourselves if the price of bicycles (female type) was reduced to say below ZK 200,000, (US\$ 42) and roads were improved. The government should help us. The road needs to be improved. At the moment, crops are wasted.”

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o **Passengers on bus/rural taxis**

(Informants: Gertrude Katuta and Mrs Mwansa (Lubwe – agricultural market spoke))

Key Problems:

Gertrude travelled from Lusaka to visit parents in Lubwe and used a bus from Lusaka up to the Serenje/Mansa check point on the provincial spoke, then used a fish truck up to the Lubwe turn-off – a total journey length of 730 km. This was the second journey in five years.

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The journey cost ZK 75,000, (US \$ 16) up to the Lubwe turn-off and then ZK 15,000, (US \$ 3) to Lubwe.

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She complained that the transport service was unreliable, expensive and you spend too much time waiting for the buses to load. Her journey took two days. She still had to walk or get a cycle taxi for final of the 5 km journey.

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She was not sure about what role a mobile telephone would play apart from easy communication.

She would like to see station buildings erected with sanitation facilities and buses running on time schedules instead of the current practice of full bus loads as a basis for scheduling bus/taxi services.

Mrs Mwansa was using a rural taxi to Lubwe. Apart from the discomfort, non-control of passenger + freight loads, she preferred rural taxi pick-ups, which had no waiting time. Only one problem, the rural taxi stops for everyone, anywhere and travel time was long as a result, but was slightly cheaper at ZK 10,000, (US\$ 2).

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o **Female Passengers on a Boat.**

(Informants: Memory Mpundu and Eunice Chibwe – both pregnant)

Key Problems:

- Journey from the island starts at 03.00 hours and takes four hours (arrive at Kashikishi, Nchelenge at 07.00 hours), but the anti natal clinic starts at 15.00 hours. They cannot manage to travel back, therefore, they sleep at the ‘station’, which operates as a small market, and travel back the next day.
- Very few boats carry passengers due to controls on loading capacity by Mweru Transport. This presents problems when a pregnant woman is in labour. Nearer the time of giving birth, some women shift from the island and stay at St. Pauls Hospital (at the mother’s shelter) for days or weeks until they give birth, for fear of transport problems or complications during labour.
- There are no shelter or sanitation facilities at the market, they experience problems during the rain season.
- Pregnant women pay ZK 20,000, (US\$ 4) for anti-natal in addition to ZK 10,000, (US\$ 2) for transport. Due to low incomes as result of depleted fish stocks on lake Mweru, most people cannot afford and avoid attending anti-natal clinics all together.

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Solutions:

Ms Mpundu and Ms Chibwe feel that:

- Government should provide a big boat with engine to provide transport to the islands as well as provide electricity and health centres at the islands.
- The Health Boards should extend the provision of mosquito nets to the islands – especially for young children.
- The council should provide shelter and sanitation facilities at the harbour as it collects levies from transporters and marketeers.
- Government should provide drinking water (boreholes) at the islands.

o Pedestrians

Group of 50 plus CMML church members were walking from Milenge to the main road and some to Samfya after attending a one week church conference in Milenge. Some had bicycles, which they used to consolidate loads and took turns to push. The journey would take between 4 – 12 hours or more over a distance of 40 – 120 km.

Key Problems:

The majority of people walk in Milenge due to lack of transport. Transporters find it uneconomic to operate on this route. The cost of fuel and spares due to breakdowns is potentially higher than the income they make from passengers and freight charges.

Government should help repair roads and offer incentives to motorised transport operators. The price of bicycles should be reduced since most people have no income here. They cannot sell their produce since Mansa is very far. Ndola is nearer, but there is no pontoon on the Luapula River.

Government should increase facilities like schools, health centres to assist the local people who spend most of their time walking. Very few NGO operate here. The Member of Parliament and the councillors do not visit us – we have to look after ourselves. It is difficult to cycle to Mansa or Ndola to sell crops. If the road was rehabilitated there would be more cars coming to do business here. We spend a lot of money to transport our crops to the main road.

o Transport for Socio – Cultural Reasons.

There is a striking contrast between settlement patterns in Milenge and that of Samfya and Nchelenge Districts.

In Samfya and Nchelenge, people have settled along either side of the main link roads between Mansa and the two districts. In Samfya, this pattern extends along the market spoke to Mpata. The inhabitants have better access to socio-cultural events like cultural dances, funerals, weddings, church services etc, for example there are several churches along the entire route including the adjacent areas.

Some isolated communities live far from the road network and they experience problems in accessing motorised transport.

Inhabitants of the smaller islands and the swamps live in small, dispersed and transient fishing camps and have very few socio-cultural gatherings. Few can afford to hire their own canoe or boat. They tend to organise themselves in groups, then hire a banana boat for ZK 30,000 per day and peddlers for ZK 10,000 (US\$ 2) per day. But there is a lack of boats for hire at peak fishing time. At times, the waterways and channels need to be cleared for larger boats to pass.

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- o **Milenge** lies 74 km from motorised transport service. There are not many facilities in the area. Even churches are very few and scattered long distances apart. Unless they organise themselves into large groups for certain gatherings and hire a vehicle, the only alternative is to walk to access the socio-cultural events in the area. Only private and government vehicles travel to Milenge. They cannot provide transport services to such social groups.

4.7 Rural Transport Services Technologies and Costs - Key Issues:

Table 4.7.1 provides a summary of operator costs and Table 4.7.2 gives examples of fares charged.

Table 4.7.1 Operator Costs Summary Sheet for commonly used means of transport in the survey area											
Mode	Distance / yr (km)	Initial costs (USD)	Vehicle Life Expectancy (yrs)	Depreciation Cost (USD)	Fixed Annual Costs (USD)	Variable Costs / yr (USD)	Total Costs /yr (USD)	Cost / km (USD)	Tariff / km (USD)	Estimated profit (USD) / km	Estimated annual profit (USD)
Trucks - less than 3 tonnes	23,000	7,500	5	1,500	1,947	3,344	6,791	0.30	0.42	0.12	2869
Trucks - more than 3 tonnes	100,000	12,650	5	2,530	4,315	27,466	34,311	0.34	0.39	0.05	4689
Buses (+20 seats)	10,000	12,650	6	2,108	2,935	8,763	13,806	1.38	1.74	0.36	3594
Rural taxis (pick up trucks, minibuses, cars)	10,000	7,500	5	1,500	1,604	7,497	10,601	1.06	1.31	0.25	2499
Bicycles	10,000	75	2.5	30	-	355	385	0.04	0.05	0.01	115

1. Due to vehicle taxis operating a system of waiting for long periods for buses or taxis to make a full load for each trip instead of operating on time schedule, vehicle taxis do not cover much distance annually. In fact total distance covered compares well with that covered by bicycle taxis.

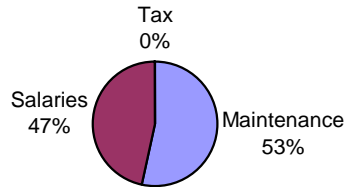
2. Tariff/km was calculated based on field data i.e. Fare x (average no.of passengers or freight x total trips per year) divided by annual distance travelled

Table 4.7.2 Examples of passenger fares by rural taxi in Luapula province					
Road type	Start	Finish	Distance (km)	Fare ZMK	Fare / km (USD cents)
Main tar road, high traffic volume	Mansa	Samfya	80	25,000	6
	Kashikishi	Lusaka	940	100,000	2
	Kashikishi	Mansa	240	40,000	2
	Mansa	Lusaka	700	80,000	2
Poor road, low traffic volume	Kashikishi	Kawambwa	70	25,000	7
	Milenge	Tuta road Junction	74	25,000	7
	Milenge	Mansa	220	45,000	4
	Mpata	Samfya	24	5000	4

Notes:

- The practice of fixing fares in increments of ZMK 5000 (one dollar) creates some pricing anomalies
- Surveys of transporters showed that loading times ranged from two hours to a few days. The majority of these transporters operate from the market centres and undertake journeys to other market centres. Where there is reduced demand for the service, a longer loading time can be expected to maximise viability of the service.
- Shorter distances tend to cost more than the long distance journeys

Figure 4.7.1 Breakdown of Annual Expenditure by Bicycle Operators in the Luapula Province based on total expenditure of about USD 355



Traffic counts revealed that bicycle traffic varies from locality to locality according to levels of economic activity – it is higher in fishing areas and less in agricultural market areas. Bicycle ownership has generally increased at village level, especially in fishing areas. The collapse of public transport in rural areas and the deteriorating road infrastructure has seriously impacted on trip frequency and purpose because of non-availability of motorised transport in most areas, especially on market and village spokes.

- No credit facilities. People borrow from friends to purchase bicycle or meet repair costs.
- Income levels in fishing areas have increased.
- Bicycle ownership at village/district levels has increased resulting in increased competition.
- Scarcity of spares and reduced incomes especially at village level revealed that most bicycles are in state of disrepair e.g. no brakes or lights.
- Cycle trips vary seasonally due to road condition. It is low in wet season.
- Lack of shelters or parking lot to allow the taxi operators to attend to personal needs.
- Improved roads would shorten travel time and reduce maintenance costs.
- 47% of total income is used for salaries – the general trend is that bicycle owners pay themselves a monthly salary as well as hire riders on long journeys to transport passengers.

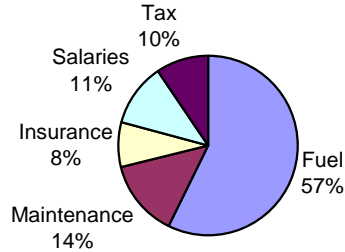
o **Boats**

- Population is expanding on the islands and swamps etc. More water transport is needed.
- Deaths have occurred due to use of unsafe canoes and banana boats in the absence of government or private operators being able to provide a reliable and safe transport service.
- Tourist visits have increased to the lakes but there are no boats for use or hire.
- Cost of fuel is very high. Lack of large capacity vessels means that transportation of fuel to the islands and swamps is very difficult.

o **Rural Taxis**

- (a) **Minibus** (Kashikishi – Fish spoke)

Figure 4.7.2 Breakdown of Annual Expenditure by Minibus Operators in the Luapula Province based on total expenditure of about USD 9100

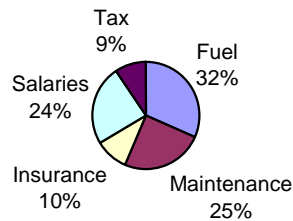


Competition has increased. Fares for the light trucks (up to 3 tons) are cheaper and they are not subject to terminal rules and therefore do not wait for a full load but pick up passengers from any point.

- Driving conditions are more hazardous on the roads with the increasing number of bicycles on the roads, especially on the Mansa – Nchelenge route.
- Business is seasonal – low business during the fish ban and peak during the fishing season.
- Road safety sensitisation of cyclists is necessary to improve road safety and prevent accidents.
- Light trucks taxis should be regulated just as other passenger transport types are.

(b) **Light Truck - 3 tons** (Milenge Agriculture Spoke).

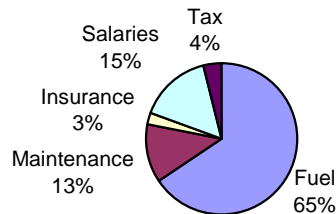
Figure 4.7.3 Breakdown of Annual Expenditure by Light Truck(<3tons) Operators in the Luapula Province based on total expenditure of about USD 3600



- Poor roads affect provision of transport service, increases repair and maintenance costs.
- Lack of spares, consumables and lack of repair facilities in certain areas affects service provision.

- More people are walking, cycling or using boats due to poor roads and related scarcity of motorised transport.
 - Reduced business means no recovery of costs by transporters.
 - Councils collect station levies but do not provide any services like waiting rooms for passengers, sanitation facilities, repair or maintenance of parking lot or roads.
 - Operators must travel to the provincial centres to obtain spares.
 - Improved communications will help overcome some of the problems listed above.
- o **Minibus (Lubwe – Agricultural Spoke)**
- Need credit facility to buy spares for vehicles.
 - Frequency of trips has increased due to recent repair of the 32_km road to Lubwe.
 - Spares only available in Kitwe (660_km) or Lusaka (700_km).
 - Council need to repair roads and provide stations/shelters and sanitation facilities.
 - Communications would improve service provision – reduced travel costs and increased business due to consolidation of loads from say, church groups, government departments, schools etc.
 - Seasonality of business due to fish ban period.
 - Roads need to be continuously maintained, repaired to reduce damage to vehicles.
- o **Trucks (6.5 tons – Nchelenge, fish spoke)**

Figure 4.7.4 Breakdown of Annual Expenditure by Truck Operators(>3.5 ton) in the Luapula Province based on total expenditure of about USD 11000



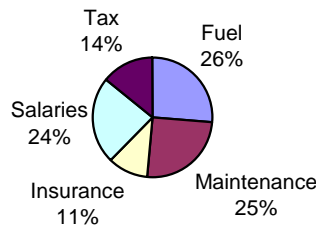
- Business has increased, as has the number of trucks operating.
- Government has banned trucks carrying freight together with passengers. Usually, the truck owner has to assist traders with alternative transport to their destination.
- Non-availability of spares in the market towns affects service provision.
- Poor road condition results in damage to vehicles.
- Communications would increase business opportunities; especially interest/business linkages would facilitate sharing of knowledge about business opportunities in other areas in the country. It would also help tracking of transport vehicles thereby improve service delivery.

- The four-month annual ‘fish ban’ period affects business and hinders development.

In Luapula Province, transport business is heavily dependent on the seasonality of the fish industry. There is a need to diversify the economy of the province to enable sustainability of transport businesses. Business linkages with other areas may encourage temporary re-location to other areas during the ‘fish ban’ period.

o Buses (+20 seats)

Figure 4.7.5 Breakdown of Annual Expenditure by 20 Bus Passenger Operators in the Luapula Province based on total expenditure of about USD 9000



Main problems for large capacity transport buses in the survey areas are:

- Insufficient transport demand leading to poor returns on investment. Fares must be high to account for fuel consumption, repair and maintenance of buses because of the poor road condition.
- Large buses get stuck in mud during the rainy season. Some roads are narrow, some bicycles and culverts are very unsafe and would not even carry the weight of a loaded bicycle, let alone the weight of a motor vehicle.
- Loading time is too long sometimes more than a day especially during the ‘fish ban’.

From the Operator Costs data collected and shown in Table 4.7.1 some useful additional conclusions, on large capacity buses, can be made:

- There is very little margin for profit. Most vehicles are in a state of disrepair and are unusable for long periods because of mechanical problems. Usually operators can’t afford shock absorbers or upholstery. There is little margin for operators reducing tariff per person / freight, unless of course the overheads were reduced or the lifespan of the vehicles increased but this would only be a possibility if the roads condition were improved.

- The lifespan of the vehicles is short due to poor state of roads and poor maintenance due to high operator costs. In some cases the operating costs seem understated maybe because they use bush mechanics or carry out most of the repairs themselves. Most service costs exclude labour and other consumables.
- The figures for "estimated profit per year" are realistic looking at the conditions in rural areas but the operators do make a bit more on a few

consolidated trips when hired or charge extra for luggage or passengers making short trips on the main route etc.

- In relation to commercial bicycle transport, the annual costs of running a ‘bicycle taxi’ is in the region of US\$ 250. Poor road conditions and make of bicycles (especially the cheaper Chinese bicycles) raises maintenance costs and USD 250 - 300 is typical against an income of US\$ 550. A 2.5 years life span is realistic. Beyond 2.5yrs almost all the bicycle parts will have been replaced.

4.8 Support Services for Rural Transport Services.

4.8.1 Overview of the supply and maintenance systems and key issues.

Support services and maintenance systems encountered in the areas surveyed indicate an unreliable and expensive service, which has contributed to the deteriorating transport service provision in the districts.

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a) Bicycle Suppliers

National supplier

TATA Zambia Bicycle Plant in Lusaka imports bicycle kits from India and assembles approximately 2000 bicycles per month. Major customers are UN agencies, World Vision, Ministry of Health (outreach programmes), NGOs and assorted traders and individuals. Peak sales are between May and August during the harvest season.

Price of bicycles varies between ZK 340,000, (US\$ 72) to ZK 423,000, (US\$ 89) inclusive of 25% duty and 17.5% VAT.

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TATA Zambia has no outlets or registered traders who could stock spares for the bicycles. It is left to traders to decide to keep some bicycle kit in knock down form to provide some spares. Discussions revealed that they could consider arranging with some traders in the districts to stock spares. TATA Zambia also indicated that they could consider reducing the price of the female type bicycle to increase access to female cyclists, most of whom had complained during the survey that the male type bicycle was not convenient for female (+ mothers) especially during emergencies. Female cyclists could not easily get off the bicycle resulting in accidents and injury.

There are other mostly individual traders/suppliers of Chinese bicycles, which are imported through Tanzania. Prices range between ZK 240,000– ZK 260,000, (US\$ 51 – 55). Cyclists are not happy with the quality of the bicycles, as the breakdown rate of bicycle parts is high. A number preferred to spend more to obtain an Indian ‘Eagle’ bicycle.

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Bicycle repairers bemoaned the lack of spares for bicycles, especially the type with gears. Most owners ended up removing the gears. They depend on the owners buying their own spares, as they can not afford to stock spares. A credit scheme for bicycle repairs in Nchelenge has not materialised. A cooperative was organised, but did not take off either, which would have arranged a large shelter from which they could operate especially in the rain season.

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b) Boat Suppliers

(i) Provincial supplier - Top Tech Enterprises of Mansa

A supplier of boats, repair kits and motor vehicle spares.

They sell about six banana boats in a year. The cost of transportation has doubled the cost of boats over the past two years to ZK 7 million (US\$ 1474).

The repair kit costs ZK 300,000, (US\$ 63).

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Sales of spares were low due to high prices as a result of high transportation costs due to fuel increases and the long distances from the provincial centres where spares are sourced. Lack of credit facilities in rural places like Mansa means business operates on cash basis only. Only fast moving spares are stocked. Improved communications with outlying areas would facilitate stocking of appropriate spares. Generally, doing business in a place like Mansa means that you spend more on overheads - travel, communication and other expenses, the Manager complained.

(ii) **District supplier – An individual at Mpata market**

At Mpata market centre, a major interchange between water and road transport, a Mr David Kamfwa hires out 10 non-motorised banana boats and provides repair services for his and other boat owners. He would prefer to hire more boats but demand is low as most fishermen use dugout canoes, which are more affordable. A banana boat cost more than ~~ZK 6 million~~ (US\$ 1263) million. An engine would cost between ~~ZK 4 million~~ (US\$ 842) to ~~ZK 6 million~~ (US\$ 842 – US\$ 1263) depending on capacity.

Business only increases during the fishing season and if there are elections or by-elections. The cost of fuel is prohibitive – more than ~~ZK 6000~~ (US\$ 1) per litre plus transportation cost to Mpata.

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The Government’s banning of the operation of the Fish Traders Association of Zambia (FITAZ) has created a gap for liaison between the boat operators and the local authorities. However, the local authorities have continued to monitor boat operators’ speed controls, operating times (06.00 – 18.00 hours), limit on passenger numbers and collection of boat levy.

Supplies of maintenance kits for fibreglass banana boats (Resin + catalyst) are not readily available except in Kafue (700 km), in Kitwe (600 km) and sometimes in Mansa. A 2.5 litre repair kit costs ~~ZK 210,000~~ (US\$ 44).

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Availability of mobile phones would assist in sourcing spares and facilitate communication with other boat owners needing repair kits.

During the survey, it was discovered that fibreglass boats were not suitable for use on the lake as they were lighter and more easily damaged.

4.9 **Perspective of Local Stakeholders on Specific Issues.**

During the survey, the interviewees were asked or encouraged to indicate their priorities in relation to improvement of Road Transport Services. Below are some of the priorities:

- The poor state of the road and water transport infrastructure is a major concern for all stakeholders. The lack of effective representation by local political leaders e.g. MPs and Councillors has caused some resentment amongst the rural population, because they are ultimately responsible for the provision and maintenance of infrastructure, without which the livelihood of rural people and access to health and education are reduced.
- Bicycles are a common asset in most rural households, but often used by men who are able to transport greater loads and have priority use over women. Most people interviewed, especially women would like to own bicycles for use to go to the Rural Health Centre, church, take children to school, grinding mills, visit friends as well as take produce to the markets for sale. The majority of the people interviewed wanted the price of bicycles reduced to half from the current price of ~~ZK 400,000~~ ~~ZK 200,000~~ (US\$ 84 – 42) or less.
- In Milenge, most people wanted a secondary school built in the area to avoid school children travelling long distances outside the district.
- Food insecurity is a problem during some months of the year. Most farmers would like extension services increased to assist in crop production. They would like government to

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assist in stocking of livestock e.g. sheep, cattle, especially in view of declining fish catches in both lake Bangweulu and Mweru. **Availability of phones (especially mobile phones) would increase access to extension services as farmers would be able to communicate and receive advice quickly rather than wait for an officer's visit.**

- District leaders especially in Milenge would like government to electrify the district. Improving feeder roads alone, without complimentary development will not necessarily bring new traders to such remote areas or increase economic and transport activity levels. They added that with reduced fish catches on both lakes and the annual fish ban there is a need to promote other economic activities in the province e.g.
 - Fish farming – construct channels and dams
 - Rubber plantations – small holder schemes
 - Palm oil farming
 - Mining (small scale)
 - Develop infrastructure and promote small grower schemes for fish farming etc.
- Lack of farming inputs like fertilizer, seed etc were mentioned by rural groups from agricultural areas of Milenge and Nchelenge and Samfya. Improved agricultural production may attract more traders to the agricultural areas.
- Due to poor access, most traders were taking advantage and either offered very low prices for crops like maize or exploited the villagers through bartering arrangements for the exchange of produce for second – hand clothes and other necessities thereby denying them cash to meet their other needs.
- The rural groups complained that without markets they could not sell their produce. HIV/AIDS infected people could not manage to meet travel expenses and cash to pay for ARVS.
- Transporters and Health Authorities complained of the high price of fuel, lack of spares and support services.
- Health users complained of long distances to the RHC and lack of maternity wards.
- Education was a priority for young people especially girls. Distance and lack of secondary schools was felt to be more acute, leading to early marriages and teenage pregnancies.
- Police complained that due to lack of transport in rural areas Police are not enforcing traffic rules strictly. Police bemoaned that there are no controls for water transport as there are no patrols on the rivers and the lakes due to lack of equipment.

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4.10 Commodity and Retail Prices

In the surveyed areas, lack of access to markets was of concern to most households. Lack of availability of consumer goods in some cases was the major contribution to barter system, especially in the fishing areas as well as forming the backbone of the fish markets like Shabo Market in Chabilika area of Nchelenge and Mpata market in Samfya. Access to consumer goods was the major attraction for some householders, who would cycle more than 100km e.g. to Ndola (from Milenge) to exchanged fish or other agriculture products for consumer goods e.g. soap, cooking oil, kerosene, candles, matches, sugar.

Householders complained that they are exploited by the local traders on commodities such as bicycle spare parts (a set of 4No. brakes costs ZK 6500 (US\$ 1 in Lusaka of which a pair costs ZK 14,000 in Mansa (US\$ 2).

Interestingly, commodity prices compare favorably with those prevailing in the provincial centre (Mansa) and in the districts as well as in the Copperbelt from where most commodities are purchased. Traders stated that they add very small margins on their products as they face competition from other small traders who operate small or 'house' shops. Whilst they have pay for their fare and freight, the other small traders (usually cyclists), due to their modest quantities, often use their bicycles to travel as well as carry their loads. The cyclists can add

as little as 5% mark up and will cycle to the various households and even exchange the commodities with other agriculture products.

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The licensed traders complained that apart from paying council levies, licensing, their sales were low and could not manage to stock up large quantities of slow selling items. The traders also complained that, as small traders, they could not recover VAT from their input or output sales. This made it difficult for them to compete with the larger licensed traders who could recover their input/output VAT.

The traders in Milenge complained that with low sales and without electricity they could not afford to stock perishables. Likewise householders complained about the poor storage facilities of the traders, that they were forced to buy expired, damaged or rotten commodities due to lack of alternatives. Improved access to their areas would attract more traders thereby increase competition and better terms of trade, they claimed.

5.0 **ANALYSIS AND CONCLUSION**

5.1 **Key Issues**

5.1.1 **Transport Situation and Trends**

In Luapula Province, the poor transport infrastructure is clearly a major constraint to economic and livelihood development. Whilst improved road accessibility may provide significant changes in physical access to socio-economic services, lasting change in people's livelihoods will require improved transport services as well as infrastructure.

Mobility of rural people in Luapula Province is mostly on foot followed by cycling and then motor vehicle. The least used was the boat – mainly due non-availability. Most interviewees indicated that they used a variety of modes.

There were no scotch carts or other IMTs observed throughout the study due to the fact that traditionally the ethnic groups in these areas are not cattle keeping.

- There is a need to increase levels of incomes especially in predominantly agricultural areas e.g. Milenge, to influence transport needs.
- Marketing constraints exist in the district locations of all major markets. Although the Copperbelt is nearer, through DR Congo, this presents difficulties – cross boarder travel, poor condition of the road, insecurity etc. This negatively affects crop and fish prices.

In the absence of good road infrastructure to access markets, marketing and storage infrastructure e.g. warehouses and sheds, prices of agricultural produce are negatively affected thereby increasing poverty in the province.

- Unfortunately, the general trend in Luapula Province indicates increased poverty, deterioration of road and water infrastructure and transport services. It is not too late to improve the rural transport services in Luapula Province but it will need committed leadership and stronger partnerships with the electorate.

5.1.2 **Profitability and Supply Issues**

The types of motorised transport that come to the areas surveyed include large and light trucks, 20-seater buses and mini-buses, pickups in predominantly fish spokes like Samfya, Nchelenge, Mpata, Kashikishi and Shabo markets. The absence of similar traffic on non-fish or agricultural spokes was very clear.

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There are big variations in motorised traffic between the fish and agricultural spokes e.g. the average daily traffic on the Nchelenge – Mansa provincial fish spoke was more than 100 compared to only six of the Milenge – Mansa agricultural spoke.

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The respondents were asked to indicate seasonality of traffic in the different seasons, namely the dry season, which is also the harvest and fishing season and the wet (farming and fish ban) period. On the average most vehicles come to the village (peak) in the harvest time and least in the wet season. In the case of bicycles, no such variation was reported.

There are very few transporters in rural areas that operate on the bad roads. The cost of vehicle maintenance and repair, high fuel costs in rural areas make transport fares unaffordable for most poor villagers and marginalized groups.

5.1.3 Regulation and Associations

As mentioned earlier, there are no Transport Associations throughout the country – whether for road or water transport services. This has created a gap in information dissemination e.g. pricing, consolidation of loads and transportation of produce to the markets.

The new regulatory framework is available but not implemented yet as the government is still working out new guidelines on operations of Transport Associations, which will operate as boards. Details of the new regulations are not yet available but it is doubtful if the regulations will cover rural roads or water transport services.

In the meantime, although there is a national RTTS policy as well as good regulatory policies, they are not implemented due to lack of transport services in the rural areas. If police strictly enforced the rules there would be no transport for the people. Police appear helpless in this situation.

At the moment Transport constraints make it difficult for rural people to access the local/regional political leadership/authorities so as to make representations on rural transport services.

5.1.4 Other key factors

- Poor road and transport system negatively affects movement of both farm inputs and produce, discourages skilled manpower, e.g. agriculture extension officers from living in remote areas thus reducing the productivity of an area.
- High cost of fuel in the rural and outlying areas, in some cases 25% higher than the price in urban areas has contributed to the high cost of rural transport services in the rural areas. As a matter of urgency the government needs to implement the much talked about ‘fuel control fund’ which is meant to control or compensate for the fuel fluctuations and fuel transportation costs to rural areas in order to provide some incentive to rural transport operators.
- Most Transport operators and passengers interviewed complained that although the local authorities collected parking levies at all bus stations, the councils were not investing the funds to improve or maintain the transport infrastructure e.g. road maintenance, bus stations or shelters with sanitation facilities, parking areas, lay by, road signs etc.

5.2 Cross Cutting Issues

5.2.1 Safety

The women commented that they have learnt how to ride but the male type bicycles (with a brace) was a problem to use on bad roads, especially when transporting loads/passengers over long distances, as it was difficult to get off the bicycle in an emergency – they tend to fall and injure themselves.

In the rural areas surveyed, most bicycles do not have brakes. All bicycles users reported they fell off bicycles regularly. Long grass increases dangers for all road users by reducing visibility. Settlement patterns along the main roads increase the risk of accidents.

In the areas surveyed, lack of safety education, road signs and policing (as police are few and lack transport) has increased accidents and fatalities among cyclists and pedestrians.

Despite the alarming road safety records in Zambia, government has paid very little attention to road safety matters. During the planning meeting of this study in March – April 2005 in Ethiopia, more than 42 students died in a horrific accident in Kawambwa involving an open truck, which carried school children from Kawambwa Secondary School in Luapula Province.

Alongside the sensitisation should be a comprehensive programme covering road and transport services – design of roads, publicity and enforcement, boat and vehicle safety, accurate recording of accidents data, driver training and testing, road safety for children, cyclists and pedestrians and emergency medical and rescue services for both road and water transport.

5.2.2 Gender

The survey revealed that the transport burden of women is clearly greater than that of men. Despite having access to bicycles, walking and head loading remains their main mode of transport. This tends to be slow. With their numerous daily tasks this leaves them with very little spare time for leisure in which for example to improve their hand skills.

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Women also complained that lack of means of transport was one of the major reasons why girls do not attend schools. The result is early marriages and teenage pregnancies.

In Nchelenge, in particular, the survey revealed a high number of teenage pregnancies (most of the fish mongers were young mothers (14-21 years old).

They also complained that lack of a reliable transport service is the main reason for high maternal deaths in areas like Milenge, the islands and the swamps.

Because of the males having to transport farming produce to distant markets, they are usually absent from the heavy field work and the result is that the women have to take care of the household and other farming activities and to some extent this impacts negatively on productivity and yields.

5.2.3 Environment

Improved transport services play an important role in bringing about the socio-economic development of any nation. In addition, they serve as a link between settlements.

But transport services can cause disruptions to the local environment by:

- a) Destruction of wildlife habitats along transport routes.
- b) Soil and water contamination by chemical, oil and fuel spillage.
- c) Disruption of traditional life styles, increase sexually transmitted diseases and other health concerns among local communities and project workers.

It is important for the Local Authorities to effectively raise awareness of environmental issues and monitor road and transport projects and programmes to ensure that anticipated impacts are contained.

5.2.4 HIV/AIDS

It has been recognised that the road, water and transport service industry can have an impact on the spread of HIV/AIDS through introduction of a temporary workforce into an area.

Road and transport service improvements, poverty and HIV/AIDS are all linked. Bad roads and transport service make it impossible for communities to access services and goods and hence increase poverty levels.

An improved transport service can improve access to poverty reducing services and goods but may increase the HIV/AIDS situation and in turn compound the poverty situation.

There are some ill effects of a good transport service. Studies have noted the introduction and increase in HIV/AIDS in some remote areas in Zambia where the road infrastructure and transport service had been improved.

Prevention of HIV/AIDS is a major factor in any transport service improvement projects and programmes. Deliberate attempts should be made to ensure HIV/AIDS prevention is part of all transport improvement interventions and integrated into environmental impact assessments.

HIV/AIDS continues to affect economic development, more so among the poor and marginalized groups of society. As such, information dissemination on the dangers and effects of HIV/AIDS have to be factored in the various field activities of [Rural Transport Safety](#).

It was clear during the study that HIV/AIDS awareness has reached all rural areas in Zambia based on the wide [publicity, which](#) was evident in all areas visited.

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5.2.5 Marginalised people

Currently there is no policy in place which addresses transport needs of the socially marginalised people e.g. disabled, old people, some retirees.

Most of them have no means of income. Any form of transport is unaffordable. Some cannot even walk, cannot cycle to get to motorised transport. Most of them rely on cycle taxis to access health services.

Lack of transport at times results in unnecessary deaths and wastage of agriculture produce.

Box.3: Transport problems faced by marginalised people

‘We are forced to sell our produce at low prices to the traders who come to our village’, they said.

Many retirees who have returned to their villages also complained often their retirement packages are not paid for years and they have to undertake numerous trips to the various districts of their last employment and Lusaka to follow up on terminal benefits. When paid, the monthly payments are so little that they cannot manage to meet their travel expenses. This increases poverty levels.

Provision of electricity and improvement of the road infrastructure would encourage transport providers, traders and local farmers to invest in the village.

5.3 General Implications

5.3.1 Poverty

The poor in Zambia who form the majority of the Zambian population see poverty in terms of limited access to food, water, health and education, clothing, bedding and shelter, other services and facilities.

Qualitative studies have pointed to a number of important issues, which are closely associated with poverty and road infrastructure/transport services, one is that of seasonality. In rural

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Zambia, poverty tends to affect people more at certain times of the year. This period is usually between November and March. In agricultural areas it is the period with the highest food insecurity, highest expenditures – purchases of food, farm inputs, medical services and education (exams and start of new school year in January). Similarly, in fish areas like Samfya and Nchelenge, this is the period of the fish ban. The whole fish economy shrinks with significant hardships for many people. In addition, during this period, there is little motorised transport as most of it is associated with the profitable trade in fish.

Traders who reach these areas have to recover their transport costs. So they pay less for the farm produce. Many do not pay cash for the farm produce but use the barter system. This denies the farmers hard cash with which to access social services such as education, health, clothing and transport thus increasing poverty levels.

Because of the high cost of transporting the produce small – scale farmers are forced to walk or cycle to distant markets (well over 100km – a journey of three days e.g. to Milenge to Ndola, Luwingu to Nchelenge’s Shabo fish market), which frequently results in a loss of productivity as farming activities are temporary abandoned for this long distance travel. At times perishables get damaged during transit.

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5.3.2 Millennium Development Goals and Rural Transport Services (RTS)

The UN Millennium Development Goals (MDG) embody the aspiration for human betterment, expressed in a limited set of numerical and time-bound targets. They include halving poverty and hunger, achieving universal primary education and gender equality, reducing under five mortality by two thirds and maternal mortality by three quarters, reversing the spread of HIV/AIDS, and halving the proportion of people without access to safe water. These targets are to be achieved by 2015, from their level in 1990.

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Progress and Setbacks

Zambia has achieved increased economic growth from 2% (mid 1990s) to 5% (2004). Implementation of the PRSP is one of the strategies government is using to achieve 2015 MDGs targets set in 2000.

In this respect, reported indicators over the Poverty Reduction Programmes for the period (2002-2004) show that Zambia has the potential to attain some of the MDGs by 2015. For instance:

- Reducing under-five mortality rates by two thirds,
- Halting and reversing the spread of HIV/AIDS as well as halting and reversing incidence of malaria and other diseases by 2015 are some of the MDG targets Zambia is capable of achieving.

While some indicators have showed potential for improvements as noted above, other indicators such as poverty, access to primary school education and maternal mortality rates have not. Possible reasons for the poor performance of maternal mortality include, negative cultural practices, current high levels of HIV/AIDS prevalence among women (according to the 2003 Health Statistics). The other reason is limited or lack of access to reproductive health services due to poor infrastructure and transport services especially in rural areas leading to a large number of women delivering at home without professional birth attendants.

Progress in reducing poverty is further complicated by the country’s weak institutional capacity to manage the environmental and economic resources, external debt, infrastructure development etc.

It is noted that the improvement of transport, in particular increasing rural accessibility can play a pivotal role towards the main objective of PRSP, i.e. poverty reduction and economic growth.

The poor state of rural transport (road and water) means that many agricultural and economic development activities are thwarted.

The strategy of alleviating rural poverty through mobility, involves improvement of the mobility of rural populations through planning, management of rural transport as well as upgrading the road and water infrastructure such as roads, paths, tracks, trails, foots ridges, swamps and flood plain areas, canals etc thus ensuring better access to points of economic activity and social amenities, including access to primary education, health services for women, such as anti-natal, child delivery, family planning.

5.4 Specific Recommendations to Zambian Transport Authorities

5.4.1 Ways to Improve Rural Transport Services in Zambia.

Currently, most of Zambia’s rural areas are beset by accessibility problems, whereby vast areas are located very far from centres of commerce and social service provision. Rural communities traverse long distances in order to access these services. Proposals to improve rural transport services should address or focus on the following:

o **Improvement of rural transport infrastructure.**

The major problems faced by road transporters:

- (i) Wear and tear of vehicles and high maintenance costs resulting from travel on the rough and bumpy roads, vehicles getting stuck when roads become muddy during the rain season;
- (ii) Unsafe nature of bridges and culverts rendering most rural roads impassable especially during the rainy season.

Therefore, rehabilitation and construction of trucks, trails, footpaths, small bridges, culverts, waterways and canals etc will improve mobility of the rural population. In addition, there is need to adopt the following approach to infrastructure repair:

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- Repair works of feeder roads should address transport problems of the rural areas instead of only providing temporal accessibility by improvements which only deal with water crossings, bush clearing, selected gravelling, repair of severe erosion and washouts which do not address medium or long term problems.
- The design standards of accessibility improvements needs to be raised so that any repairs or improvements should be based on 2WD for dry/wet season access and not 4WD vehicles only. Almost all feeder roads in the survey areas (including the main ones) had minimal traffic. It is difficult to see how large scale improvement works can be justified. But low cost maintenance works under the community initiative component of RAMP would be a good start. This would improve accessibility and protect against loss of roads.
- At the moment, most travel on feeder or rural roads takes too long to reach the destinations. Speed of travel and time taken are deemed irrelevant, but if a road is more than 50 or 100 km a return trip will not be possible in a day and some traders will be discouraged from making the journey. Therefore, in addition to 2WD dry and wet season access, travel time must be taken as an important design factor to apply to any road repair or improvement.

o **Promotion of Intermediate Means of Transport (IMT)**

Relative to conventional motor vehicles, IMT demand low investment cost of both method of transport and infrastructure and require basic skills, materials and investment for their manufacture and usage.

IMT should constitute the major bulk of traffic on rural roads but ownership is low especially in Luapula Province. Apart from bicycles and canoes animal powered IMTs were evidently absent in the surveyed areas.

The survey revealed the main reasons for low ownership of IMTs in Luapula Province are:

- (i) Low income levels
- (ii) Limited availability of IMTs and support services
- (iii) Unfamiliarity of people with IMT
- (iv) Cultural acceptance of existing methods
- (v) Lack of availability of credit facilities for the purchase of IMTs.

IMTs can easily replace a number of small load size trips and can have higher load capacities and greater speeds than pedestrian transport. IMTs offer better options for [Rural Transport Services](#) as they increase the efficiency of short to medium transport of people and produce.

There is need for more people to have access to IMT in order to address the problem of rural poverty as well as provide a viable and sustainable rural transport system. IMT would help the transportation of agricultural produce to the markets, take the sick to [Rural Health Centre](#), fetch water and carry maize to hammer mills etc.

With the shortage of efficient [Rural Transport Services](#), IMT will provide an important link between rural and urban/market towns as well as provide a link for rural population to faster forms of motorised transport provided by the private sector. For example introduction of long tail banana boats, increase numbers of bicycles and motorcycles would greatly alleviate rural transport services.

There is need to build capacity of local artisans in order for them to produce IMTs and also provide support services for repair and maintenance of IMTs.

o **Improvement of Canals and Waterways.**

Canals and waterways play a vital role in facilitating the movement of people and goods in most areas of Luapula inaccessible by road transport. Water transport is the cheaper mode of transport because it does not require colossal investment in the improvement and maintenance of navigable ways and development of terminal facilities. Water transport is also energy efficient and generates more employment per unit of investment than other modes of transport hence providing opportunities for income.

Apart from facilitating movement of people and goods and provision of services between areas of the main land located along navigable waterways and between islands, canals provide the opportunity for socio-economic development activities in the affected areas. Canals also drain surrounding areas and make the land more accessible and arable.

The inland water transport sector has continued to lag well behind other modes of transport due to lack of maintenance in clearing river weeds, mud and sand banks. Consequently, rehabilitation can only be achieved through reconstruction or dredging.

Despite the activities that have been undertaken in the transport sector, there has not been a clear strategy on water transport development.

Firstly, there is no provision for the inland water transport in the hierarchy of the Road Development Agency. Secondly, the only funding available for canals and waterways is that for the Rural Accessibility and Mobility Programme (RAMP).

- o Reduction of fuel cost in rural areas is required to make transport services affordable and sustainable.
- o Government needs to extend the rural electrification programme to all rural districts in order to encourage investment and rural development, which will bring new traders to such remote areas and increase economic and transport activity levels.
- o Councils should be monitored to ensure that transport levies are invested or used for the improvement of transport infrastructure.
- o Safety and Regulations need to be implemented and enforced. Insufficient transport makes this difficult; however it is necessary to ensure that the minimum requirements are met by all transport service users.
- o Provision of motorised and/or appropriate non - motorised transport to Rural Health centres or introduction of other IMTs like carts, all of which have a comparative advantage in rural areas, should be given priority and supported by government in order to improve access to Emergency health care and services thereby reduce unnecessary deaths.
- o The most common mode of travel in the study area was the bicycle. A bicycle is a common asset in most rural households. The majority of the people interviewed wanted the price of bicycles reduced to half from the current price of ZK 400,000 (US \$ 84). Current Taxes are 25% Import duty and 17.5% VAT. **There is a need for government to waive tax on bicycles. The revenue loss on 30,000 bicycles imported per year is less than US \$ 1.0 million.**
- o In order to ensure fair distribution of rural transport services, licensing of operators should be based on shared routes i.e. scheduling of operators such that they all share and provide services at certain times of the week/month on profitable and non – profitable routes. Road or route triangles should be encouraged to increase access to transport services.
- o In addition, the new regulation for transport service providers must include the requirement for operators to operate on time schedules rather than the current system of waiting for long periods for buses or taxis to make a full load for each trip.
- o Government should promote loan consolidation or rural cooperatives-based support, encouraging savings and loans through micro-financing for rural people.
- o Government should encourage or provide incentives including tax rebates for rural transport service providers.

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5.4.2 Specific follow up activities proposed (Zambia)

- To find out the Road Development and Safety Agencies' strategy or plan on the improvement of rural transport infrastructure.
- Review the proposed guidelines on operation of transport associations, licensing of transporters to ensure that most of the key problems are taken into account
- Review the proposed Safety Regulations for Land and Water Rural Transport Services.
- Discuss with the Ministry of Communications and Transport on possibility of tax incentives for Rural Transport Services providers and removal of taxes on bicycles, boats and other IMTs.
- Setting up of shared routes and route triangles in some areas.

6.0 APPENDICES

Table 6.1 List of persons interviewed during the field work

Interviewee	Names	Position	Institution/Location
National Authorities	Mr Raphael Mabenga	Acting Director	National Road Fund Agency
	Mr Davies Zulu	Principal Engineer	Ministry of Local Government & Housing
	Mr Wedex Illunga	Technical Director	ZAMSIF
	Mr Oliver Makungu	CTI Project Engineer	ZAMSIF
	Mr Mwandila	Acting Executive Secretary	Road Transport and Safety Agency
	Mr David Kema	Director	Maritime & Inland Waterways, Ministry of Communication and Transport
	Mr Mulungushi	Director of Planning & Economic Management	Ministry of Finance & National Planning
<u>Donors</u>	Mr Davies Makasa	Transport Specialist, Zambia	World Bank
Regional Authorities	The Provincial Road Transport Commission		Luapula Province
District Authorities	Mr P Kapoba	Acting Council Secretary	Samfya
	Mr A Mwenya	District Planner	Samfya
	Mr M Mwaba	District Commissioner	Nchelenge
	Mr F Mtonga	Acting District Planner	Nchelenge
	Mr A Chidefa	Council Secretary	Milenge
	Mr D Kangwa	District Planner	Milenge
	Mrs T Muleya	Acting Head Teacher	Milenge
	Mrs Mwelwa		Nchelenge
	Mrs Judith Mwansa	Director	Milenge
	Mr Kalembwe	Manager Planning	Milenge
	Mrs E Chisha	Director	Nchelenge
	Mr James Ngosa	Clinical Officer	Chisenga Island
	Mr M Wapachole	Environmental Health Technologist	Chabikikila Rural Health Centre, Nchelenge
Mr E Chabamba	Officer in Charge	Nchelenge	
Farmers			Milenge & Samfya
Traders	Mr Mordeguy Kamfwa		Mpata, Samfya
	Mr Cosmam Mwansa		Mpata, Samfya
Students			Shitambuli Village, Milenge
Health Users	Mrs Margaret Chileshe		Shitambuli Village, Milenge
Employees	Ms C Kabwe		Shanyemba School, Nchelenge
	Mr Duncan Mabonga		Mulundu Community School, Kawambwa
Isolated People, Handicapped, Old, Socially Marginalised	Mumba Mwasha		Milenge
	Paul Kaoma		Nchelenge
	Mr Able Mwape		Milenge
Household Managers	Mrs Jane Mutale		Milenge
	Evelyn Bwalya		Milenge
	F Kunda		Milenge
	N Kabengele		Milenge
Passengers on Bus/Rural Taxis	Gertrude Katuta		Lubwe
	Mrs Mwansa		Lubwe
Passengers on a Boat	Memory Mpundu		Lubwe
	Eunice Chibwe		Lubwe
Pedestrians	CMML church members + others		Milenge & Samfya
Village Authority	Paul Kaoma	Headman	Nsemiwe Village
Water Transport	Mr Najon Bwalya	The Manager	Bangweulu Water Transport
Boat Suppliers	Mr D Kamfwa		Mpata, Samfya
Bicycle Suppliers	TATA Zambia		Lusaka

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Table 4.5.2.1 Traffic Count Summary Sheet - AGRICULTURE SPOKES

Mode	Passengers / loads		Frequency	Average	Frequency	Average	Frequency	Average
	Manufacturer recommended loading capacity (people or tonnes)	Observed loading (people or tonnes)	Market day	Regional Spoke	Non/Market day	Market spoke	Non/Market day	Village spoke
			Regional spoke	Regional Spoke	Market spoke	Market spoke	Village spoke	Village spoke
Trucks	0	0	0	0	2	2	0	0
Buses (+20 seats)	30	30	0	0	0	0	0	0
Rural taxis (pick up trucks, minibuses, cars)	15	16	0	0	4	4	0	0
Government/NGO 4x4s, pickups and cars	5	5	3	3	3	3	0	0
private cars and pick ups	5	5	1	1	0	0	1	1
Male Motorcyclist	2	2	0	0	0	0	0	0
Female Motorcyclist	2	1	0	0	0	0	0	0
Male Cyclist	1	2	23	23	55	55	49	49
Female Cyclist	1	2	4	4	19	19	8	8
Water transport - medium (4-30 passengers)	10	16	0	0	0	0	0	0
Water transport - small (1-3 passengers)	1	3	0	0	0	0	0	0

Table 4.5.2.2 Traffic Count Summary Sheet - FISH SPOKES

Mode	Passengers / loads		Frequency	Frequency	Average	Frequency	Frequency	Average	Frequency	Frequency	Average
	Manufacturer recommended loading capacity (people or tonnes)	Observed loading (people or tonnes)	Market day	Market day	Regional Spoke	Market day	Non Market day	Market spoke	Market day	Non Market day	Village spoke
			Regional spoke	Regional spoke	Regional Spoke	Market spoke	Market spoke	Market spoke	Village spoke	Village spoke	Village spoke
Trucks	0	0	11	14	14	10	10	10	0	0	0
Buses (+20 seats)	30	30	3	8	7	10	0	1	0	0	0
Rural taxis (pick up trucks, minibuses, cars)	15	16	17	30	28	17	9	10	0	0	0
Government/NGO 4x4s, pickups and cars	5	5	13	8	9	10	2	3	0	0	0
private cars and pick ups	5	5	4	9	8	11	2	3	0	0	0
Male Motorcyclist	2	2	0	4	3	0	2	2	0	0	0
Female Motorcyclist	2	1	0	0	0	0	0	0	0	0	0
Male Cyclist	1	2	130	412	372	322	85	119	0	0	0
Female Cyclist	1	2	20	136	119	83	33	40	0	0	0
Water transport - medium (4-30 passengers)	10	16	0	0	0	0	0	0	54	30	33