



AfCAP
Africa Community Access Partnership



Rural Transport Survey Report

Batkanu-Makoth, Bombali District, Sierra Leone



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Cover Photo: Broken-down truck on the Batkanu-Makoth road. This picture and all other pictures in the report by Krijn Peters©

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Abstract

This study was carried out in the interior zone in Sierra Leone, focusing on the Batkanu-Makoth rural road in Bombali District in the Northern Province. The study sought to understand the existing transport services for the rural communities along and within the road's catchment area. Structured but in-depth qualitative interviews with transport users, operators, regulators and those concerned with socio-economic development were conducted, following the rapid rural appraisal methodology. This produced some valuable estimates, related to movements of people and goods in the rural communities for distances greater than 5 km. Batkanu, serves as a minor transport, services and market hub – although without a distinctive market day – for its inhabitants and the nearby villages. The catchment area population is nevertheless oriented at Makeni, which is a 15-minute drive from Makoth. Batkanu is located approximately halfway along the Port Loko-Kamakwie road, although nearly all transport services use Port Loko-Makeni-Kamakwie highway. The study showed that motorcycle taxis are the dominant mode of transport providing daily rural transport services. Some taxi cars, pick-up trucks and mini-buses ply the road as well, depending on the time of the year.

Key words

Rural transport services; transport users; transport operators; local development experts; rapid rural appraisal method; motorcycle taxi; interior zone

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Acronyms, Units and Currencies

AfCAP	Africa Community Access Project
AsCAP	Asia Community Access Project
DFID	Department for International Development
4x4	Cross country vehicle; station wagon
e.g.	For example
FrT	Freight
HIV	Human Immunodeficiency Virus
GPS	Global Positioning System
GoSL	Government of Sierra Leone
ICT	Information and Communication Technologies
i.e.	That is
IMT	Intermediate Means of Transport
kg	kilogramme
km	kilometre
MCT	Motorcycle Taxi
N	Number/sample size
n/a	Not applicable or not available
NMT	Non-motorised Transport
Pax	Passengers
PMU	Project Management Unit
ReCAP	Research for Community Access Partnership
RTS	Rural Transport Services
RTSi	Rural Transport Services Indicator
SLRA	Sierra Leone Roads Authority
SLRSA	Sierra Leone Road Safety Authority
t	tonne
TA	Technical Advisor
UK	United Kingdom
USA	United States of America
USD	United States Dollar
USDc	United States Dollar cent

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Executive Summary

This report presents the findings of a study carried out in the Interior Zone on the Batkanu-Makoth road in Bombali, Northern Province. It is one of three rural transport survey reports prepared under the Rural Transport Diagnostic Study in Sierra Leone, with the other two reports looking at a road in the coastal plains (Pujehun District) and a road in the interior plateau zone (Koinadugu District). The surveyed road for this study is 43.6 km long and 3 to 4 m wide, traversing a nearly flat terrain (Boli-lands). The overall aim of the study is to understand the existing rural transport services in Sierra Leone based on understanding the transport needs and preferences of rural women and men with different ages, occupations, and abilities in Sierra Leone. Specifically, it aims to understand the needs and perspectives of different road users in the rural communities along and within the catchment area of the selected road, as well as those of transport operators, regulators and those concerned with socio-economic development. It is also to identify constraining factors and good practices in Sierra Leone's rural transport services, for evidence-based policy suggestions. The field data collection took place from 5 to 8 June and from 11 June to 13 June 2017, using structured questionnaires but with additional space for elaboration and explanation by the interviewee. The rapid rural appraisal methodology was used for the study. The data collected were derived from personal interviews by the authors of this report, helped by a senior employee of the Sierra Leone Road Safety Authority. Road traffic counts were conducted by locally recruited literates, inducted and overseen by the SLRSA employee, producing estimates relating to the movements of people and goods in the rural communities, transport fares, tariffs, trends in transport services and preferences of road users.

Results from the study

Transport users

- The motorcycle taxi (MCT) is the main mode of rural transport available for the population for travel over longer distances. All transport users indicated that they use the MCT. Users indicated that there is an early morning car-taxi and/or mini-bus service leaving from Batkanu to Makeni, returning in the afternoon. All other regular transport requirements are met by the MCTs, although a truck is sometimes chartered by the Batkanu women to transport charcoal to urban markets.
- On the Foredugu market day (close to Lunsar) the number of trips by MCTs doubles (from 200 to 400) and the number of car taxi trips triples (from 4 to 12).
- The MCT is the main mode of transport, transporting an estimated 250,000 people annually compared to less than 4000 transported by car taxi. While the car taxi takes on average six times as much freight as the motorcycle, due to the sheer number of trips by MCTs these transport nearly 40x the amount of freight as compared to the car taxi on an annual basis.
- The fare per passenger kilometre for the car taxi is USDc 13, compared to USDc 15 for the motorcycle. This makes the motorcycle the most expensive form of transport, although the car taxi fare is not much lower. However, accompanied freight, when taking the car taxi is considerably cheaper than when taking the MCT, so this may offset the relatively high car-taxi fare.
- Generally, transport users were dissatisfied to moderately satisfied across board and across the various modes of transport. The only difference is for the car taxi, which seems to be more appreciated by male users, although the number of men interviewed was limited.

Transport operators

- Nine (9) transport operators were interviewed; three car taxi operators and six MCT operators. Few indicated that they were members of a transport union.

- All the respondents were dissatisfied with the poor road condition, which resulted in high operating costs. Access to formal credit for vehicle purchase or maintenance was limited or non-existent, and access to informal credit was nearly equally limited. There were no travel related security concerns raised.

Transport regulators

- Six (6) regulators were interviewed. In general, they were satisfied with the level of technical and fiscal compliance for all modes of transport (MCT; car taxi; pick-up; mini-bus; small truck). However, other compliance aspects (operational; safety; environmental, etc.) picked up lower marks on average.
- Regulators indicated that they were moderately satisfied with the safety of the road for all modes of transport. What positively contributed to this is the fact that there is limited vegetation at the sides of the roads (mainly grass) which gives a clear view of oncoming traffic.

Development

- Four (4) stakeholders concerned with socioeconomic development were interviewed. They indicated that overall the various modes of transport made satisfactory contributions to development. The MCT received the highest average score, receiving full marks for women's empowerment; youth empowerment and 'mobile phone integration'. The MCT was closely followed by the light truck (scoring full marks for the empowerment of both women (reflecting that it is frequently chartered by women) and youth and the car taxi (full marks for women's empowerment and mobile phone integration).
- The mini-bus scored the lowest average, although still deemed to make a close to moderate contribution. The limited number of services by mini-busses may explain this low score

Conclusions and recommendations

- The MCT is the most dominant and readily available mode of transport on the surveyed rural road, taking the largest share in both passenger and freight transport on an annual basis. They navigate the surveyed road (and feeding roads) each day and during the Foredugu market day their number of trips doubles.
- Taxis and mini-buses serve the road on normal days but in limited numbers, with an early morning service, due to the fact that the driver stays the night in Batkanu. While only one run is provided in the morning, it is much appreciated by rural dwellers.
- The light truck, although not always raised by the respondents, is making a contribution to in particular women's empowerment. It can be chartered to transport goods (often charcoal). Furthermore, it can still operate when the road becomes impassible for vehicles with a low axle basis, such as the car taxi.
- Some of the interviewees deemed the maintenance of gravel roads – and for that matter gravel roads in general – a waste of money, as the repairs would hardly last the rainy season. Others suggested that this may be because 'corners are cut' as far as quality is concerned by the companies contracted to maintain the roads.
- Upgrading the currently unpaved section of the Port Loko – Kamakwie road would solve many of Batkanu's accessibility problems. A key problem for this section are the water crossing. The cable-ferries in place are a relatively low-price solution, although do not provide year-round services. However, it is worth studying the pros and cons of the cable-ferries in more detail as potential small-scale solutions for other water-crossings.
- Promoting the use of the cargo motor tricycle should be further explored. These vehicles have the advantage of being relatively cheap to buy and operate, while having a significant payload. This would result in cheaper fares: a main issue for the MCTs.

1 Introduction

1.1 Research Objectives

The overall aim of the rural transport diagnostic study was to understand the existing rural transport services and the implications that these have for policy and practices in Sierra Leone. This was based on understanding the needs and perspectives of different transport users, including women and men in different rural communities along a representative rural road in Bombali District in the northern Province in Sierra Leone.

2 Methodology

The study was carried out between 5 and 13 June 2017 on the Batkanu-Makoth road in Bombali District to understand the nature and character of rural transport services in the interior region in Sierra Leone. The rapid rural appraisal methodology was used for the study (Starkey, et al., 2013). The data collected was elicited from the rural communities along the selected study road or within its catchment area to produce some estimates relating to movement of people and goods in the rural communities, the transport fares, tariffs, trends in transport services and preferences of road users. Another criterion applied was that the rural transport services under consideration are for the medium travel distance range, between 5 km and 75 km.

The Batkanu-Makoth road is a 43.2 km long gravel road. This study was based on about 40 in-depth interviews which provided indicative data on the transport needs and preferences of the local stakeholders and experts. About twenty-five road users were interviewed, balanced for gender. The road users interviewed included farmers, traders, students, older persons, persons with disabilities, and people using transport to access health care, maternal healthcare, formal employment, financial services and for socio-cultural reasons such as funerals, naming ceremonies and the like. For some of these categories, there were only two people interviewed (one male and one female).

Similarly, in-depth interviews were carried out with a small number of transport operators for the transport modes plying the route, people familiar with regulatory issues, and those concerned with development. The people selected for the interviews had clear knowledge and an understanding of the relevant issues relating to the transport systems along the study road. The data generated, though small, provides a clear picture of the existing rural transport situation. During the data gathering stage, efforts were made to ensure that data obtained were inherently consistent and represented the best possible estimates of the real situation for the study area. This was done by constantly comparing the researchers' data to identify, and if necessary, ask follow-up questions to seek a clearer understanding of why for instance an answer from an interviewee was different to the answer of others.

Traffic counts were carried out on a 'normal' day and on a market (busy) day, at three different locations; close to the start and end of the surveyed road, and at the ferry between Batkanu and Mateboi. The traffic counting teams classified the traffic and recorded the counts during the 12-hour daytime period from 6:00 am to 6:00 pm. The classified counts involved conventional vehicles and intermediate means of transport (IMTs).

Makeni, the third largest city in Sierra Leone and the focus point for most of the market related activities of the people in the catchment area of the surveyed road, does not have a specific market day. Batkanu too has no specific market day, but there is a weekly market on the Lunsar-Makeni road, at Foredugu. A key challenge for the people travelling along the Port Loko-Batkanu-Kamakwie road is that there are a number of rivers with no bridges, so these have to be crossed by ferry. For instance, half way between Batkanu and Mateboi, along the above-mentioned road, there is a ferry

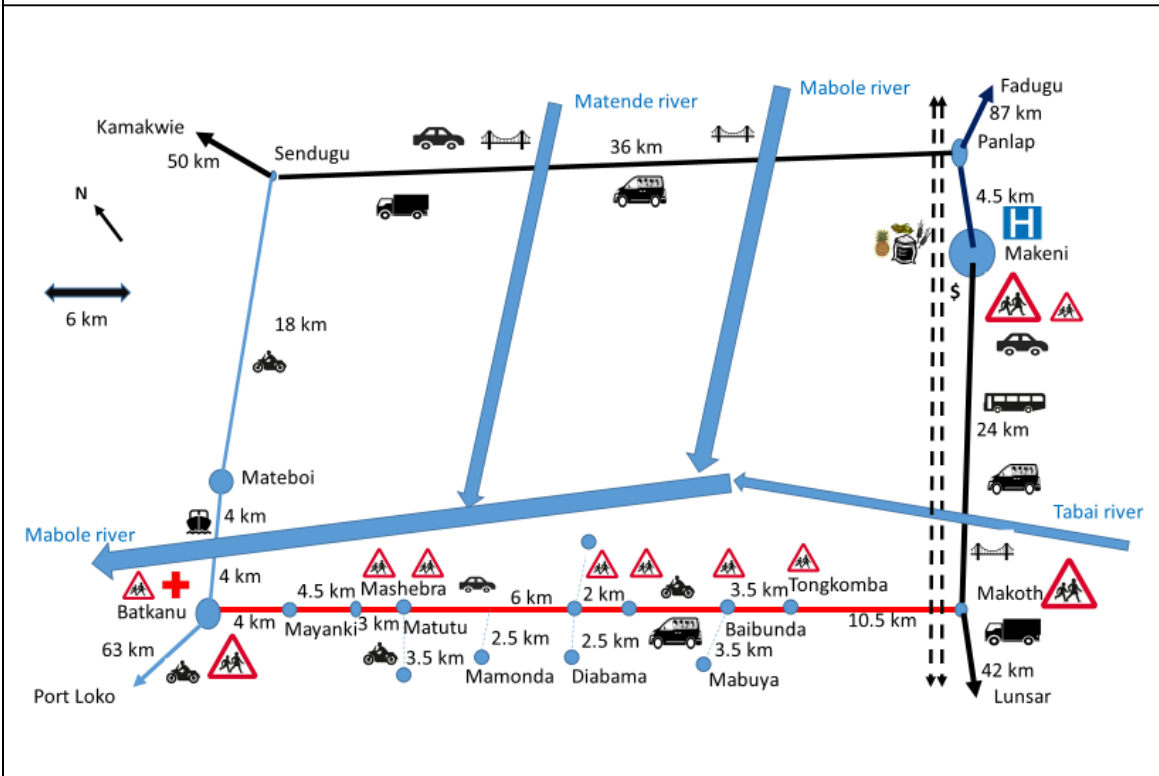
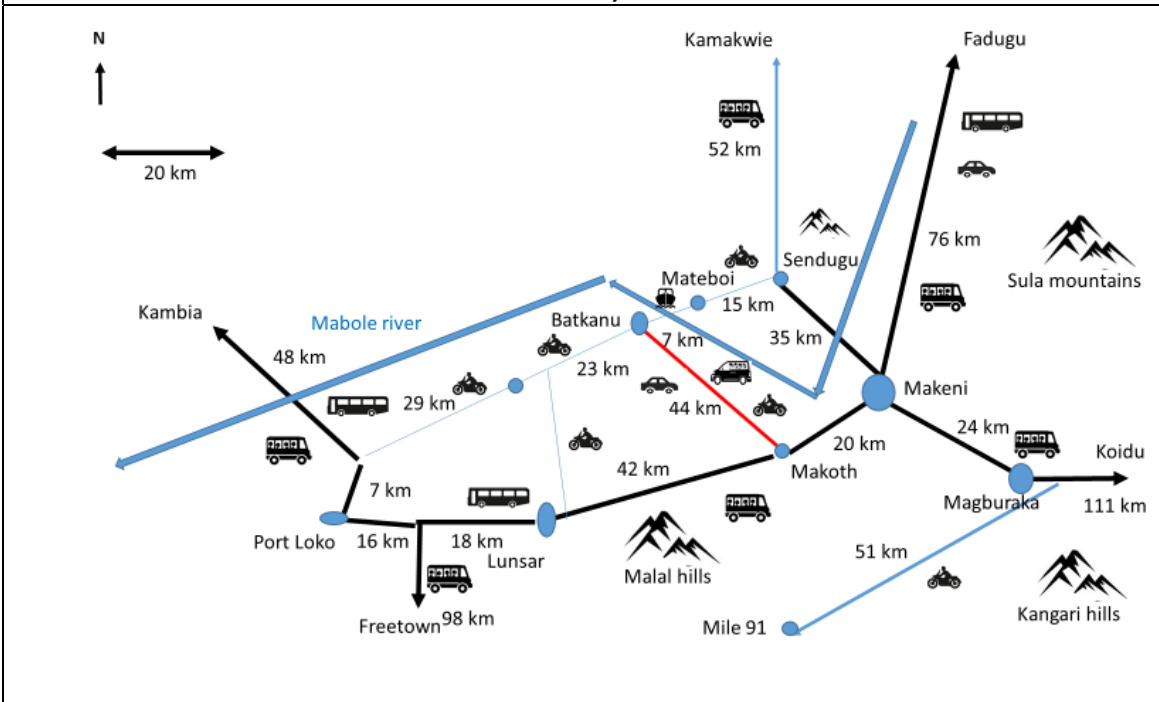
crossing, which literally acts as a watershed. People in Mateboi, despite being relatively close to Batkanu, do not frequently visit Batkanu.



























The key data in this survey report is presented in eight standardised tables. The first four tables summarise most of the key statistics and the assessments and opinions obtained from the surveys, while the last four tables summarise the opinions of the road users, the operators, the regulators and those concerned with development. Maps and photographs have also been added to the text to provide further information on the surveyed road.

3 Rural transport services: summary tables of key statistics and indicators

RTSi Road Report Table 1. Road information			
Road name: Batkanu-Makoth			
Dates of survey: 5 June 2017 – 13 June 2017			
District, Region and Country: Bombali, Sierra Leone			
Road type: Gravel		Responsible authority: Bombali District Council	
Road start location: Batkanu		Start GPS coordinates: Latitude: 9°04'25" Longitude: 12°24'55"	
Road finish location: Makoth		Finish GPS coordinates: Latitude: 8°49'22" Longitude: 12°13'03"	
Road length: 43.6 km		Catchment population 15.000-25.000	
Road quality and condition from different perspectives			
Road authority	Operators	Development	Safety
	★★★★	★★★	★★★★
<p><i>The more stars (or the higher score) the better. ★= Very dissatisfied (= 1). ★★= Dissatisfied (= 2). ★★★= Medium (=3). ★★★★= Satisfied (= 4). ★★★★★= Very satisfied (= 5).</i></p>			
Summary of road geography and socio-economic situation			
<p>The surveyed road runs from Batkanu, the headquarters town of Libeisyaghun Chiefdom, to Makoth. Makoth is situated on the Makeni-Lunsar highway, just under 20 km south of the capital of the Northern Province. The road is gravel, on average 3 to 4 metres wide. There are no signs of recent maintenance on the road, and there are many potholes. The road is in the flat 'boli-land' region, with extensive rice farms on both sides. Villages along the road are built on natural elevations, and some sections of the road also follow slightly higher areas (approximately 1 m higher). During the rainy season the agricultural lands, and some of the lowest sections of the road, become flooded. There are no large river crossings, and there are only a handful of culverts. Batkanu has a number of services available, ranging from a health-clinic, police station and secondary school to the seat of the chieftaincy. Travelling toward Makoth, one passes a number of villages. Most people along the road are dependent on semi-subsistence agriculture. Crops include rice, maize, groundnut, and vegetables like pepper and okra. Orange and mango trees are also common. Livestock is in the form of chickens, sheep, and goats.</p>			

Maps of road showing context (directly below) and road features (middle) plus map legend (far below)

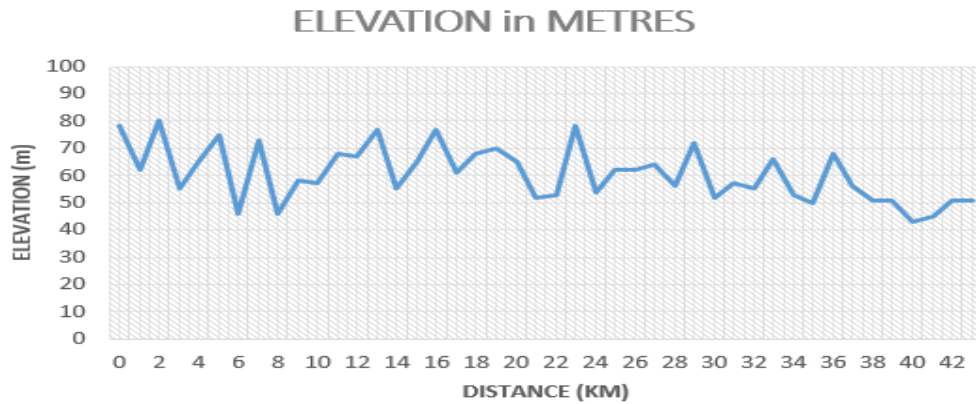


	Motorcycle		Ferry		Control barrier (on market days)
	Car taxi		Bridge		Market
	Minibus, minivan		Hospital		Town hub
	Light truck		Clinic, health post		Village hubs
	Midi bus		Secondary / Primary school		Bank
	Large bus		Hills / mountains		Walking
	Footpath / track		Country border		Rail-line
	Feeder road				
	Main road				
	Highway (tarred)				
	Surveyed Road				
	River				

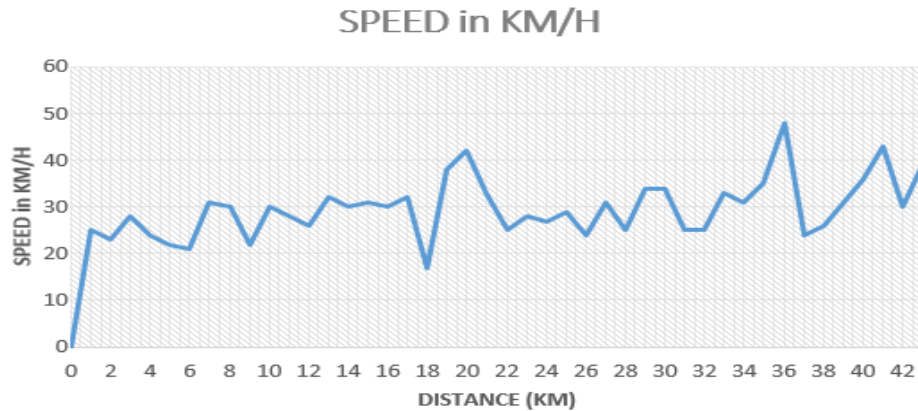
Schematic map of 'straightened' road with features



GPS elevation track



GPS speed track



Description of hub and spoke patterns

Batkanu, despite being a Chiefdom headquarters town, is a town with limited facilities and a low population. During the colonial era, it was the seat of the colonial district commissioner for the North, but its central position has long been lost. It is located halfway along the Port Loko-Kamakwie road, but traffic going from Port Loko to Kamakwie or vice versa will take the Lunsar-Makeni highway. This is a significant detour, but is still much faster because of the better quality of the road (paved versus gravel) and the absence of ferry crossings. Batkanu acts as a local hub for the villages around it. From Batkanu, transport services leave for Makeni, which is main hub in the North and a city with a full range of facilities. To reach Makeni, people leaving from Batkanu have to travel the 43 km road to Makoth. Here, they either continue with the same transport mode or change and hop on one of the frequently passing public transport providers, whether MCT, car taxi or mini-bus. Makoth itself is a small community and mainly developed because it is at the intersection between the Freetown-Lunsar-Makeni highway and the road to Batkanu. Most transport movements are made by MCT, of which there are about 15 riders present in Batkanu. Furthermore, most of the villages along the surveyed road have a few resident MCT riders present as well. Every morning a car taxi leaves at around 6.30 from Batkanu for Makeni, followed by a mini-bus at around 7.00 am. This early morning service is possible because the drivers stay overnight in Batkanu. The mini-bus normally travels to Makeni, but trips to Freetown have also been reported, depending on the time of the year. MCT riders normally take the passengers all the way to Makeni, if they know that there are no police-checkpoints between Makoth and Makeni.

Intermodal connectivity (one to five stars, the more stars the better)				
'Feeding' (getting to the road)	User satisfaction	★☆☆☆☆	Development impact	★★★★☆
'Linking' (to onward destinations)	User satisfaction	★★☆☆☆	Development impact	★★★★☆
★☆☆☆☆= Very dissatisfied (= 1). ★★☆☆☆= Dissatisfied (= 2). ★★★☆☆= Moderately satisfied (=3). ★★★★☆= Satisfied (= 4). ★★★★★= Very satisfied (= 5).				

Table 2. Traffic and transport along road

Daily traffic flows					Fleet	Passengers and small freight						Change in past year ²
	Normal	Busy	Disrupted	Impassable	No of vehicles operating on road	Trip transport		Daily transport		Annual transport		
						normal day		normal day		adjusted for traffic fluctuations		
						per vehicle		all vehicles				
						Pax	Frnt	Pax	Frnt	Pax	Frnt	
						(no)	(kg)	(no)	(kg)	(no)	(t)	
14	15	16	17	18	19	--, -, 0, +, ++						
Taxi (saloon/estate)	4	12	0	0	2	2	100	8	800	3,892	123	0
Motorcycle	200	400	40	25	75	1	17	225	11,475	245,050	4,470	0
Totals	204	412	40	25	77	3	117	233	12,275	248,942	4,593	



Table 3. Rural transport services key operational statistics for major transport modes		
		
	Taxi (saloon/estate)	Motorcycle
Contribution to annual passenger transport (% of market)	2	98
Contribution to annual small freight transport (% of market)	7	93
Fare per km in USDc	13	15
Journey time (average speed on normal days) in km/hr	19	22
Transport frequency on normal days (number of opportunities to travel per day)	6	35
Number of days a year with 'normal service'	249	266
Number of busy days a year	26	69
Number of days a year with disrupted service	60	30
Number of days a year with no transport services	30	0
Reliability factor(s) (%)	34	66
Cost of 50 kg accompanied freight in USDc per tonne-km	39	60
Cost of 200 kg consigned freight in USDc per tonne-km	54	26
Safety: Recalled no. of accidents per 100,000 vehicle trip	0	323
Security: Recalled no. of incidents per 100,000 vehicle trip	0	77
Typical age of vehicle (in years)	No data	3
Typical fuel consumption of vehicles (litres per 100 km)	No data	4
Typical operating distance per year in km	No data	12,519
Daily hire charge for use of vehicle (entrepreneurial mode)	No data	No data
Indicative vehicle operating costs per day for entrepreneurial mode, <i>includes all costs and hire charges but not operational labour/profit</i>	No data	No data
Daily cost of vehicle ownership/fixed costs (ownership mode)	No data	1
Indicative vehicle operating costs per day for ownership mode <i>(includes all costs for ownership mode except profit and operational labour)</i>	No data	No data
Total revenue per day (USD)	No data	25
Total revenue per kilometre (USDc)	No data	15
Total revenue per passenger kilometre (USDc)	No data	7
Percentage total revenue due to freight (%)	No data	30
Regulation compliance (overall assessment)	3	3
Development impact (overall assessment)	3	4

Table 4: User satisfaction with main RTS modes (disaggregated for gender)						
	Minibus		Taxi (saloon/estate)		Motorcycle	
	Men	Women	Men	Women	Men	Women
Sample size (N)	7	13	2	4	9	8
Fares	★★☆☆	★★☆☆	★★★★	★★★★	★★☆☆	★★☆☆
Journey time	★★☆☆	★★☆☆	★★★★	★★★★	★★★★	★★★★
Operational features	★★★☆☆	★★☆☆	★★★★	★★☆☆	★★★★	★★☆☆
Freight	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Safety and security	★★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Comfort	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆
Universal access	★★★☆☆	★★☆☆	★★★★★	★★☆☆	★★☆☆	★★☆☆
Overall satisfaction	2.4	2.1	3.3	2.4	2.3	2.1
★☆☆☆☆=Very Dissatisfied, ★★☆☆☆=Dissatisfied, ★★★☆☆=Moderately Satisfied, ★★★★☆=Satisfied, ★★★★★=Very Satisfied						

4 Rural transport services: report of survey findings

4.1 Overview of road situation and issues

Hubs and spoke patterns

The 43.6 km Batkanu-Makoth road runs in a South Eastern direction from Batkanu, through the Boli-lands to Makoth. The rather outdated Oxford printed map of Sierra Leone (no date) suggests that the surveyed road is a ‘main road, paved’, but there are no indications that the road was ever paved. At Makoth, the road connects to the Freetown-Lunsar-Makeni highway, which is in a good condition. Hence, the 20 km journey from Makoth to Makeni, the capital of the Northern Province, is a smooth and quick one. Makeni is the main hub in the region, and from here it is possible to travel North to Kabala (see Koinadugu road report); North-West to Kamakwie and on to the Guinea border; East to the diamond mines of Kono or South-West to Freetown. Car taxis, mini-buses and state-buses leave Makeni throughout the day. The surveyed road was constructed under the authority of the Bombali District Council.



Figure 1 (left): fully loaded mini-bus on surveyed road.



Figure 2 (right): run-off damage in the middle of the surveyed road.

Batkanu, the former colonial district centre for the Northern Province, is about halfway along the Port Loko-Kamakwie road (officially it is the ‘Port Loko/Bombali’ road). With the construction of the Lunsar-Makeni road, this road has lost further importance, as nearly all transport that would travel

from Port Loko to Kamakwie – an uncommon journey in the first place – via Makeni. Currently, the Makeni-Kamakwie road is being upgraded to a paved highway, but this is unlikely to impact on the preferred route of travelling between Port Loko and Kamakwie. However, it would give the people in Batkanu and its catchment area the option to travel to Makeni via Mateboi, which would then take place on 22 km of gravel road and 35 km of paved road, rather than the current route via Makoth on 44 km of gravel road and 20 km of paved road. This would be a shorter journey, and with the majority of the journey on better roads, but there still is a ferry crossing between Batkanu and Mateboi which can be challenging for fully loaded car taxis and mini-buses. For now, the people in Batkanu and its catchment area travel to Makoth along the surveyed road. Between Batkanu and Makoth, there are about 13 villages, with some no bigger than a few houses. Others are slightly larger and have a primary school, but there are no large settlements along the surveyed road. The settlements are all built on natural land elevations. About a kilometre before reaching Makoth, the road crosses the rail-line, which runs from the Tonkolili iron ore mines near Bumbuna to the deep-sea water port of Pepel, close to Freetown.

Road characteristics and accessibility

The physical condition of the surveyed road is mixed; the lower lying sections tend to be full of potholes, which during the time of the research had already filled with water. The higher sections of the road were usually in a better condition, with fewer potholes. Some steeper sections had run-off channels, which will only deepen with the ongoing of the rainy season. The average speed of 28.5 km/h recorded by the team is quite telling, particular since this is an open landscape and a relatively flat road. This speed was recorded by a 4x4 with just two researchers and a driver. A fully loaded car-taxi or pick-up truck would easily take twice the time, even without factoring in the need to stop to pick up and drop off passengers and freight.

Population and History

Most of the people living in the road catchment area are from the Temne ethnic group. There are some other ethnic groups, such as Lokko, Limba and Krio, but none of the interviewees indicated any ethnic tension or marginalisation. Batkanu was badly damaged during the civil war, and was occupied by the RUF in the second half of the conflict when the rebels relocated their headquarters from Kailahun to Makeni. In 2014, when the Ebola Virus Disease outbreak started and ravished across Sierra Leone, Liberia and Guinea, leading to more than 25,000 deaths, Bombali was heavily affected. The clinic in Batkanu was expanded to deal with Ebola patients, along the Community-based Community Care Centre model. Due to curfews and travel bans, it was a time of limited movement.



Figure 3 (left): private truck at Batkanu roundabout.



Figure 4 (right): mini-bus with charcoal on top.

Market Characteristics

Makeni has no specific market day, but has continuous market activities going on. Batkanu too has no market day, with most farmers along the surveyed road keen to sell their produce in Makeni as it will fetch them a higher price. There is a weekly market at Foredugu, close to Lunsar, along the Freetown-Makeni road, and farmers living along the surveyed road indicated that they do go there to sell and buy.

Social amenities

As a Chiefdom district Capital, Batkanu has a number of facilities that may not be expected from a town with a relatively small population. These include a clinic; a chiefdom seat, providing customary justice and direct representation on a national level; a police station; a primary and secondary school; and an 'entertainment centre' showing films and football matches (and some overgrown tennis lawns from the colonial era). Moreover, there is a strong mobile phone signal. Besides the occasional primary school, none of the villages along the surveyed road have any facilities. Makoth also has few facilities, but given its location, is much livelier, with some smaller shops.

Agriculture and climate

The land is not particularly fertile, and many farmers need to invest in fertiliser. Rice is the commonly cultivated crop on the Boli-lands. Most farmers face a challenge in either having enough labour available for ploughing or having the cash to hire a tractor to do it for them. In addition to rice, most people have a vegetable garden (often closer to home) and grow a number of fruits, such as pineapple, mango and oranges. Cutting wood for the production of charcoal – in high demand in both Makeni and Freetown – is another common income generating activity in the area.

The climate in Bombali is characterised by a dry season (October to May) and a rainy season (June – September). The rains, albeit less than in the South-East can be intense, swelling rivers and flooding the low-lying agricultural lands. Large sections of the surveyed road become flooded, and car taxis in particular find it difficult, if not impossible to cross. When the Mabolé River reaches its highest level, the ferry is taken out of operation for a few weeks, further cutting Batkanu off.



Figure 5 (left): The Batkanu community tractor with MTC rider passing in the background.

Figure 6 (right): the 'boli-lands' spread out on both sides of the surveyed road.

4.2 Overview of transport services situation and issues

As is the case everywhere else in Sierra Leone, the MCT has become the dominant public transport provider. The fifteen or so resident MCT riders in Batkanu provide on demand transport to where the passenger(s) would like to go. The most common trip is to Makoth or further on to Makeni, and vice versa. Trips to the villages around Batkanu, and trips to the rice fields to pick up produce during the harvest season, are also common. Most villages along the surveyed road have at least two or three residential MCT riders, again fulfilling on demand transport needs, including (medical)

Road planning

The costs of road construction can range from tens of thousands of US\$ per kilometre for gravel roads to millions per kilometre for highways. These are big decisions requiring good data. Maps only show part of the picture. Traffic movements and routes taken by local people can be quite different from what can be expected on the basis of maps or simply calculating the distance. For instance, operators may prefer a longer route, if it passes through a more populated area because they are likely to pick up more passengers. The surveyed road presents another interesting planning case. The Batkanu residents would prefer to have the surveyed road paved (rather than the Batkanu-Mateboi-Sendugu road), as this one leads straight to the Freetown-Lunsar-Makeni highway. The same is likely to be true for the Gbinti residents further along the Port Loko-Batkanu-Kamakwie road. However, this would result in what are effectively dead-end roads branching off the highway. Both the inhabitants of Gbinti and Batkanu would be better off if the road between Port Loko and Sendugu (where it connects to the Makeni-Kamakwie highway) would be paved. This makes both places thoroughfares rather than dead-end towns, increasing the amount of traffic and opportunities for trade.

emergency transport and courier services. The MCT is both a competitor to the other forms of transport as well as complementary to these. There is still a car taxi and a mini-bus leaving Batkanu each morning, returning in the afternoon. However, without the MCT it would have been likely that more four-wheeled transport providers would make the journey to and from Batkanu each day. In this way, the MCT has taken away customers from the more conventional transport providers. On the other hand, MCTs have opened up the opportunity for people in the villages around Batkanu to arrive in time for the car taxi or mini-bus

service, which leaves Batkanu early in the morning. Also, when these return in the afternoon from Makeni, a MCT from Batkanu to one's village saves a multi-hour walk. This makes it easier for people to travel who might otherwise postpone their travels (because of a relatively expensive overnight stay away from home). In this respect, MCTs are complementary to the conventional transport modes.

4.2.1 Transport services for market purposes

Batkanu is fortunate to have either a car taxi or mini-bus leaving each morning (some informants told us that both a car taxi and mini-bus leave each morning, at 6:30 AM and 7:00 AM respectively, but the traffic count did not pick this up). Such an early morning service is always much appreciated and allows people to go about their planned activities. Regarding market activities (to either sell or buy), it is generally considered better to be at a market early for the best deals. The early morning services are possible because the drivers of the vehicles are willing to stay overnight in Batkanu. It seems that most drivers are residents of Batkanu, but not all. For this latter group, it was still considered to be an attractive set-up, despite the fact that they probably spent the night in their

vehicle (partly to guard against thieves), as they are guaranteed of an early full load (rather than queuing at the Makeni car park, for instance).

The interviewees commented on MCTs, car taxis and mini-buses, and indicated that no other forms of transport were regularly providing transport services. One or two trucks were observed passing by during the survey, but these were private rentals, and although they were perhaps taking a few passengers with them on an ad-hoc basis, they should not be considered as public transport providers. A few Batkanu residents did have their own car, again overwhelmingly used for private transport needs. They were the first to complain about the bad state of the surveyed road, pointing out that for several months during the height of the rainy season, the road cannot be used by cars. Travelling via Mateboi to the Kamakwie-Makeni highway is an option during this period, since this road is better maintained with the most recent maintenance taking place in 2016. However, it requires taking the ferry, which is not only out of service for at least a few weeks each year during the peak of the rainy season, but also difficult to get on for low-axle vehicles. In short, during the peak of the rainy season, Batkanu can only be reached by MCTs and brave mini-bus operators.



Figure 7 (left): Necessity or road-safety disaster: four on a motorcycle. Note that neither ReCAP nor DFID endorse unsafe riding practices.



Figure 8 (right): Rural realities: where four fit, five fit as well. Note that neither ReCAP nor DFID endorse unsafe riding practices.

4.3 User perspectives

25 transport users were interviewed. Nearly all users commented on the MCT, the car taxi and mini-bus. The gender distribution was as follows: 11 men and 14 women.

MCTs are the main form of rural transport available for the population along the Batkanu-Makoth road, and the only form of motorised transport visiting the villages off the road. Nearly every community has some resident MCT operators, making it easier for people in between the two hubs to find transport. Batkanu has around 15 MCT operators. Batkanu is located approximately halfway along the Port Loko-Kamakwie road, but contrary to what this may suggest, there are hardly any vehicles taking this route. Rather, Batkanu is an ‘end of the line’ community, acting as a tiny hub for its surrounding communities. A common problem at ‘end of line’ communities is that transport providers such as car taxis and mini-buses wait to be filled up completely before leaving, to make it financially viable for them. This can result in very long waiting hours. To illustrate, a car taxi has to take seven passengers or more to make the Batkanu-Makeni profitable. This is not the case for Batkanu, where the car taxi and/or mini-bus leave early morning, whether or not these are fully loaded. This is beneficial to the (potential) users – both in Batkanu and for the communities along the road – as they do not have to wait long, knowing when the transport mode is leaving. This can be beneficial to the transport providers as well, as long as they are quite certain that they will pick up passengers along the way and if they can provide more transport services that day (for instance, in Makeni town itself).



Figure 9 (left): MCTs on the Batkanu-Mateboi ferry.

Figure 10 (right): The Batkanu-Mateboi ferry crossing the Mabole river in June.

MCTs offer the ultimate ‘service on demand’, and where there is mobile phone coverage – which is the case for the Batkanu area - the MCT can even collect you and your freight at your house or farm. The local MCT chairman indicated that if one is in need of a MCT: *that person would call me, so I can send an motorcycle taxi to him or her*. The Batkanu MCT parking spot is located next to his shop/entertainment centre, which is next to a basic motorcycle repair shop.

As in many other rural areas in Sierra Leone, the MCT has become fully institutionalised. It provides daily transport needs, provides transport services for emergencies (which do not necessarily have to be a of a medical nature) and according to many users, provides courier services as well. As mentioned, nearly all the MCT operators based in the villages along the surveyed road were either born there or had lived there for quite some time already. With social ties, they would hardly refuse to pick up an item – or even do a bit of shopping – in Makeni for a small fee.

Users indicated that travel in both car taxis and mini-buses is considered to be safe, with no accidents recalled. Equally, they could not recall any security incidents for these two types of transport. The MCT does not have such a good reputation, however. Users, on average, recalled between 10 and 20 accidents happening with MCTs over the last year on the surveyed road, although there were no deadly accidents. Most of these accidents involve falling over at low speeds (because of overloading) or falling at higher speeds because of the bad road condition (due to potholes filled up with water, for instance). It is important to remember here that the daily amount of kilometres driven by all the MCTs on the surveyed road is easily ten or twenty times as much as the total kilometres driven each day by the car taxi and mini-bus. Hence, the accident rate per kilometre for the MCT is lower than what the data may suggest at first glance. There were a few motorcycle thefts recalled

Water-crossings

Streams and rivers often pose huge challenges for transport, particularly in climates with a clearly defined rainy season. Without proper water-crossings whole communities can be cut-off for weeks, if not months. Dug-out canoes are often used in rural areas for ferrying pedestrians and the occasional bicycle, they cannot not really cope with motorised transport. And if the water starts to run too fast, they can become dangerous endeavour. While a bridge offers an all-season and convenient solution, they come at a price. That is, they present by far the highest cost per metre of any road. More so, as they have to be over-engineered, to cope with loads much higher than the indicated axel-load indicated. Does a cable-ferry, such as the one between Batkanu and Mateboi, offer a third way? Construction costs are much lower than those of a bridge and operation and maintenance costs could be covered by introducing a small crossing-fee. Whether or not this is a feasible option partly depends on the nature of the riverbed: if even during its highest level the river does not break its banks, a cable-ferry may be possible. However, if the river bursts its banks and floods a large area, a cable-ferry is unlikely to be a good solution, or at the very least it will not be able to operate during this period.

by users over the last year on the surveyed road. This issue takes place all over the country, and is a key concern of the riders. Some refuse to take passengers who are not familiar to them, particularly when it is dark. It is often the MCT union rather than the police who can be helpful in getting these motorcycles back, although the power and network of, for instance, the Batkanu union is rather limited. Some of these stolen motorcycles end up in other rural areas, exactly because of limited police presence and limited power of local unions.

Table 5: Summary of user satisfaction responses (disaggregated for gender)

<i>Means of transport</i>	Minibus		Taxi (saloon/estate)		Motorcycle	
<i>Gender of respondent</i>	M	F	M	F	M	F
<i>Sample size (N)</i>	7	13	2	4	9	8
Passenger fares	★★☆☆	★★☆☆	★★★★	★★★★	★★☆☆	★★☆☆
Journey times	★★☆☆	★★☆☆	★★★★	★★★★	★★☆☆	★★☆☆
Service frequency	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Service predictability	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Passenger capacity	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Small freight availability	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Small freight charges	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Small freight handling	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Medium freight availability	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Medium freight charges	★★☆☆	★★☆☆	★★★★	★★★★	★★☆☆	★★☆☆
Medium freight handling	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Courier services	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Road safety	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Security	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Comfort: space	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆
Comfort: seat type/conditions	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Comfort: surrounding baggage	★★☆☆	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Comfort: environment	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★☆☆
Access for vulnerable people	★★★★	★★☆☆	★★★★	★★☆☆	★★☆☆	★★☆☆
Overall un-weighted average	2.4	2.1	3.2	2.2	2.3	2.2
Satisfaction for all transport types						
<i>Gender of respondent</i>	M (n=11)		F (n=14)			
Facilities at roadside stops	3		2			
Feeding intermodal connectivity	3		2			
Linking intermodal connectivity	3		2			
Overall un-weighted	2.7		2.0			
★☆☆☆☆=Very Dissatisfied, ★★☆☆☆=Dissatisfied, ★★★☆☆=Moderately Satisfied, ★★★★☆=Satisfied, ★★★★★=Very Satisfied						



Figure 11 (left): Motorcycle repair shop with mobile phone mast in background.

Figure 12 (right): Cargo motor-tricycle in one of the villages along the surveyed road.

All respondents were dissatisfied with the roadside waiting facilities. This is of little surprise as they were non-existent. However, with the MCTs going on demand, road-side facilities are hardly necessary except perhaps for the one or two communities which do not (yet) have resident MCTs.

4.4 Operator perspectives

Six operators of MCTs and three car taxi operators were interviewed. One of the MCT riders interviewed in Batkanu was a 46-year-old man who has been an MCT rider for the last 6 years, and who owns his motorcycle. He has been a member of the Batkanu MCT union for the last four years, paying LE 5,000 each month. In addition, he is a member of a Susu (informal savings club) paying Le 10,500 each week. With nearly 70 members, this club enables its members to spend significantly, once one's turn has come. He does not make many trips, varying from 1 trip each day during the rainy season – when most people are working on their farms – to 1.5 trips during normal days and about 2 trips during the market day. However, note that all these trips are significant, taking one or more hours. He also indicates that: *I can easily take two passengers on my motorbike [despite the bad condition of the road], but I prefer to take only one passenger between Makoth and Makeni because of the presence of a police check-point.* Some MCT riders take more passengers, but those are not likely to be owners of the motorcycle as well.

For this latter category, maximising profit by taking on as many passengers and as much load as possible is key, while for operator/owners the longevity of the motorcycle is also important, hence the reluctance to overload. According to the interviewee; *the number of motorcycle taxis on the road has declined a bit due to the bad state of the road, which causes motorcycles to break down.* This is partly offset because more people in Batkanu now own motorcycles privately.

Road and Transport Paradoxes

Rural transport presents a number of paradoxes, and few have easy answers to them or answers that are applicable everywhere at all times. For instance, good smooth roads allow for higher speeds, making accidents more likely and more likely to be serious if not deadly. Bad roads force vehicle operators to reduce their speed, but gravel and potholes bring with them their own safety risks. Compulsory helmets for MCT operators make their profession safer for them, potentially leading to higher speeds and more risk taking. This then leaves the passengers – who often do not wear helmets – at higher risk. Overloading reduces the speed of the vehicle/motorcycle, making accidents less severe, but at the same time, it reduces the operator's control over the vehicle, increasing the likelihood of an accident. MCT journeys are fast but expensive, while journeys with car taxis or mini-buses are slow but cheap. Which one to take? Another point is that people in rural areas tend to be poorer than their urban counterparts, but the first category often has to pay a premium for their transport needs due to lack of competition and bad roads.



Figure 13 (left): Motorcycle repair shop and MCT park in Batkanu.

Figure 12 (right): Crowd in front of the MCT chairman’s entertainment centre in Batkanu.

Table 6: Summary of operator perspectives		
Means of transport	Taxi (saloon/estate)	Motorcycle
Sample size (N)	3	6
Road condition for operations	★★★☆☆	★★★☆☆
Adequacy of working capital	★★☆☆☆	★☆☆☆☆
Facilities for formal credit	★☆☆☆☆	★☆☆☆☆
Facilities for informal credit	★☆☆☆☆	★★★☆☆
Adequacy of technical facilities	★★☆☆☆	★★★★☆
Regulatory disincentives	★★☆☆☆	★★★★☆
Regulatory incentives	★★☆☆☆	★★★☆☆
Active associations	★★☆☆☆	★★★☆☆
Security risks	★★★★☆	★★★★★
Un-weighted average	2.1	2.6
Weighted average		
★☆☆☆☆=Very Dissatisfied, ★★☆☆☆=Dissatisfied, ★★★☆☆=Moderately Satisfied, ★★★★★=Satisfied, ★★★★★=Very Satisfied		

Security is not a major issue, but the MCT operators indicated that they normally do not like to ride during the night time in case the passenger(s) connive with robbers. Motorcycle theft is a concern of many operators. Safety wise, the condition of the road is the main issue, particularly during the rainy season. Nevertheless, only five accidents were recalled with MCTs during the whole of last year, with just one more serious one.

4.5 Regulator perspectives

Six people with knowledge of regulator issues were interviewed, including a police officer and MCT union leader in Batkanu. Foremost, the union chairman represents the interests of his members and in that sense is not an (unbiased) regulator. On the other hand, he is probably one of the better informed community members regarding issues of transportation. According to MCT union chairman: *we face a constant struggle to ensure that no motorcycles operate outside the union.*

However, not all MCT unions are equally beneficial to their members, reducing the incentive to pay the monthly contributions or become a member in the first place. Some operators see the unions as mechanisms for the self-enrichment of the union bosses, with promised benefits (such as sick pay or help if a motorcycle is confiscated by the police) seldom materialising. Passengers sometimes accuse the unions of setting artificially high prices, preventing competition.

In general, regulators were satisfied with the level of technical and fiscal compliance for all modes of transport (MCT; car taxi; pick-up; mini-bus; small truck). However, other compliance aspects (operational; safety; environmental, etc.) picked up lower marks on average. Regulators indicated that they were moderately satisfied with the safety of the road for all modes of transport. What positively contributed to this is the fact that there is limited vegetation at the sides of the roads (mainly grass) which gives a clear view of oncoming traffic.

Table 7: Summary of regulator perspectives (n=6)					
Means of transport	Minibus	Taxi (saloon/estate)	Pickup/freight	Light truck	Motorcycle
Vehicle technical compliance	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Vehicle fiscal compliance	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Insurance compliance	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Operational compliance	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆
Safety compliance	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆
Environmental compliance	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆
Regulatory planning framework	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆
Safety of the road	★★★★☆	★★★★☆	-	★★★★☆	★★★★☆
Un-weighted average	2.5	2.5	2.4	2.5	2.7
<i>Number of people interviewed (6)</i>					
★☆☆☆☆=Very Dissatisfied, ★★☆☆☆=Dissatisfied, ★★★☆☆=Moderately Satisfied, ★★★★☆=Satisfied, ★★★★★=Very Satisfied					

As can be deduced from table 7, there is little to separate the various modes of transport, with average scores ranked between dissatisfied to moderately satisfied. The fact that the MCT scores the highest average score (2.7) may partly be explained by the ‘voice’ of the MCT union man in this relatively small sample (N=6).

4.6 Development perspectives

For development, and the contribution of the public transport services to development, a number of local development experts were interviewed. For instance, a community health officer based in



Figure 13 (left): The school-building in Batkanu.



Figure 14 (right): Clinic in Batkanu.