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Rural Transport Survey Report

Tokali-Wechiau-Wa Road, Upper West Region, Ghana

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Cover Photo: Motor-tricycles on the Wechiau-Vieri road in Wa West District.

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Abstract

This study was carried out in the Guinea savannah ecological zone in Ghana, focusing on the Tokali-Wechiau-Wa rural road in the Wa West District in the Upper West region. The study sought to understand the existing transport systems for the rural communities along and within the road's catchment area. The rapid rural appraisal methodology was used to gain a deep understanding of the existing rural transport systems based on in-depth qualitative interviews with transport users, operators, regulators and those concerned with socio-economic development. This produced some valuable 'order of magnitude' estimates, related to movements of people and goods in the rural communities for distances greater than 5 km. Wa, a regional and municipal capital, served as the major transport and market hub for the inhabitants along the surveyed road. The study showed that the mini/midi bus service is the main mode of transport providing daily rural transport services. The mini/midi bus transports over 50% of the total passengers and about 30% of small freight. Together, the motorcycle and motor tricycle (IMTs) move over 30% of passengers and about 40% of small freight. No large buses, commercial car taxis or motorcycle taxis (Okadas) served the road. Generally, transport users were dissatisfied with overloading, poor service predictability, long waiting times and high passenger fares.

Key words

Rural transport services; Transport operators; Rapid rural appraisal method; Motor tricycle; Intermediate means of transport (IMT); Guinea savannah ecological zone

Acronyms, Units and Currencies

AfCAP	Africa Community Access Project
AsCAP	Asia Community Access Project
BRRI	Building and Road Research Institute
CSIR	Council for Scientific and Industrial Research
DFID	Department for International Development
DFR	Department of Feeder Roads
DVLA	Driver and Vehicle Licensing Authority
e.g.	For example
4x4	Four-by-four cross country vehicle; station wagon
Frt	Freight
HIV	Human Immunodeficiency Virus
IFRTD	International Forum on Rural Transport and Development
GPRTU	Ghana Private Road Transport Union
GPS	Global Positioning System
GSS	Ghana Statistical Service
ICT	Information and Communication Technologies
i.e.	That is
IMT	Intermediate Means of Transport
kg	kilogram
km	kilometre
MMT	Metro mass transit
MoT	Ministry of Transport
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
SSATP	Sub-Saharan Africa Transport Policy Program
STC	State Transport Corporation
t	tonne
TA	Technical Advisor
TRL	Transport Research Laboratory
UK	United Kingdom
USA	United States of America
USD	United States Dollar
USDc	United States Dollar cent

Contents

Executive Summary

This report is one of three rural transport survey reports prepared under the Rural Transport Diagnostic Study in Ghana. It presents the results of a study carried out in the Guinea savannah ecological zone focusing on the Tokali-Wechiau-Wa gravel road in the Wa West District in the Upper West region. The surveyed road, 49.1 km long and between five and six metres wide, traverses a relatively flat terrain. The overall aim of the study is to understand the existing rural transport systems in Ghana based on understanding the transport needs and preferences of rural women and men with different ages, occupations, gender and abilities in the Guinea savannah ecological zone. Specifically, it is 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 transport operators, regulators and those concerned with socio-economic development. It is also to identify constraining factors and good practices in Ghana's rural transport services, for evidence-based policy suggestions.

The field data collection took place from 16th -22nd January, 2017 through the use of standardised questionnaires to gather relevant data to help the researchers to understand the nature and character of rural transport systems in the Guinea savannah ecological zone of Ghana. The rapid rural appraisal methodology was used for the study. A key feature of the rapid rural appraisal methodology is its focus on gaining a deep understanding of the issues under investigation based on a limited number of in-depth qualitative interviews involving the local stakeholders and sector experts. The data collected was derived from personal interviews by the transport experts and road traffic counts by trained enumerators to produce some valuable 'order of magnitude' 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. Another criterion applied was to ensure that the travel distances were above 5 km.

This rural transport survey report has highlighted the following:

- road geography and socio-economic situation for the communities along and within the catchment area for the Tokali-Wechiau-Wa surveyed road in the Upper West region.
- the hubs-and-spokes pattern of the surveyed road.
- the findings from the interviews and classified roadside traffic counts and
- conclusions and recommendations for further research studies and suggestions for possible changes to rural transport services practices, policies and strategies in Ghana.

Results from the study:

Transport users

- Thirty-one (31) road transport users were interviewed of which 15 were males and 16 were females. The respondents included farmers, traders, disabled, elderly, students, nurses, and persons using transport to access health care, maternal healthcare, formal employment, financial services, funerals and the like. Their ages range from 18 to 75 years.
- Wa is the main transport hub and market town which provided most of the needed services for the inhabitants in the catchment area of the surveyed road. There are two markets: the major one is in Wa and the other at Wechiau, both taking place on a six days rotational basis.
- The tro-tro (mini/midi bus) is the main mode of rural transport available for the population on daily basis. Nearly all transport users (94%) indicated that they use the tro-tro, with cargo tricycles in second place. No larger buses and no commercial car taxis and motorcycle taxis (Okadas) served the road. Motorcycles were mostly used for private purposes, but owners

were often willing to take a passenger with them. Motor-tricycles, though mostly used for freight services, also carried passengers.

- On an annual basis, the mini bus transported 52% of total passengers and 29% of total small freight. The motor tricycle is responsible for 15% of annual passenger movements and 27% of annual small freight movements. Together, the IMTs transported annually over 30% of passengers and about 40% of small freight on the route.
- The fare per passenger kilometre for the mini bus is USDc 4, compared to USDc 5 for the motor tricycle and USDc 9 for the motorcycle.
- Generally, transport users were dissatisfied with overloading of the transport modes, long loading times and high passenger fares. The rural dwellers were concerned over their security when travelling in the evening or early morning hours due to regular highway robberies.

Transport operators

- Eight (8) transport operators were interviewed; four tro-tro operators, three owner-operators of cargo tricycles and one motorcycle owner. Whereas operators of the mini/midi buses (tro-tros) belonged to active driver unions, motor-tricycles riders did not belong to any association/union.
- All the respondents were dissatisfied with the poor road condition which resulted in high operating costs. Most operators indicated that, if possible, the surveyed road should be paved (tarred) to lower their operating costs. Their major concerns were access to credit facilities to purchase their own vehicles or boost their businesses. Concerns over security were also raised due to highway robberies.

Transport regulators

- Three regulators were interviewed. They were satisfied with the level of compliance of mini/midi buses regarding insurance, road worthiness inspections and taxes. The regulators were, however, dissatisfied with security and safety of the surveyed road.

Development

- Three stakeholders concerned with socio-economic development were interviewed. They considered all the modes, and in particular the mini bus, making important contributions to the socio-economic development of the rural communities. The motor tricycle is adjudged to be most suited to agriculture due to its versatility for off- and on-farm activities.

Conclusions and recommendations

- The mini bus is the most dominant and available mode of transport on the surveyed rural road, contributing annually 52% of passenger movements and nearly 30% of small freight movements. Together, the IMTs (i.e. motorcycle and motor-tricycle) play a useful role in the provision of rural transport services on the surveyed road, providing nearly one-third of the annual passenger movements and over 40% of small freight movements. No large buses and no commercial car taxis or motorcycle taxis (okadas) serve the road.
- It is recommended that the significant role of the IMTs in rural passenger transport services be recognised by reviewing the current road traffic regulations 2012 (LI 2180) to lift the ban on rural IMT passenger services.
- Regular road maintenance should be carried out on the feeder road by DFR to improve riding quality and make the road passable during the rainy seasons. If finances allow it, the road should be paved to improve the riding quality of the road to attract more operators to

compete for passengers and goods which may ultimately reduce overloading on the Tokali-Wechiau-Wa route.

- An issue raised by all respondents is security. Armed robberies have taken place where motorcycles have been forcibly taken and passengers robbed. However, there is no easy solution to this.

1 Introduction

1.1 Introduction to rural transport study in the Guinea Savannah ecological zone

The overall aim of the rural transport diagnostic study in Ghana was to understand the existing rural transport systems and the key issues relating to policies and practices in Ghana based on understanding the needs and perspectives of different transport users with different occupations, ages, gender and abilities, as well as transport operators, transport regulators and those responsible for socio-economic development. Specifically, this study aimed at understanding the needs and perspectives of the different groups of stakeholders including women and men in different rural communities along a representative rural road in Wa West District in the Upper West region in the Guinea savannah ecological zone of Ghana.

The study was carried out from 16th to 22nd January, 2017 on the Tokali-Wechiau-Wa road in Wa West District to gather requisite information to help the research team understand the nature and character of rural transport systems in the Guinea savannah ecological zone. The rapid rural appraisal methodology, adapted by Starkey, et al., 2013 for rural transport services research, was used for the study. A key feature of the rapid rural appraisal methodology is its focus on gaining a deep understanding of the issues under investigation based on a limited number of in-depth qualitative interviews involving the local stakeholders and sector experts, rather than taking a large-scale quantitative survey approach. The data collected was derived from the rural communities along the selected study road or within its catchment area to produce some valuable 'order of magnitude' 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.

1.2 Introduction to the rural road transport survey report and statistics

The information and results derived for this rural transport study relate to one specific rural road in the Guinea savannah ecological zone, namely the Tokali-Wechiau-Wa road in West Wa district. The road is about 49 km long and it is predominantly unpaved gravel with only a short section paved within the Wechiau township (district capital) and another section towards the boundary with Wa Municipality. The research team used the rapid rural appraisal methodology to obtain a 'snapshot' situation of the existing rural transport systems along and around the selected survey road. This methodology is different from large-scale surveys that use enumerators to interview many stakeholders to gain data size that may be statistically significant. This study was based on about forty five in-depth interviews that provided indicative data on the transport needs and preferences of the local stakeholders and experts. About thirty road users were interviewed, balanced for gender. The road users interviewed included farmers, traders, students, elderly, disabled, 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, 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 understanding of the relevant issues relating to the transport systems along the study road. Their informed opinions were respected and formed the basis for understanding the existing transport services regulatory framework, policies and practices applicable to the selected rural road and its catchment area. 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. Information from the various sources was constantly compared to clean the data sets from discrepancies (outliers) by the researchers in the field. Follow-up questions were asked to seek a clearer understanding of why for instance an answer from an interviewee was different to the answer of others, which is important for data quality assurance.

In this survey report, traffic counts were carried out on a 'normal' weekday and on two market (busy) days, at three locations in total. Wa municipality and Wechiau represented two important market hubs which had separate market days patronised by inhabitants within the study area. The larger market was, however, in Wa. Each market operated separately on 6-day rotational basis and both were investigated. 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, intermediate means of transport (IMTs) and non-motorised transport (NMTs) such as bicycles and pedestrians.

This survey report presents in all 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.

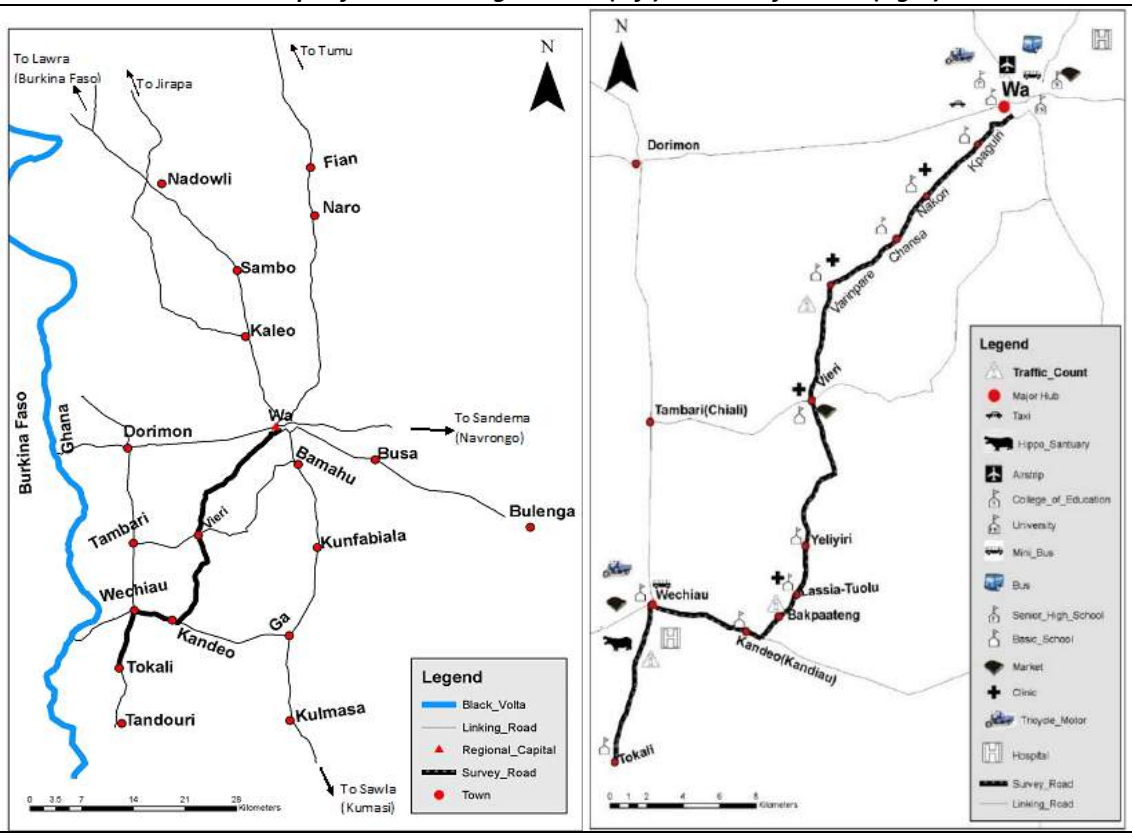
2 Rural transport services: summary tables of key statistics and indicators

<table>
<tr><th colspan="4">RTSi Road Report Table 1. Road information</th></tr>
<tr><td colspan="4">Road name: Tokali-Wechiau–Wa</td></tr>
<tr><td colspan="4">Dates of survey: 16th January 2017 – 22nd January 2017</td></tr>
<tr><td colspan="4">District, Region and Country: Wa West, Upper West, Ghana</td></tr>
<tr><td colspan="2">Road type: Gravel</td><td colspan="2">Responsible authority: Department of Feeder Roads</td></tr>
<tr><td colspan="2">Road start location: Tokali</td><td colspan="2">Start GPS coordinates: Longitude: W 2.420234; Latitude: N 9.452026</td></tr>
<tr><td colspan="2">Road finish location: Wa</td><td colspan="2">Finish GPS coordinates: Longitude: W 2.303208; . Latitude: N10.015137</td></tr>
<tr><td colspan="2">Road length: 49.1 km</td><td colspan="2">Catchment population: 15,456</td></tr>
<tr><td colspan="4">Road quality and condition from different perspectives</td></tr>
<tr><td>Road authority</td><td>Operators</td><td>Development</td><td>Safety</td></tr>
<tr><td></td><td>★★☆☆☆</td><td>★★☆☆☆</td><td>★☆☆☆☆</td></tr>
<tr><td colspan="4">Summary of road geography and socio-economic situation</td></tr>
<tr><td colspan="4">The surveyed road runs from the small village of Tokali to the regional capital of Upper West, Wa. After approximately 8 km the road enters the small district town of Wechiau, which has a district hospital, a police station, a bank, an open air market and a few small shops. The road continues for another 6 km towards Ga on an unpaved highway (with no reference number) before branching off to Wa, running for another 31 km before reaching the outskirts of Wa. A further 3 kilometres through Wa brings one to the Wa lorry station (terminal). One or two of the larger villages along the surveyed road, such as Vieri and Lassia-Tuolu have their own market days, but Wa market is the largest, followed by Wechiau. Markets take place every six days in the villages and Wa, resulting in a</td></tr>
</table>

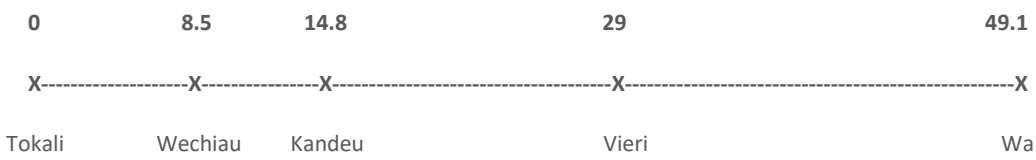
rotational system.

The area is relatively flat in the Guinea Savannah ecological zone of Ghana. Heavy rains are mostly experienced in June, July and August; but after the rainy season, the area sees its green landscape and small rivers dwindle quickly during the dry harmattan period. Some sections have low side drainage channels, but these are of lower quality than those along the National Road N12. A few low dams hold water back for the dry season, which is used by both people and the significant cattle herds. Burning of vegetation takes place regularly to provide fresh shoots for the animals. Farmers grow yam, maize, millet and vegetables. These are the main food crops, with surplus marketed. Cashew trees have been a more recent introduction and the nuts are a cash crop. Groundnuts are the other main cash crop. Farmers also harvest the seeds of the indigenous Shea tree (*Vitellariaparadoxa*) for among other things, cooking oil and the fruits of the Dawadawa tree (*Parkiabiglobosa)* for cooking spices. Some fishing takes place in the streams and creeks, dams, and more importantly, in the River Volta which forms the Western boundary between Wa West and Burkina Faso (see Map).

Maps of road showing context (left) and road features (right)

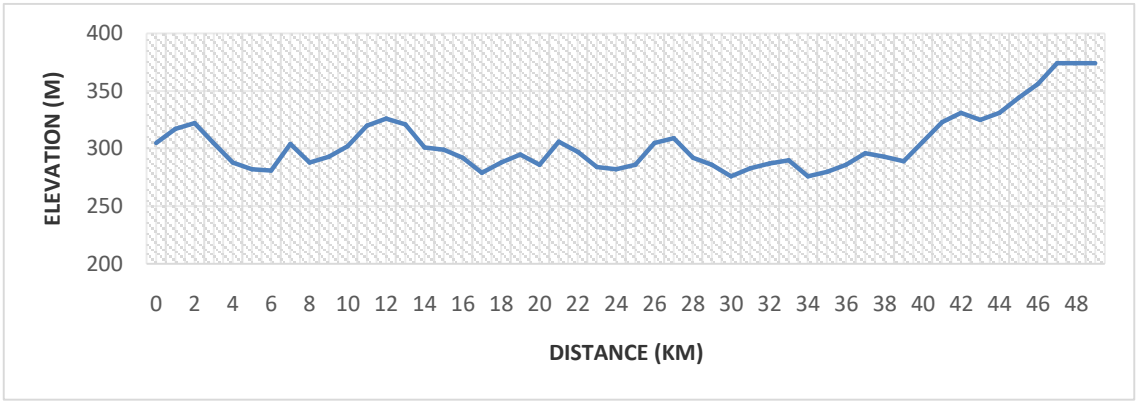


Schematic map of 'straightened' road with features



GPS elevation track (same horizontal scale as 'straightened' road)

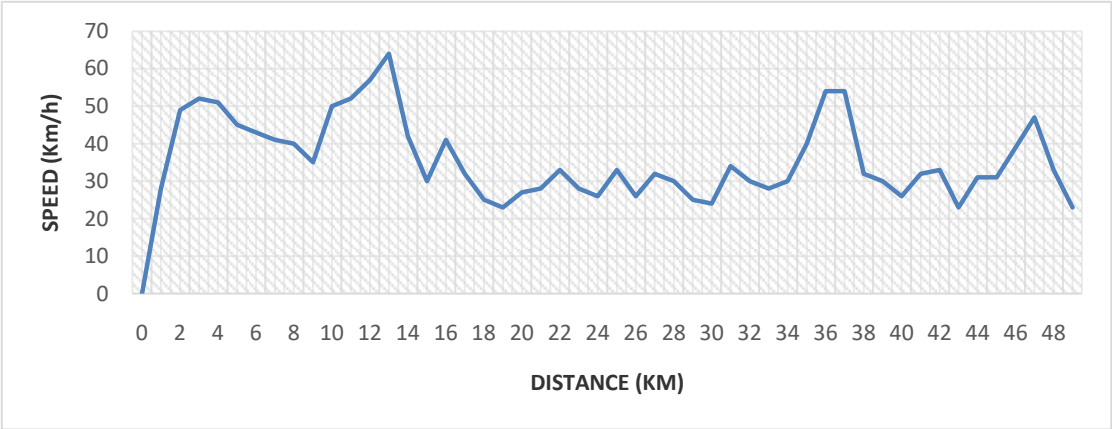
ALTITUDE



(M)

GPS speed track 6(same horizontal scale as 'straightened' road)

SPEED IN KM/H



Description of hub and spoke patterns

Both Wa and Wechiau act as a hub. As can be expected from a regional capital, Wa attracts people and traffic from tens of kilometres in all directions, and acts as a start, end or transit point for inter-regional travelling to Jirapa in the North, Bolgatanga and Tamale in the East, and Kumasi and Accra in the South. Wechiau's pull on the other hand extends to the nearby villages. From Wechiau the dominant form of public transport – mini/midi-buses or 'tro-tros' – travel mainly to Wa and back again, with few if any journeys to villages not along this route. For instance, Ga and Dorimon, respectively located East and North of Wechiau, along the unpaved highway, are not regularly served and their market days are of limited interest to people living in and around Wechiau.

No bush car taxis operate along the road, nor are there any motorcycle taxis present. That said, in each village a number of individuals own motorcycles, which are used for private purposes. The private motorcycle owners can also be called upon in case of emergency. Besides the tro-tros and an occasional truck, the main form of public transport is the cargo motor-tricycle. Some of the cargo motor-tricycles in the area operate in a similar manner as the private motorcycles with the owners using them predominately for the transport of their own farming products, but others operate the tricycles on a commercial basis, providing rural transport services for people and freight.

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*	★★★★☆
The more stars (or the higher score) the better. ★☆☆☆☆= Very dissatisfied (= 1). ★★☆☆☆= Dissatisfied (= 2). ★★★☆☆= Medium (=3). ★★★★☆= Satisfied (= 4). ★★★★★= Very satisfied (= 5).				

Table 2. Traffic and transport along road

Daily traffic flows (in both directions)					**Fleet**	**Passengers and small freight**						
	Normal	*Busy*	*Disrupted*	*Impassable*	*No of RTS vehicles operating on road*	***Trip transport***		***Daily transport***		***Annual transport***		***Change** in past year*
						normal day		*normal day*		*adjusted for traffic fluctuations*		
						per vehicle		*all vehicles*				
						Pax	*Frt*	*Pax*	*Frt*	*Pax*	*Frt*	
						(no)	*(kg)*	*(no)*	*(kg)*	*(no)*	*(t)*	*-- 0 ++*
Midi-bus	5	7	2	2	5	25	200	250	4,000	89,550	3,374	+
Minibus	36	60	6	1	19	23	88	874	6,650	328,851	3,322	0
Saloon/estate	4	2	0	0	3	3	-	-	-	-		
4x4/pickup	8	7	0	0	6	4	-	-	-	-		
Light truck	3	3	1	0	1	4	-	12	-	-		
Medium truck	1	0	0	0	1	0	-	-	-	-		
Motor tricycle	20	32	30	2	11	9	167	297	16,500	96,090	3,122	0
Motorcycle	290	300	0	0	7	1	15	21	945	114,375	1,616	0
Bicycle	45	43	30	30	0							
Pedestrians (>5 km)	61	20	40	40	61							
Totals	**367**	**474**	**109**	**75**	**114**	**69**	**470**	**1,454**	**28,095**	**628,866**	**11,434**	

Table 3: Rural transport services key operational statistics for major transport modes			
	Minibus	**Motor tricycle**	**Motorcycle**
Contribution to annual passenger transport (% of market)	52	15	18
Contribution to annual small freight transport (% of market)	29	27	14
Fare per km in USDc	4	5	9
Journey time (average speed on normal days) in km/hr	25	21	40
Transport frequency on normal days (number of opportunities to travel per day)	5	4	3
Number of days a year with 'normal service'	156	250	275
Number of busy days a year	179	85	60
Number of days a year with disrupted service	30	30	30
Number of days a year with no transport services	-	-	-
Reliability factor(s) (%)	80	77	98
Men as % of passengers/day	50	72	76
Women as % of passengers/day	41	19	14
Children as % of passengers/day	9	9	10
Cost of 50 kg accompanied freight in USDc per tonne-km	71	81	120
Cost of 200 kg consigned freight in USDc per tonne-km	85	80	NA
Safety: Recalled no. of accidents per 100,000 vehicle trip	91	296	299
Security: Recalled no. of incidents per 100,000 vehicle trip	286	169	494
Typical age of vehicle	13	5	6
Typical fuel consumption of vehicles (litres per 100 km)	12	9	5
Typical operating distance per year in km	34,560	20,910	11,520
Total revenue per day (USD)	42	21	19
Total revenue per kilometre (USDc)	40	147	32
Total revenue per passenger kilometre (USDc)	2	16	16
Percentage total revenue due to freight (%)	42	81	69
Regulation compliance (overall assessment)	4	2	3
Development impact (overall assessment)	4	4	4

Table 4: User satisfaction with main RTS modes (disaggregated for gender)								
	Minibus		Light truck		Motor tricycle		Motorcycle	
	Men	Women	Men	Women	Men	Women	Men	Women
Sample size (N)	**14**	**15**	**3**	**1**	**8**	**8**	**5**	**4**
Fares	★★☆☆☆	★★☆☆☆	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Journey time	★★☆☆☆	★★☆☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★☆☆	★★★★☆
Operational features	★★★☆☆	★★☆☆☆	★★★☆☆	★☆☆☆☆	★★★☆☆	★★☆☆☆	★★★☆☆	★★☆☆☆
Freight	★★★☆☆	★★★☆☆	★★★★☆	★★★★☆	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Safety and security	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★★★	★★☆☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Comfort	★★☆☆☆	★★☆☆☆	★☆☆☆☆	★★☆☆☆	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★☆☆
Universal access	★★☆☆☆	★★☆☆☆	★★☆☆☆	★☆☆☆☆	★★☆☆☆	★☆☆☆☆	★☆☆☆☆	★★☆☆☆
Overall satisfaction	**2.2**	**2.2**	**2.4**	**2.3**	**2.3**	**2.5**	**2.2**	**2.4**

The more stars (or the higher score) the better. ★☆☆☆☆ *= Very dissatisfied (= 1).* ★★☆☆☆ *= Dissatisfied (= 2).* ★★★☆☆ *= Medium (=3).* ★★★★☆ *= Satisfied (= 4).* ★★★★★ *= Very satisfied (= 5).*

3 Rural transport services: report of survey findings

3.1 Overview of road situation and issues

The 49.1 km surveyed rural road runs from the small village of Tokali to Wa. Starting from Tokali, after 9 km on a gravel road one reaches the small town of Wechiau, which is the district capital for Wa West. Wechiau enjoys approximately 1.5 km of paved road, which significantly reduces dust thrown up by traffic. Wechiau has a significant market every six days, attracting farmers and traders from all nearby villages. A secondary highway (with no Reference Number), which makes a

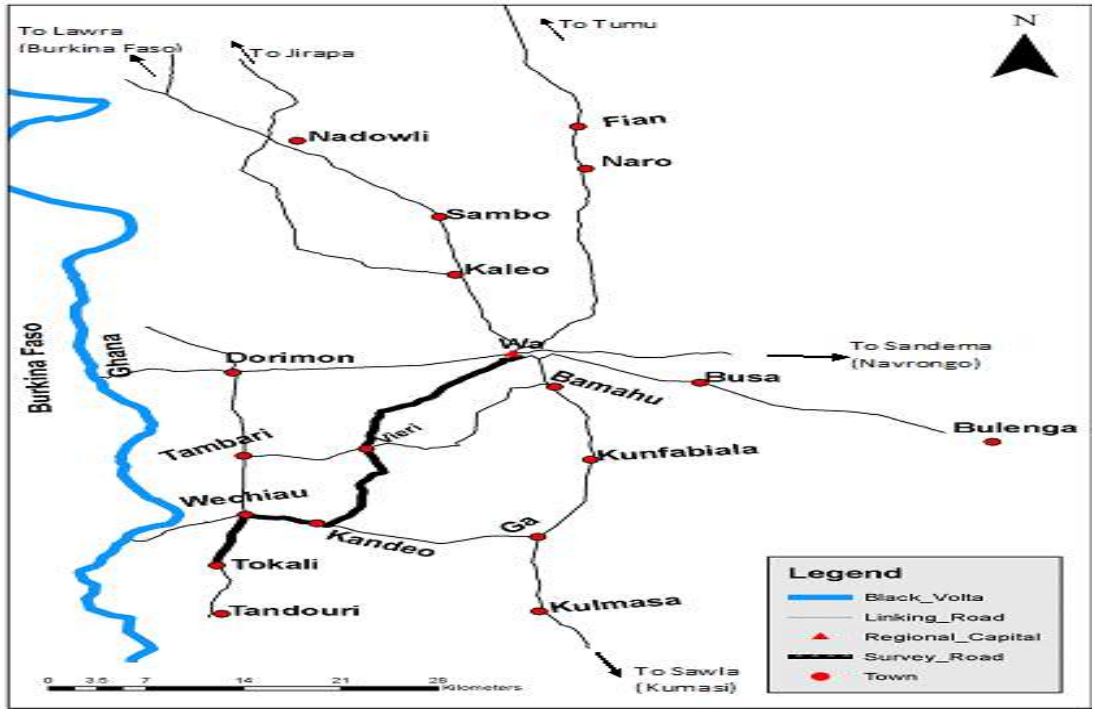


Figure 1: The surveyed rural road showing Wa, Wechiau and other towns

rectangular loop to the west of the main Wa–Kumasi highway, starts at Ga and passes through Wechiau, to continue to Dorimon and then to Wa. But nearly all the Wechiau–Wa public transport takes a different route via the village of Vieri. Following the highway for 7 km from Wechiau towards Ga, the surveyed road than branches off to north-east heading directly towards Wa, passing through a number of villages including Lassia-Tuolu – where a Senior High School and two health clinics are located – and Vieri, with a significant market. While one of the clinics at Lassia-Tuolu is government owned and under the Ghana Health Services, the second clinic, is a missionary clinic built for the Lassia-Tuolu Senior High School (St. Ignatius of Loyola Senior High School). This clinic is, however, open to the public.

Wa is the regional capital of Upper West, and the district capital of Wa Municipal, with a population of around 107,200 (Ghana Statistical Service(GSS), 2012). It has a university, government buildings, banks, hotels, a football team (which won the 2015/16 national league), a big market and numerous shops. It is also the main hub for onward travel to other major towns and cities in Ghana, with tro-tros (i.e. mini- and midi- buses), Metro Mass Transit (MMT) and State Transport Corporation (STC) buses leaving throughout the day. Wechiau (with 2,820 inhabitants, GSS(2012)) has a number of facilities, despite its small population size, since it is the district capital of Wa West. These include a health clinic, district offices, a bank, a police station, an open air market and a few small shops. The office of the 'Wechiau Community Hippo Sanctuary' is also based in Wechiau. This community-run project organises hippo-viewing trips to the nearby Black Volta, with all profits going back to the communities in the locality. Visitors come from both Ghana and abroad.

The overwhelming majority of people within the catchment area of the surveyed road are semi-subsistence farmers who market their small surpluses at the frequent village markets or at Wa market. Groundnut is an important cash crop and some of the inhabitants have moved into cashew production, which is a more recent development. Livestock and poultry, such as chickens, goats and pigs are also common. Cattle are used to pay for the bride price in marriages and for other cultural practices such as funerals. Therefore, almost every household keeps some cattle for these cultural and economic purposes. Generally, in the Wa West District, an extensive system of animal husbandry is practised where cattle roam freely and fend for themselves during the dry season (off-farming season). During the rainy/farming season, however, all livestock except poultry are kept indoors. In situations where there are large numbers of livestock, Fulani herdsmen are employed to look after the cattle, sheep and goats. Transport of marketable agricultural surplus is done either by head-loading, by using the cargo motor-tricycle or by the tro-tros, which run more frequently during market days.

The topography of the terrain in which the road is found is near flat, and during rainy seasons streams/rivers and low-lying plains get flooded. A few low dams hold back water to create reservoirs used by both people and cattle, but except for the largest, these tend to dry up completely towards the end of the dry season. Houses within a village are much more scattered than for instance in the forest region of Ghana, with on average 50 to 75 metres between homesteads. Besides the handful of somewhat larger villages along the road, there are scattered houses or small villages along the road and further away off the surveyed road; some connected with a dirt road but others only reachable by foot, motorcycle or motor tricycle. The surveyed road, albeit used by many more people, is in a worse condition as compared to the highway. Although shorter in distance, travelling from Wechiau to Wa takes longer on the surveyed road, than along the highway via Dorimon. Evidence of maintenance, let alone regular maintenance, is sparse for the surveyed road. Despite the lack of maintenance, the road is navigable all year round, although travel times do increase during the rainy season.

Figure 2 (left): Rain-fed agriculture

Figure 3 (right): Cattle crossing the highway near Wechiau

Wechiau is also connected to Wa via Dorimon (see Figures 1 and 4). This gravel road is in fairly good condition, but with some degree of corrugation. The team's expectation (and prior road selection on the basis of our detailed maps) was that most of the transport movements between Wechiau and Wa would take place either via Ga or Dorimon. This turned out not to be the case. Rather, the majority of public transport between Wechiau and Wa took the road via Vieri and Lassia-Tuolu. The reason is simple; the Vieri-Lassia road is going through a much more populated area, making it more attractive for public transport providers. It is also shorter than the road via Dorimon, but given its bad state, it actually takes longer to travel. This situation is a good example of when a proper user survey - before the decision to upgrade a road – would have made sense. If such a 2 or 3 day survey was executed, it would have become evident that upgrading the Wechiau - Vieri – Wa road would have made more sense than upgrading the much longer Ga – Wechiau – Dorimon - Wa section.

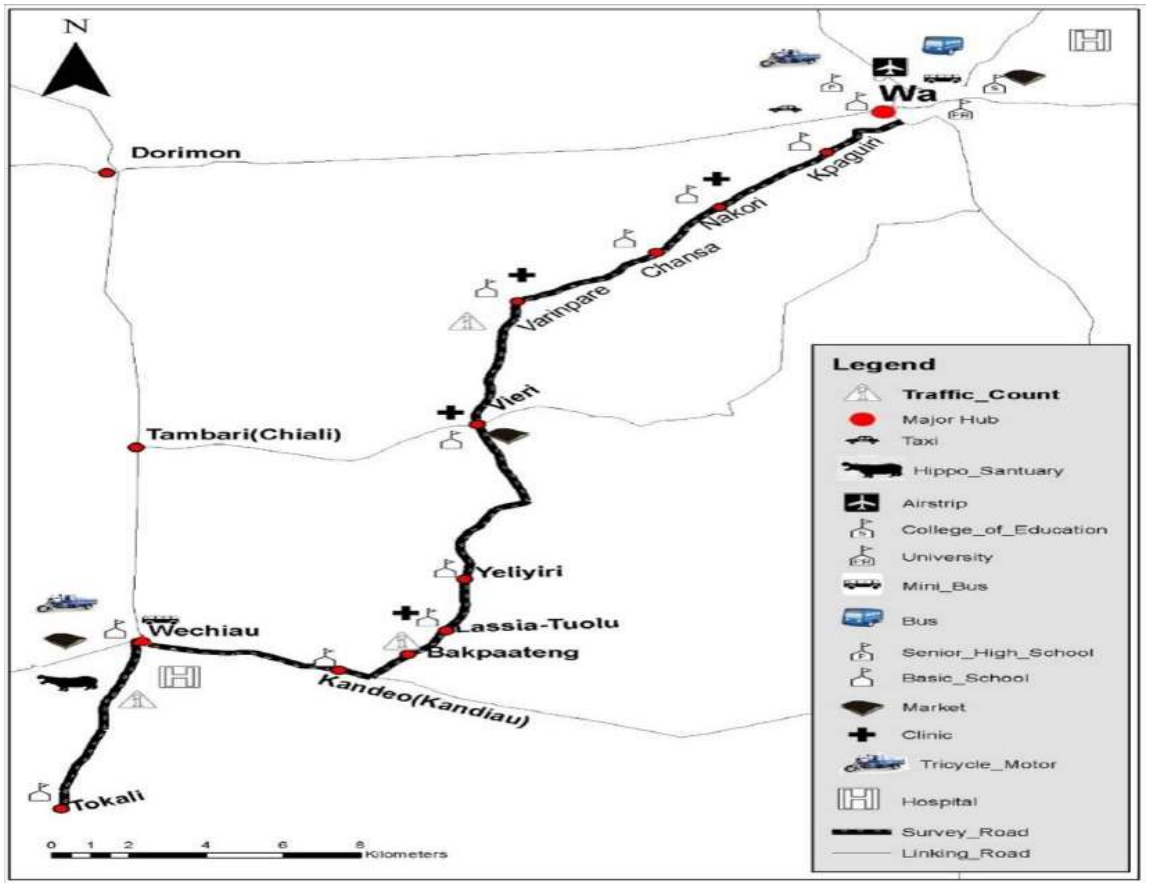


Figure 4: Map of surveyed road showing transport hubs, services and features of interest

3.2 Overview of transport services situation and issues

The surveyed road is predominately served by the so-called 'tro-tros' – which include both mini-buses and the smaller midi-buses - although the former is the most common in the area. Cargo motor-tricycles are also common in the area. Private motorcycle ownership is present, and the privately-owned motorcycles are sometimes used for semi-commercial activities where the passenger is asked to pay for the fuel, if it is a trip on request. The majority of the cargo tricycles transport both freight (official maximum load capacity is 800 kg) and passengers. According to the road traffic regulations of 2012 (LI 2180) the motor-tricycles are prohibited from providing commercial passenger transport services. But passenger numbers can be up to 10 or 12, with people sitting on the side, on top of freight or on wooden planks. The motor-tricycles do make the full length trip from Wechiau to Wa, particularly on a market day, which can take about 2 hours.

Wechiau – and the villages of Lassia and Vieri along the road towards Wa – all have their residential tro-tro drivers. This allows for an early morning service towards Wa. Tricycles owners are scattered among the villages, including some part-time tricycle operators. These can be farmers who bought a tricycle for the transportation of their own farm products, only to become tricycle operators during the dry off-farming season.

All tro-tros operating on the surveyed route are registered with the Ghana Private Road Transport Union (GPRTU). The Wa branch is the main one, but all the surrounding smaller hubs have their own sub-branches. There is for instance a Wechiau GPRTU branch which has a considerable level of autonomy. Many of the tro-tros operating along the surveyed road tend to be old or in relatively bad shape – although the Wa GPRTU deputy leader assured the research team that they have all passed the necessary Driver and Vehicle Licensing Authority (DVLA) roadworthiness tests. On the contrary, the private motorcycles and the cargo tricycles operating along the road hardly go for regular vehicle tests. Since both types of transport are not allowed to take paying passengers in the first place, taxes, insurances, and regulatory checks normally associated with public transport providers, are by default not applicable to the motorcycles and cargo tricycles.

Because of the rotational market system and the fact that both the Wechiau market and the Wa market see increased traffic along the surveyed feeder road, a three day traffic count was executed. The first count, taking place during the Wa market day, allowed the research team to understand the extent of the pull factor of this big regional market, and whether it attracted visitors from Wechiau and even beyond, such as Tokali. For the Wechiau market day count, we had the opportunity to find out if communities along the surveyed road which are as close to Wechiau as they are to Wa, would still go to the Wechiau market. In addition, we could see how the Wechiau market attracted visitors from its surrounding villages (and how these would travel to the market). Finally, a third traffic count on a non-market day took place, to provide us with a baseline. All traffic counts were categorised into conventional vehicle classes, Intermediate Means of Transport (IMTs) and Non-Motorised Transport (NMTs). The roadside surveys were undertaken from 6:00 am to 6:00 pm. The data seem to suggest that people beyond Wechiau – in Tokali for instance – focus just on the Wechiau market and do not or only seldom visit the Wa market. This suggests that rural dwellers are willing to take one transport provider to go to the market, but are reluctant to – for time and financial reasons – take two transport providers, e.g.: a motor-tricycle from Tokali to Wechiau and then a tro-tro from Wechiau to Wa to attend the Wa market.

The traffic count showed that on the busy market day (whether in Wechiau or in Wa) the number of mini-buses servicing the road nearly doubles. There is also an increase in the number of midi-buses and cargo tricycles. Interestingly, the number of car taxis - which sometimes ply the road if chartered - and cross country station wagon (4x4), on the road goes down during the busy days. The same

applied to the number of pedestrians which dropped drastically by about two-thirds during the busy days. Clearly, with such increased demand during market days, it becomes viable for the transport providers with larger capacity to provide their services: even midi-buses tend to fill up relatively quickly, or at least in the morning. Further analysis of the NMTs (pedestrians and bicycles), showed that majority of the pedestrians were women (94%) and children (5%) compared to 83% of bicycle riders being men and the rest being male children (17%). Thus, men hardly travel on foot, preferring to use a bicycle or other means. No woman was found riding a bicycle for the medium range distance.

There is a drop in transport movements during disrupted days for all vehicles, except for the motor tricycles which compensate somewhat for the reduced travel opportunities during the rainy season. The key observation here is that people just do not travel a lot during the rainy season – which also happens to be the main farming period – mainly because they are too busy working on their farms or because the disposable income tends to be lower during that period. The fact that motorcycles do not operate during disrupted and impassable days underscores the observation that these are used for private transport and not as a means of income generation, as would be the case if okadas (i.e. motorcycle taxis) operated in the area. As suggested elsewhere, motorcycle owners who use their means of transport for personal purposes are reluctant to overload their motorcycles or use it on a bad road (that is, during the rainy season).

According to the traffic count the mini-buses are the largest movers of people, with just about 330,000 people per year. They also do this over considerable distances. Here, they differ from the motorcycles, which transport about 114,000 people per year, but normally over much shorter distances. The transport share for both people and freight by the motor-tricycles is quite low according to the traffic count data. Actually, they are not the preferred mode of transport. Some respondents indicated that it is out of necessity that they travel by the motor-tricycle, and that their preference is to travel by the mini-bus. However, if the bus is full they are compelled to use the tricycle. Normally, the mini- and midi-buses only leave the station (terminal) when full.




Figures 5-8 (clockwise from top-left): Wechiau tro-tro station; Water-crossing near Vieri; Tro-tro loading passengers; Motor-tricycle being pushed

3.3 User perspectives

A total of 31 users were interviewed, with most of them having experience with at least two forms of transport. The gender distribution was as follows: 15 males and 16 females. The categories included farmers, traders, disabled, elderly, students, health users, maternal health care and those using transport for employment. In a number of cases there was an overlap between the categories, e.g. farmers stating that they were also doing some trading, health users stating that they were farmers, etc. The age distribution ranged from 18 to 75 years. Nearly all of the users (94%) indicated that they predominantly used the tro-tros, with cargo tricycles in second place. It was indicated that, no car taxis were operating along the road to provide regular transport services. According to the operators interviewed, the road was in a bad shape and it was not a lucrative venture. Most users commented on the tro-tros, and one other form of transport: often the tricycle but in a few cases people also mentioned motorcycles or light trucks.

Tro-tros serve all the communities along the surveyed road on a regular basis. There is a somewhat complicated arrangement between the GPRTU Wechiau branch and the GPRTU Wa branch, to reduce direct competition and any confrontation. Basically, the Wechiau based tro-tros leave for Wa in the morning, and no competition of the Wa-based tro-tros is allowed at that time. But after one o'clock in the afternoon the Wa-based tro-tros start to take over, reversing the first arrangement. This tends to minimise the risk that tro-tros run half-full while giving all operators the opportunity to make some money. For the users, this arrangement is not necessarily detrimental – in the end it does not matter which branch provides the travel opportunity – but there are examples where tro-tros travel and pass a locality empty and not being allowed to pick up passengers. What is clear is that the suppliers operating along the road can easily deliver to meet the demand.

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

Means of transport	Minibus		Light truck		Motor tricycle		Motorcycle	
Gender of respondent	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Sample size (N)	**14**	**15**	**3**	**1**	**8**	**8**	**5**	**4**
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	★★☆☆☆	★★☆☆☆	★★☆☆☆	★☆☆☆☆	★★☆☆☆	★☆☆☆☆	★☆☆☆☆	★★☆☆☆
Average	**2.3**	**2.3**	**2.7**	**2.6**	**2.5**	**2.6**	**2.4**	**2.3**

Satisfaction for all transport types

Gender of respondent	**M**	**F**
Facilities at roadside stops	★★☆☆☆	★☆☆☆☆
Feeding intermodal connectivity	★★★★☆	★★★☆☆
Linking intermodal connectivity	★★☆☆☆	★★★☆☆
Average	**2.7**	**2.4**

The more stars (or the higher score) the better. ★☆☆☆☆= Very dissatisfied (= 1). ★★☆☆☆= Dissatisfied (= 2). ★★★☆☆= Medium (=3).★★★★☆= Satisfied (= 4). ★★★★★= Very satisfied (= 5).

Tro-tros at Wechiau only leave when they are full, which results in long waiting times at the start of the journey. It also means that people half-way the road have to wait even longer before encountering a tro-tro which has sufficient space because some passengers alighted en-route. Alternatively, a vehicle, which may leave the start-station filled with passengers but not overloaded, can take more passengers on board along the route, resulting in sometimes serious cases of overloading (including passengers travelling on the roof of the tro-tro).

Table 5 presents satisfaction levels, disaggregated for gender, for a number of transport service indicators. Some of the highest scores are for small trucks, which are liked for the low freight charges and proper handling of goods. They are also considered to be a safe form of transport, security wise. The motor tricycle is, as perhaps can be expected, liked for its ability to transport small and medium freights, although the cost for this is deemed too high, particularly for small freights. Motorcycles are liked for their limited journey times, reflecting the fact that they will not stop and wait for more passengers, and –particularly by women – for their comfort and courier services. Interestingly, the main mover of people – mini-buses – is considered 'medium' at best, and judged as 'dissatisfied' for key aspects such as 'fares'; 'journey times' and 'service predictability'.
The different aspects of 'comfort' are, with the exception of the motorcycle, also deemed as being 'dissatisfied' or 'very dissatisfied'. It is discouraging to realise that not only do rural people (often poorer than their urban counterparts) pay a premium for transport, but that they also get less in return for that extra money: bad roads, old vehicles, crammed vehicles and no roadside stop facilities. This is exemplified by users of commercial modes of transport, particularly the tro-tros in the rural communities. It is not surprising that comfort was, generally, scored so low (one to two stars) by users of mini-buses and motor-tricycles which provide the bulk of rural passenger transport services in the Guinea savannah ecological zone.

What is remarkable is the significant gender difference in use between the minibus, motor tricycle and motorcycle: women prefer to use the minibus, with the motor-tricycle and motorcycle use being dominated by males. This may be explained by fact that unlike most men, women tend to travel mostly with accompanied loads which they know can be handled better by the mini-buses. Mini-buses have carriers or the load can be kept inside, which is particularly useful during the rainy season.

The number of tro-tros and the number of journeys each one makes increases during market days. However, most of the trips are concentrated during the early morning and early evening – when people go to and come back from the market. In between, transport opportunities can still be quite limited. The alternative for the tro-tros is the cargo tricycle, which although (rightly) seen as an inferior mode of transport, is gradually becoming more popular. Within Wa itself passenger tricycles (the Indian 'tuk-tuk') have become so popular that car taxis are seldom used (these now operate on

the main roads). The passenger tricycles were introduced by the former President, but on the basis of the 2012 legislation (which ban the use of two or three wheelers for commercial passenger services) are in effect illegal. Clearly, the cargo tricycles are the rural answer to the popularity of these urban-based passenger transport services. They go where tro-tros do not reach and seldom wait to be filled up completely before starting the journey, knowing that they will pick up passengers and cargo along the road. Currently, safety may be an issue but once the ban is lifted, these services could be regulated and safety compliance can be enforced.

A key concern of nearly all the interviewed users was security. There have been a number of armed robberies along the road, with the robbers targeting motorcycles and tro-tro passengers. Dawn and just after sun-set are the most notorious times, and some users indicated that when conducting business in Wa, they would return home around 4 or 5 o'clock– irrespective of whether the business has been completed – just to be back before dark. Last December a police-man following up on an armed robbery incident was shot dead. The interviewees regularly accuse Fulani herdsmen of being involved in these armed robberies, perhaps influenced by the fact that they tend to be strangers moving from one area to another. But other interviewees, while blaming again the Fulani, argue that some of the notables who have cattle looked after by the Fulani, do at least have knowledge about it or even connive with them. In any case, culprits are seldom caught (and the involvement of the Fulani is not backed up by data) and with only one vehicle at its disposal, the Wechiau police have a near impossible task in preventing this.

Figures 9-12 (clockwise from top-left): Leaving the Wechiau market in a cargo motor tricycle; Disabled interviewee; Loading a bicycle; Head-loading firewood.

3.4 Operator perspectives

Four (4) operators of tro-tros (three mini-bus and one midi-bus operators) were interviewed. Due to the operating system, as agreed between the Wa and Wechiau GPRTU branches, the tro-tros seem to operate only at half its capacity. That is, two trips on a non-market day and a maximum of four trips on a market day, suggest that a lot of time is wasted with waiting for one's turn. Added to this are the relatively high maintenance costs of the vehicles, given the poor condition of the road and the regular overloading. On overloading, the normal loads are 14 passengers for mini-buses, but loads of 26 passengers (usually 18 seated and crammed and eight others on the roof carrier) are typical on the market days and about 23 passengers are common on non-market days. Few journeys and high maintenance costs result in a marginal profit. This in turn makes operator/owners to allow

for overloading and also to operate vehicles which are close to the end of their working life, making them cheap to purchase.
Three (3) owner/operators of cargo tricycles were interviewed. A (very) small cargo tricycle hub has emerged in Wechiau and these can be hired very much like commercial motorcycle taxis (which were not present here). One of the interviewed cargo tricycle owners had purchased (or more exactly, traded in his motorcycle plus additional cash) the tricycle to be able to transport his agricultural produce to the markets, and while still being a farmer, used his tricycle for providing transport services during the less busy dry season. Others operate the tricycles all year around and are either the owner or hire it from a 'big man'. Hire-purchase arrangements are not common.

According to a motorcycle and tricycle shop-owner, the number of tricycles sold on a yearly basis is gradually increasing. At first the shop-owner was willing to set up a credit arrangement with the buyer, but after some of the buyers defaulted on their repayment commitments, the shop no longer offers this facility. More generally, all tricycle owners interviewed indicated that it is nearly impossible to obtain credit or a loan for the purchase of a tricycle, which can be purchased at around 5,400 Cedis (USD 1,350.00).

Table 3 presents the contributions to the annual passenger numbers for each of the means of transport: minibuses took the largest share with 52%, followed distantly by motorcycles with 18% (but again, note that these are not okadas - commercial motorcycle taxis - but semi-commercial at best) with motor-tricycles taking 15% of the passengers. The picture changes somewhat when looking at freight, with the minibuses transporting 29%, followed closely by motor-tricycles, increasing their share to 27% and the motorcycles moving 14% of the annual freight. Car taxis were completely absent on the road because they were unprofitable to run and their place is gradually being taken over by the tricycles. The IMTs heavily depend on freight for their revenue, with motorcycles receiving nearly 70% of their income from this and motor tricycles – perhaps not unexpected – receiving over 80% of their income from freight transport. This compares to about 40% for the minibuses. The fare for passenger and freight transport is more or less the same for the minibus and the motor tricycle, but for the motorcycle is much more expensive. If these would be run on a strictly commercial basis the operator may be forced to ask even higher prices for transport.

Figures 13-16 (clockwise from top-left): Public transport waiting at Wechiau market; Heading to Wechiau market in a small truck; Motorcycles waiting at market; Transport of groundnut in cargo motorcycles.

Table 6: Summary of operator perspectives

Means of transport	Midi-bus	Minibus	Motor tricycle	Motorcycle
Sample size (N)	***1***	***3***	***3***	***1***
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	★★☆☆☆	★★☆☆☆	★★★☆☆	★★☆☆☆
Overall Average	**2.0**	**1.9**	**1.9**	**1.6**

The more stars (or the higher score) the better.
★☆☆☆☆ *= Very dissatisfied (= 1).* ★★☆☆☆ *= Dissatisfied (= 2).*
★★★☆☆ *= Medium (=3).* ★★★★☆ *= Satisfied (= 4).* ★★★★★ *= Very satisfied (= 5).*

Both types of operators complained about the condition of the road. The many potholes forced the tro-tro drivers to slow down and the road roughness resulted in more regular flat tyres, while for the tricycle operators it could result in their vehicle sometimes tipping over to the side. They also shared an anxiety regarding security, with all knowing about armed robbery cases occurring during the past year.

Operators of all means of transport paint a rather grim picture of how it is to be a public transport provider. Set aside the 'associations' indicator, no other aspect asked for scored more than 'medium' and most are in the 'very dissatisfied' or 'dissatisfied' category. A key issue which scores 'very dissatisfied' across the four different means of transport and across three related indicators, is the access to credit and working capital. It seems that the transport providers operate in an environment of marginal gains with little if any financial support available. This finding is further underscored by the lack of 'regulatory incentives'. Another concern is the security risks, with a number of armed robberies having taken place over the last year.

3.5 Regulator perspectives

To obtain the perspective of the regulators we interviewed a police officer at Wechiau police station and GPRTU representatives of the Wechiau and Wa branches. All three interviewees indicated that the cargo tricycles did operate in the absence of any rules and regulations concerning commercial mixed freight/passenger and/or passenger transport. The law that two and three wheeled vehicles are not allowed to transport passengers for commercial reasons was not enforced, neither by the police-officer nor by the GPRTUs regulators, reflecting an awareness that the tri-cycles provide an essential transport service in rural areas.

The police officer indicated that the trotros operating along the surveyed road complied with the regulations, taxes and laws. This was corroborated by the GPRTU regulators who also indicated that checks were regularly conducted, particularly at the Wa central station, to prevent overloading at

the station. We observed during the study that each mini-bus leaves as soon as it is filled with its normal load of 14 passengers for the next to start loading. Yet, vehicle overloading took place en-route by picking other awaiting passengers.

Table 7: Summary of regulator perspectives

Means of transport	Midi-bus	Minibus	Light truck	Motor tricycle	Motorcycle
Vehicle technical compliance	★★★★★	★★★★★	★★★★★	★★★★☆	★★★☆☆
Vehicle fiscal compliance	★★★★★	★★★★☆	★★★★★	★★☆☆☆	★★☆☆☆
Insurance compliance	★★★★☆	★★★★☆	★★★★☆	★☆☆☆☆	★★☆☆☆
Operational compliance	★★★★☆	★★★★☆	★★★☆☆	★★☆☆☆	★★★☆☆
Safety compliance	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆	★★★☆☆
Environmental compliance	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Regulatory planning framework	★★★☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆	★★☆☆☆
Safety of the road	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆
Overall Average	**3.5**	**3.5**	**3.1**	**2.1**	**2.3**
Number of people interviewed (N)	3				

The more stars (or the higher score) the better.
★☆☆☆☆= Very dissatisfied (= 1). ★★☆☆☆= Dissatisfied (= 2).
★★★☆☆= Medium (=3).★★★★☆= Satisfied (= 4). ★★★★★= Very satisfied (= 5).

Table 7 paints a diverse picture, but not a surprising one. Midi- and mini-buses and light trucks score okay to good on the first four components, related to technical, fiscal and insurance compliance. Motor tricycles and motorcycles, with limited requirements for these aspect, score worse. What all modes of transport have in common is their satisfactory compliance with environmental issues. The road itself is judged 'dissatisfactory', regardless of the vehicle that operates on it. The current deteriorated condition of the road makes respondents score very low (one star) for the road. Road safety features such as warning, regulatory and information signs are generally absent. Additionally, maintenance of the surveyed road is woefully inadequate.

Figure 17 (left): Wechiau GPRTU 'office'

Figure 18 (right): View of Wa station from Wa GPRTU office

3.6 Development perspectives

All modes of transport are considered to make significant contributions to development. Motor tricycles score full stars for agriculture development and one can understand why: they are perfectly suited to transport considerable freight, and have the advantage of being agile enough to leave the road and drive to the actual farm. In addition, they are relatively cheap. The motorcycles also pick up full stars for a number of categories with their flexibility and availability in times of (medical)

emergencies particularly praised. As observed above, women are the main users of mini- and midi-buses and give (nearly) full stars to the tro-tros' impact on women's empowerment. Some of the lower scores are for environmental impact, particularly for light trucks and motor-tricycles, which are often used for the transport of firewood and charcoal, contributing to deforestation.

Table 8: Summary of Development Perspectives

Means of transport	Midi-bus	Mini bus	Light truck	Motor tricycle	Motorcycle
Agricultural facilitation	★★★★★	★★★★☆	★★★★☆	★★★★★	★★★★☆
Enterprise/trade facilitation	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★☆
Women's empowerment	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★☆☆
Disabled people's empowerment	★★★★☆	★★★★☆	★★★☆☆	★★★★★	★★☆☆☆
Young people's empowerment	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★★
Maternal health needs	★★★★☆	★★★★☆	★★★☆☆	★★★★★	★★★★★
Medical service transport	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★★
Education-related transport	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★★
Mobile phone and ICT integration	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★★
Average of the above nine issues	**4.2**	**4.2**	**3.4**	**4.3**	**4.2**
Cultural impact	★★★★☆	★★★★☆	★★★★☆	★★★★★	★★★★★
Environment impact	★★★★☆	★★★☆☆	★★☆☆☆	★★☆☆☆	★★★☆☆
HIV/Aids impact	★★★★☆	★★★★☆	★★★☆☆	★★★★☆	★★★★☆
Average of the above three issues	**3.8**	**3.7**	**3.0**	**3.4**	**3.8**
Integration with feeder transport	★★★★☆				
Integration with external transport	★★★★☆				
Road maintenance adequacy	★★☆☆☆				
Number of interviews (people answer questions relevant to their experience)	4				

The more stars (or the higher score) the better, from the development perspective. For example, the contribution of each mode of transport to the achievement of development goals in that area of concern has been rated by the people interviewed as:

★☆☆☆☆ *= Very poor (= 1).* ★★☆☆☆ *= Poor (= 2).*

★★★☆☆ *= Medium (= 3).* ★★★★☆ *= Good (= 4).* ★★★★★ *= Very good (= 5)*

One of the persons interviewed for a development perspective was the head teacher for the senior high school in Lassia, located soon after the surveyed road branched off the national road. Both the tro-tros and cargo tricycles were, according to the interviewee, making a significant contribution to the various development indicators, such as agricultural, health and trade. An interesting point was raised by the head teacher, and echoed by other interviewees, regarding the impact of public transport provisions on cultural events, particularly funerals. Funerals in Upper West, as in other parts of Ghana, are big events. But because the body has to be buried the same day, there used to be little opportunity for family, relatives and friends to travel to the particular community where the funeral was taking place. With the presence of tro-tros (often hired for the day) and tricycles this has changed. Funerals have grown into significant events, with hundreds of people attending, and small market activities taking place as well (people selling drinks and food).

The health director of the Wechiau hospital was also interviewed and asked to provide a development perspective. The contributions of both the tro-tros and tricycles on the various development indicators were again confirmed. For general health and maternal health, some more

specific and informed comments were given. Although the hospital has its own ambulance, sometimes tro-tros are hired to transport patients to the main Wa hospital. For transport from the scattered villages to Wechiau hospital, health users use both private motorcycles (hired for the trip) and motor-tricycles, or basically whatever is available. Another issue raised by the health director is the fact that there is no paved connection between Wechiau and Wa, which means that Wechiau is a less attractive place for health professionals to work in.

3.7 Conclusions

Public transport is provided by tro-tros which are mainly mini-buses and a few smaller midi-buses. They serve the road on a daily basis and nearly double in numbers on market days. They contribute 52% of passenger movements and nearly 30% of small freight movements. Demand is limited during the non-busy days and during market days in between the early and late hours. Some of the demand is served by the cargo tricycles, which are sometimes preferred by the waiting tro-tro passengers, as they are more likely to leave sooner. There is no car taxi service on the road because operators found them to be unprofitable. Together, motor-tricycles and motorcycles move nearly one-third of the passengers and over 40% of small freight. It is not completely clear if limited demand results in limited supply or if limited supply translates into limited demand: that is that people are adjusting their needs to the travel opportunities on offer. The fact that cargo motor-tricycle transport is growing, albeit not rapidly, is an indication that there still is an unmet need for transport services, although not necessarily in the form of more tro-tros.

The population is overwhelmingly dependent on semi-subsistence agriculture, with surplus sold at one of the frequent markets. Cash crop production is limited to ground-nuts and more recently, cashew. Most have cattle. Some of the farmers who produce a lot of cash crops, may be able to invest in a cargo tricycle, which will not only reduce their costs of transporting the often voluminous bags of ground nuts to the market, but can also be used to earn some extra money when operating it on a commercial basis during less busy farming periods. To some extent, a clear cash crop season with significant income in a short period – rather than a constant trickle as a result of selling surplus food crops – is helpful when people want to buy, for example a tricycle, given that obtaining credit for the purchase of tricycle is nearly impossible.

An issue raised by all respondents, whether interviewed as users, regulators, operators or for their perspectives on development, is security. Triangulating the responses of the various respondents, at least 6 or 7 serious security incidents have happened on the surveyed road in the last year. These were armed robberies where motorcycles have been taken and passengers being robbed. There is no easy solution and even doubling the police force and their fleet may do little to counter this. Robberies take place during twilight or when it is dark and the robbers can easily make a quick escape into the bushy area. It was suggested by some that, because the robbers position themselves where vehicles have to slow down considerably because of potholes, paving the road would make robbery more difficult because vehicles could travel at a higher speed. However, the Wa GPRTU representative told us that buses travelling along the main highway towards Tumu often had an armed police officer with them, despite the fact that they were travelling at reasonable speed.

It is recommended that the surveyed road should be maintained regularly to improve the riding quality and if finances allow it, should be paved to attract more operators to compete for more passengers and goods. The significant role of IMTs in rural passenger transport services urges policy makers to look again at LI 2180 with a view to reviewing and changing it to accommodate such services.