

Enhancing understanding on safe motorcycle and three-wheeler use for rural transport

Final Country Report: Tanzania



Transaid, Amend and TRL

RAF2114A

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Abstract

This Tanzania Country Report presents the Tanzania-specific findings of the project ‘Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks’. This project was carried out in Ghana, Kenya, Tanzania and Uganda between September 2017 and January 2019.

Based on the findings of a comprehensive literature review and a stakeholder mapping and engagement exercise, an in-depth study was designed, including a number of activities that were carried out in all four countries and a number of country-specific activities. Activities included reviews of the regulatory framework and training, a survey of the benefits and disbenefits of motorcycle and three-wheeler taxis, key informant interviews and focus group discussions. In Tanzania, particular focus was put on rider training and the operations of motorcycle taxi associations.

The study has revealed that motorcycle taxis are very important for rural travel, and are very popular among rural communities. They are especially important for health-related trips and also provide economic advantages, creating employment and supporting agriculture.

As well as the many benefits that motorcycle taxis provide, riders and passengers also suffer from crashes, crime, abuse and health issues, and they create safety risks for other road users. A very small proportion of people in rural communities does not – or cannot – use motorcycle taxis, but for the vast majority they are the most common form of day-to-day transport.

The results of the study can be used by the Tanzanian government and others to better understand the issues related to motorcycle taxis in rural areas and to develop policy and practice to maximise their benefits and minimise the disbenefits. This will include uptake of the two Tanzania-specific manuals that have been developed as part of this project: a motorcycle taxi instructors’ manual and an operating manual for motorcycle taxi associations.

Key words

Motorcycles, Motorcycle taxis, Three-Wheelers, Rural transport, Rural access, Safety, Training, Regulatory framework, Enforcement, Tanzania

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Research for Community Access Partnership (ReCAP)

Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

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Acronyms, units and currencies

ABS	Anti-lock braking system
AfCAP	Africa Community Access Partnership
AsCAP	Asia Community Access Partnership
DFID	Department for International Development (United Kingdom)
DID	Division of Infrastructure Development (Tanzania)
GBP	British pound sterling
GPS	Global positioning system
IRF	International Road Federation
km	Kilometre(s)
NGO	Non-governmental organisation
NIT	National Institute of Transport (Tanzania)
PMU	Programme Management Unit (of ReCAP)
PO-RALG	President's Office for Regional Administration and Local Government (Tanzania)
PPE	Personal protective equipment
ReCAP	Research for Community Access Partnership
RTA	Road Traffic Act (Tanzania)
SACCOS	Savings and Credit Cooperative Societies
SMS	Short message system
SUMATRA	Surface and Marine Transport Regulatory Authority (Tanzania)
TDSA	Tanzania Driving Schools Association
TARURA	Tanzania Rural and Urban Roads Agency
TRA	Tanzania Revenue Authority
TRL	Transport Research Laboratory
TZS	Tanzanian shilling (GBP 1 = TZS 3,001, at 1 st July 2018)
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid (Department for International Development, UK)
UNICEF	The United Nations Children's Fund
USD	United States dollar (GBP 1 = USD 0.75724, at 1 st July 2018)
VAT	Value Added Tax
VETA	Vocational Educational and Training Authority (Tanzania)
WHO	World Health Organization

Executive summary

The project ‘Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks’ was carried out in Ghana, Kenya, Tanzania and Uganda between September 2017 and January 2019.

The use of motorcycles in many African countries has increased greatly in recent years. Motorcycles are often used as taxis, with riders¹ charging a fare to carry passengers or goods. In rural areas, motorcycle taxis play a crucial role in connecting people to services and farmers to markets, and in many countries motorcycles are the most commonly found vehicle on rural roads. As motorcycles often travel off the road, along paths and tracks, they have changed the nature of rural transport, effectively ‘widening’ the impact of roads.

Motorised three-wheelers are also used in some countries, although their numbers are far fewer, especially in rural areas.

In some African countries, including Ghana, the use of motorcycles and motorised three-wheelers to carry fare-paying passengers is banned, although these bans are not always enforced, especially in rural areas. In Uganda, the use of only motorised three-wheelers as taxis is banned. In Tanzania, the use of both motorcycles and motorised three-wheelers as taxis is legal.

The overall aim of this project is to improve knowledge and understanding concerning effective ways of enabling rural people to benefit from the safe use of motorcycles and three-wheelers, with an emphasis on rural motorcycle taxis, rider training, appropriate regulatory frameworks and realistic enforcement methods.

This Tanzania Country Report provides a brief introduction to the project and then describes the findings of the Tanzania research activities. It presents brief conclusions and a set of recommendations specific to the Tanzanian situation. However, for more detailed discussion and more comprehensive recommendations, the project’s Final Report will be of interest to readers.

¹Throughout this report, the term ‘rider’ is used to mean the driver or operator of a motorcycle or three-wheeler. The term rider does not include passengers.

1 Introduction

The research project 'Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks' was carried out by a consortium led by Transaid and including Amend and TRL (the UK's Transport Research Laboratory).

1.1 Research Objectives

The overall aim of the project was to improve knowledge and understanding concerning effective ways of enabling rural people to benefit from the safe use of motorcycles and three-wheelers, with an emphasis on rural motorcycle taxis, rider training, appropriate regulatory frameworks and realistic enforcement methods.

1.2 Research Countries

The research project covers four countries: Ghana, Kenya, Tanzania and Uganda, shown in Figure 1.



Figure 1 The four project countries

According to the latest data available from the World Health Organization (WHO, 2015) at the time that this project was developed, motorcycles and motorised three-wheelers made up 23% of the total registered vehicle fleet in Ghana, 37% in Kenya and 34% in Tanzania. Comparable data was not available for Uganda at the time this project was developed, but more recent WHO data published during the course of this project put the figure for Uganda at 59% (WHO, 2018).

1.3 Research Methodology

Three main activities were conducted across all four project countries. These activities were:

- A review of motorcycle and three-wheeler taxi-related regulatory framework and enforcement methods
- A review of motorcycle and three-wheeler taxi rider training

- A survey of benefits and disbenefits of motorcycle and motorised three-wheeler taxis among riders and other users in rural areas

An investigation into the potential of technology to enhance safe motorcycle and three-wheeler use for rural transport was also carried out in three of the project countries – Kenya, Tanzania and Uganda – and also in Rwanda, which is known throughout Africa as a centre for mobile phone technology. Ghana was not included in this investigation.

In addition, country-specific activities were undertaken, addressing specific research gaps identified during the Inception Phase. These activities were:

- In Ghana, reanalysis of existing motorcycle and three-wheeler related data with a rural focus
- In Kenya, a study to understand the health-related benefits and impacts of motorcycle and three-wheeler use
- In Tanzania, the development of two manuals: one to improve the operations of motorcycle taxi associations, and one for rider training
- In Uganda, investigations to understand the barriers to motorcycle and three-wheeler taxi use faced by some members of the study communities

Following completion of the research activities, a draft country discussion paper was produced for each of the four countries, based on an initial analysis of the data.

These draft discussion papers were presented at a series of workshops – firstly a 4-day workshop that brought two key government stakeholders from each of the four countries together with the project team, and secondly four 1-day workshops (one in each country) of around 30 stakeholders each.

These workshops allowed the project team to present the initial findings of the different research activities, including comparisons between the four countries, and provided opportunity for questions to be asked and ideas to be shared.

1.4 Background to Motorcycles and Three-Wheelers in Tanzania

In Tanzania, as in Kenya and Uganda, motorcycle taxis are known as ‘boda boda’. The number of motorcycles in the country has grown very rapidly from the early 2000s. Latest data from the WHO shows that in 2016, there were over 1,280,000 registered motorcycles and three-wheelers in Tanzania (WHO, 2018) – the highest number of any of the four countries in this study. Motorcycles and three-wheelers make up 59% of the total vehicle fleet – the joint highest proportion of the four countries in this study, together with Uganda.

In rural areas, studies have shown that over 90% of motorised vehicles on rural roads are motorcycles, and that crash rates are high. In the centre of Dar es Salaam, Tanzania’s largest city, motorcycles have been banned from operating as taxis, due to road safety concerns and a perceived association between motorcycles and crime. However, enforcement of this ban is intermittent. Three-wheelers are mainly found in urban areas.

Attempts to regulate the commercial use of motorcycles and three-wheelers have largely been unsuccessful. A Memorandum of Understanding between SUMATRA (the public transport regulatory authority) and local councils to issue business licences, encourage motorcycle taxi operators to form associations and generate revenue for road safety campaigns has seen low levels of uptake.

In 2015, a motorcycle rider training curriculum was developed by Transaid in conjunction with Tanzania’s Surface and Marine Transport Regulatory Authority (SUMATRA), with funding from AfCAP. During the Inception Phase of this project, it was identified that the uptake of this curriculum had been limited.

2 Research Findings in Tanzania

2.1 Stakeholder Mapping and Engagement

During the Inception Phase of the project, the research aims were introduced to the two AFCAP partner institutions: the Division of Infrastructure Development (DID) (in the President's Office for Regional Administration and Local Government (PO-RALG)) and the Tanzania Rural and Urban Roads Agency (TARURA). SUMATRA (under the Ministry of Works, Transport and Communications), and the Traffic Police (under the Ministry of Home Affairs) were both identified as key stakeholders, and the project was introduced to senior officers through in-person meetings.

In total, the stakeholder mapping exercise in Tanzania identified a total of 31 stakeholders who have some responsibility or interest related to motorcycle and three-wheeler taxis in rural areas, representing government, private sector, and civil society. A full list of these stakeholders can be found in the project Inception Report.²

2.2 Review of Regulatory Frameworks and Enforcement Methods

Motorcycle and three-wheeler related legislation is found in the Road Traffic Act (RTA) of 1973 and its various amendments, and the Transport Licensing (Motor Cycle and Tricycles) Regulations, 2010 (commonly referred to as the 'SUMATRA Regulations'). The RTA applies to all motorcycle and three-wheeler riders, while the SUMATRA Regulations apply to motorcycles and three-wheelers that charge a fare to carry passengers or goods. The SUMATRA Regulations require that riders of motorcycle and three-wheeler taxis obtain a road service licence or 'business licence'.

Eli Mgonja, former Rector of the National Institute of Transport and a member of a team of experts formed to advise the Tanzanian government on whether motorcycles should be allowed to provide public transport, in 2010:

"At the beginning, I was very negative [about allowing motorcycles to be used as taxis]. I saw that accidents were rampant and I opposed the introduction of motorcycles as a means of public transport. While we were discussing it, we didn't understand their contribution in rural areas. If someone is stuck in a rural area they can't move. In the villages, motorcycle taxis are very useful - they are actually ambulances and had we banned them, we would have denied opportunities for people in rural areas"

There are some clear weaknesses in the legislation, such as there being no clear legislation prohibiting the use of a mobile phone while riding a motorcycle. There are also some inconsistencies between the two sets of legislation, such as the SUMATRA Regulations requiring that both motorcycle riders and passengers wear helmets, but the RTA only requiring that the rider wears a helmet.

The RTA and the SUMATRA Regulations are both applicable nationwide, but some additional regulations exist which apply to specific areas only. For example, in Dar es Salaam there are regulations that prohibit motorcycle taxis from entering and operating within the Central Business District.

In general, it has been identified that implementation and enforcement of the RTA and SUMATRA Regulations related to motorcycles and three-wheelers is challenging to the relevant government authorities – the Traffic Police and SUMATRA, respectively. Specific challenges exist in rural areas, in particular around awareness and enforcement.

In rural areas, there is a lack of awareness among riders and passengers of much of the legislation that applies to motorcycles and three-wheelers, including penalties for non-compliance. There is also a lack of

²<http://www.research4cap.org/Library/BishopBarber-AmendTransaid-2017-EnhancingUnderstandingSafeMotorcycleThreeWheelerUse-Inception-AfCAP-RAF2114A-180130.pdf>

understanding of the reasons behind legislation. For example, people living in rural communities may never have been educated about the benefits of wearing a helmet in the event of a crash. When helmets are worn it is often only because of a form of enforcement and not through an understanding of the safety benefits.

Very few Traffic Police officers cover rural areas away from district centres or major highways. Where regular police officers are to be found in rural areas, they often do not possess specialist knowledge of traffic regulations. This can lead to a lack of enforcement of traffic laws in rural areas.

Other challenges to enforcing the law in rural areas include political influence and interference, lack of resources and the safety of officers.

Where attempts are made to enforce a law, it is not uncommon for the accused rider to use a connection to a person of influence to avert the charge, and police officers are at risk of losing their jobs in extreme cases. During the investigations into enforcement in rural areas, it was identified that in some areas local politicians and officials own motorcycles and three-wheelers.

Police officers struggle to apprehend riders committing offences. Riders often avoid police checkpoints or ignore an officer's signal to stop and speed away. In these circumstances there is very little the officer can do and very little likelihood that the rider and motorcycle will be identified and prosecuted. Officers do not have cameras or other equipment, and often rely themselves on motorcycle taxis for transport. Officers risk their personal safety enforcing the law, as reports of groups of riders collectively becoming violent towards enforcement officers is not uncommon.

Helmet use is an area in which strong enforcement efforts are being made by the Traffic Police in some areas. For example, in Bagamoyo District in Pwani Region, between the 1st and 20th May 2018, at least 168 riders were fined for not complying with the law requiring them to wear a helmet.

Another law that officers at Traffic Police Headquarters say is currently being strictly enforced is the requirement to have insurance. However, at the district level, officers admit that about 90% of riders do not have the necessary insurance.

Some new regulations are planned to be introduced during 2019. These include requirements for motorcycle taxi riders to be registered at ward level and to wear high visibility vests marked with their identification number. New regulations will also cover the carriage of goods (which has previously not been legislated for). The Director of Transport Regulation at SUMATRA is also keen to research opportunities for requiring specific Passenger Service Vehicle insurance for motorcycle and three-wheeler taxis.

2.3 Review of Motorcycle and Three-Wheeler Taxi Rider Training

As in Kenya, in Tanzania, a motorcycle rider is not legally required to have undertaken any formal motorcycle training before being issued with a licence, although the Tanzania Revenue Authority's computerised licensing system does require that details of a training certificate be entered before the licence is issued. This assumes a high standard of driving is demonstrated in order to obtain a certificate.

However, motorcycle and three-wheeler rider training provision is limited in Tanzania, and is all but non-existent in rural areas. Driving schools are located where there are significant numbers of customers, hence their location in cities and large towns. Communities in rural Tanzania have little or no immediate access to training, other than occasionally through projects funded by donors such as an initiative by BG Group to train approximately 600 motorcycle taxi riders in Mtwara region in 2012.

With little or no access to formal training and testing, the training of rural riders often consists of what knowledge their friends and family can share with them, focusing on the basics of operating and manoeuvring the vehicle. Some simply teach themselves. Many rural riders have never taken a test and so operate without a licence.

The rider training that is available is disjointed and varies in quality. Training is often only theory-based, without a practical training component, and is limited in its scope and duration. It is often run for short periods (one or two hours) per day over a number of days (generally up to five). Many driving schools lack

access to standardised training materials for the training of motorcycle and three-wheeler riders and therefore develop their own materials, which vary significantly from school to school. In some cases it was found that schools adopt training materials that are used to train car drivers, so the focus is often not appropriate to motorcycle riders.

In 2015, in conjunction with SUMATRA and supported by AfCAP, Transaid developed a curriculum for training motorcycle and three-wheeler riders with a focus on motorcycle taxis. This curriculum was translated into Swahili by SUMATRA and passed to the Traffic Police for dissemination. However, between 2015 and 2018, dissemination and uptake of the curriculum was slow and many driver training schools were unaware of the curriculum's existence. A lack of training materials appears to have hampered effective training, and the official motorcycle and three-wheeler riding tests have not sufficiently established the competence of the rider.

As part of this project, investigations were undertaken into the reasons behind the slow uptake of the curriculum. One key finding of these investigations was that while stakeholders recognised the need for the curriculum, the limited knowledge of instructors, their difficulties in converting the requirements of the curriculum into effective training for riders, and a lack of training material, restricted its use and resulted in driving schools offering training that varied greatly in both content and quality.

To address this, as part of this project, a manual was developed to complement the curriculum. The manual itself is available in the ReCAP Rural Access Library³ and on the Transaid Knowledge Centre.

2.4 Survey of Benefits and Disbenefits of Motorcycle and Three-Wheeler Taxis

2.4.1 Survey locations

The survey of benefits and disbenefits was carried out in eight different settlements across Tanzania. Table 1 outlines the eight settlements, Figure 2 shows their locations within Tanzania, and more detailed information is provided in Tables 2 to 5 and Figures 3 to 6.

Table 1 Survey Settlements, Tanzania

Agro-Ecological Zone	Region	District	Settlement
Southern Highlands	Mbeya	Kyela	Lugombo
Southern Highlands	Mbeya	Kyela	Tenende Juu
Southern Highlands	Mbeya	Rungwe	Kandete
Southern Highlands	Mbeya	Rungwe	Ntuso
Coastal	Pwani	Bagamoyo	Kimarang'ombe
Coastal	Pwani	Bagamoyo	Ludiga
Coastal	Pwani	Kisarawe	Kifuru
Coastal	Pwani	Kisarawe	Vigama

³<http://www.research4cap.org/Library/Transaidetal-2019-InstructorsManualCompetencyBasedCurriculumMotorcycleRiderTraining-AfCAP-RAF2114A-190128.pdf>



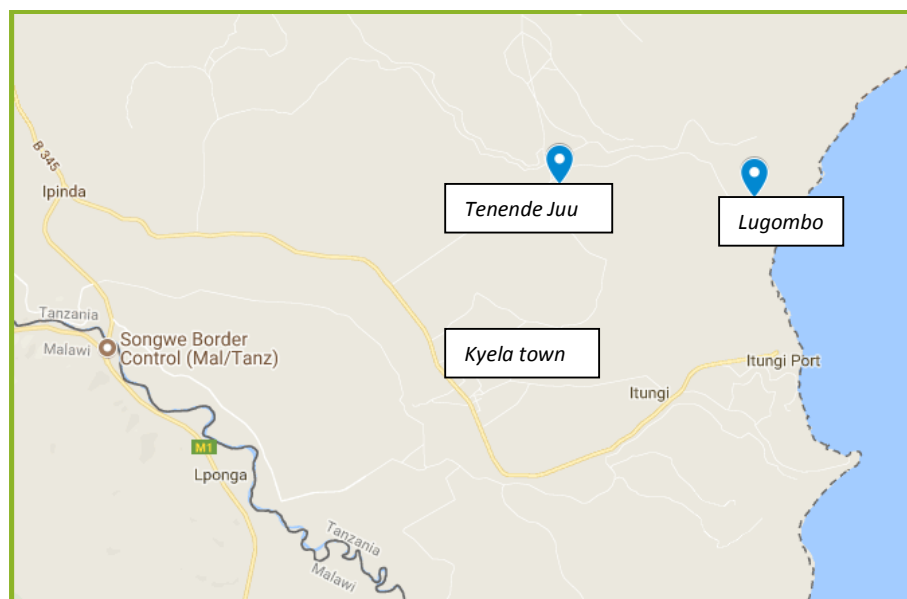
Source: Google Maps

Figure 2 Maps of Tanzania, showing survey locations

Information about the settlements was obtained through interviews with local leaders, discussions with local people and general observation by the project team. This information should be considered as a snapshot of what was found during the short visit to each settlement, rather than a comprehensive profile.

Table 2 Settlements in Kyela District, Mbeya Region

	Lugombo Village	Tenende Juu Village
Location and access	<ul style="list-style-type: none"> • 9 33 13.2S 33 56 27.2E • 130 km from Mbeya city • 14 km from district centre (Kyela town) • 10 km from nearest sealed road • More remote 	<ul style="list-style-type: none"> • 9 33 01.7S 33 53 27.8E • 123 km from Mbeya city • 9 km from district centre (Kyela town) • 5 km from nearest sealed road • Less remote
Transport options	<ul style="list-style-type: none"> • Motorcycles are predominant mode of transport • Inaccessible to vehicles (including motorcycles) during rainy season 	<ul style="list-style-type: none"> • Motorcycles are the predominant mode of transport. Bicycles also very common. • Accessible year round by a good gravel road.
Population	<ul style="list-style-type: none"> • 5,200 people approx. • Majority are young people • Nyakyusa ethnic group 	<ul style="list-style-type: none"> • 700 people approx. • Smallest of the nearby villages • Mainly Nyakyusa ethnic group, also a few others
Economy	<ul style="list-style-type: none"> • Agriculture dependent: Cocoa, rice and palm trees 	<ul style="list-style-type: none"> • Agriculture dependent: Cocoa and rice • Many young men employed as motorcycle taxi riders
Recent development	<ul style="list-style-type: none"> • Combination of motorcycle taxis and mobile phones has improved quality of life 	<ul style="list-style-type: none"> • The introduction of motorcycle taxis has generated employment
Local issues	<ul style="list-style-type: none"> • Cut-off during rainy season • Lack of irrigation system hinders agriculture 	<ul style="list-style-type: none"> • Pressure on land due to proximity to Kyela town • Falling price of cocoa is harming agriculture

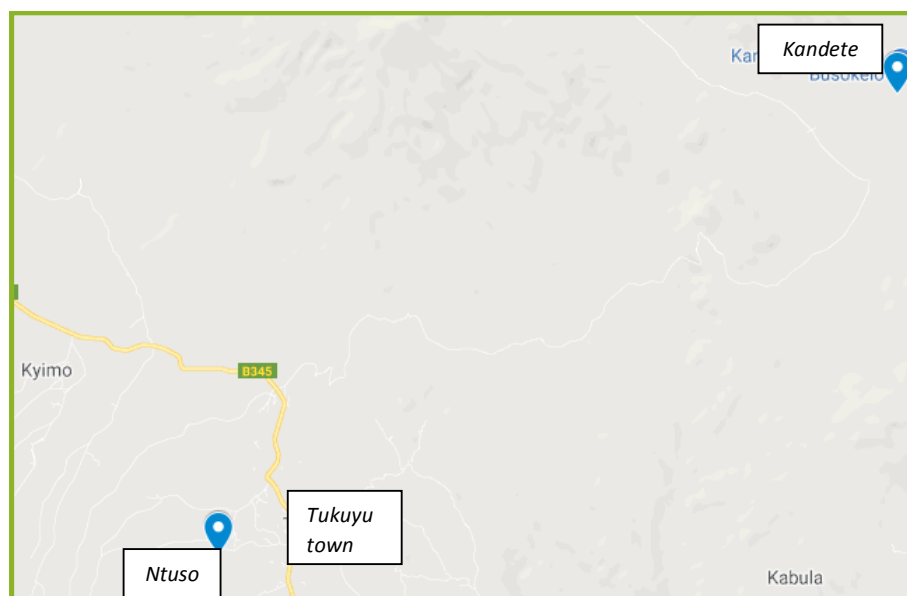


Source: Google Maps

Figure 3 Map of Lugombo and Tenende Juu

Table 3 Settlements in Rungwe District, Mbeya Region

	Kandete Village	Ntuso Village
Location and access	<ul style="list-style-type: none"> • 9 08 59.4S 33 47.5E • 60 km from Mbeya city • 28 km from district centre (Tukuyu town) • 20 km from nearest sealed road • More remote 	<ul style="list-style-type: none"> • 9 15 39.7S 33 37 29.9E • 69 km from Mbeya city • 4.5 km from district centre (Tukuyu town) • 3 km from nearest sealed road • Less remote
Transport options	<ul style="list-style-type: none"> • Shared taxis go to Tukuyu town several times per day • Motorcycle taxis are widely available • Accessible year round 	<ul style="list-style-type: none"> • Shared taxis go to Tukuyu town several times per day • Motorcycle taxis are widely available • Accessible year round, but travel is difficult during rainy season
Population	<ul style="list-style-type: none"> • 12,000 people approx. • Most highly-populated and wealthiest of nearby villages • Many young people • Nyakyusa ethnic group 	<ul style="list-style-type: none"> • 24,000 people approx. • Highly-populated due to proximity to Tukuyu town • Wealthy • Nyakyusa ethnic group make up around 60% of population. Remainder are mixed
Economy	<ul style="list-style-type: none"> • Agriculture dependent: Tea, potatoes, maize. Also milk • Local commercial activities – shops and small businesses 	<ul style="list-style-type: none"> • Agriculture: Bananas and coffee • Proximity to Tukuyu town enables strong trade
Recent development	<ul style="list-style-type: none"> • Most houses now have electricity and piped water • Modern health centre 	<ul style="list-style-type: none"> • Increase in production of cash crops due to easy access to market at Tukuyu town
Local issues	<ul style="list-style-type: none"> • Water shortages during dry season • Speeding motorcycles pose risks to pedestrians, especially children 	<ul style="list-style-type: none"> • Pressure on land due to proximity to Kyela town • Speeding motorcycles pose risks to pedestrians



Source: Google Maps

Figure 4 Map of Kandete and Ntuso

Table 4 Settlements in Bagamoyo District, Pwani Region

	Kimarang'ombe Village	Ludiga Village
Location and access	<ul style="list-style-type: none"> • 6 26 52.4S 38 52 2.9E • 64 km from Dar es Salaam city • 4.5 km from district centre (Bagamoyo town) • 1.5 km from nearest sealed road • Less remote 	<ul style="list-style-type: none"> • 6 26 55.3S 38 29 57.1E • 116 km from Dar es Salaam city • 15 km from district centre (Bagamoyo town) • 7 km from nearest sealed road • More remote
Transport options	<ul style="list-style-type: none"> • Motorcycles are predominant mode of transport • Accessible year round, but travel is difficult during rainy season 	<ul style="list-style-type: none"> • Motorcycles are predominant mode of transport • Accessible year round, but travel is difficult during rainy season
Population	<ul style="list-style-type: none"> • 5,200 people approx. • Many young people • Mix of different ethnic groups 	<ul style="list-style-type: none"> • 12,000 people approx. • Poor compared to Kimarang'ombe • Mostly indigenous Zaramo and Kwele ethnic groups
Economy	<ul style="list-style-type: none"> • Agriculture dependent: Cassava, rice and pineapple • Some local businesspeople and government officials 	<ul style="list-style-type: none"> • Agriculture: Cassava and pineapple • Many young people engaged in selling land to people from other regions
Recent development	<ul style="list-style-type: none"> • Mains electricity supply currently under construction • Police post and dispensary currently under construction 	<ul style="list-style-type: none"> • Mobile phones have made it easier to communicate with 'outsiders' wanting to buy land
Local issues	<ul style="list-style-type: none"> • No irrigation system, so dependent on (unreliable) rains • Few services, as most services are in Bagamoyo town 	<ul style="list-style-type: none"> • Nearest market and nearest secondary school are far away, in Bagamoyo town • No mains electricity supply, and few people own solar panels • Dependent on firewood and charcoal

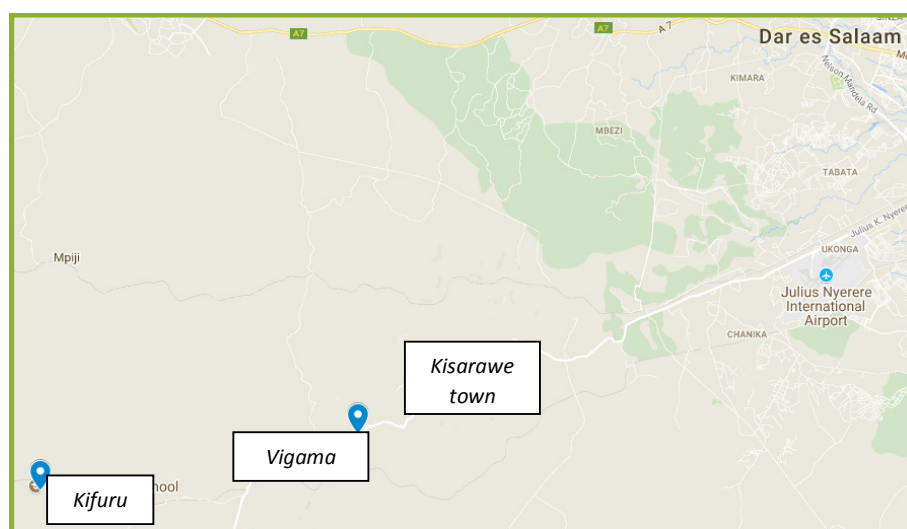


Source: Google Maps

Figure 5 Map of Kimarang'ombe and Ludiga

Table 5 Settlements in Kisarawe District, Pwani Region

	Kifuru Village	Vigama Village
Location and access	<ul style="list-style-type: none"> 6 56 42.1S 38 56 26.7E 49 km from Dar es Salaam city 16 km from district centre (Kisarawe town) 6 km from nearest sealed road More remote 	<ul style="list-style-type: none"> 6 55 33.5S 39 02 53.1E 36 km from Dar es Salaam city 5 km from district centre (Kisarawe town) 1 km from nearest sealed road Less remote
Transport options	<ul style="list-style-type: none"> Motorcycles are predominant mode of transport Inaccessible during rainy season 	<ul style="list-style-type: none"> Motorcycles are predominant mode of transport Accessible year round, but travel is difficult during rainy season
Population	<ul style="list-style-type: none"> 2,500 people approx. Many young people Mix of many different ethnic groups Poor 	<ul style="list-style-type: none"> 3,000 people approx. Many young people Mix of many different ethnic groups Poor
Economy	<ul style="list-style-type: none"> Village was created alongside TAZARA railway line, but the station is now abandoned Agriculture: Cassava, oranges and pineapples Petty business, charcoal production, motorcycle taxi riding 	<ul style="list-style-type: none"> Agriculture: Cassava, oranges and pineapples. Livestock: Chicken and cattle Petty business, charcoal production, motorcycle taxi riding
Recent development	<ul style="list-style-type: none"> Used to be very poor, dependent on government support Now people are slightly better able to support themselves 	<ul style="list-style-type: none"> Primary school has been improved
Local issues	<ul style="list-style-type: none"> No mains electricity Secondary school is almost 20 km from village 	<ul style="list-style-type: none"> Nearest dispensary and nearest primary school are over 5 km from village



Source: Google Maps

Figure 6 Map of Kifuru and Vigama

2.4.2 Survey respondents

A total of 280 questionnaires were completed across the eight different Tanzanian settlements. Table 6 shows the breakdown of the survey respondents.

Table 6 Survey Respondents, Tanzania

	Motorcycle taxis				Motorised three-wheeler taxis				Non-users
	Riders	Passengers	Vehicle owners	Freight owners	Riders	Passengers	Vehicle owners	Freight owners	
Number of Respondents	103	116	28	29	0	0	0	0	4

It was notable that the survey team were able to locate very few people who fell into the ‘non-user’ category. This is important as a finding in itself as it potentially shows the degree to which rural communities are reliant on motorcycle taxis to fulfil their daily transport needs, and how commonplace motorcycle taxis have become in rural Tanzania. Also, no motorised three-wheelers were found being used in the survey locations.

Figure 7 shows the age profile of the taxi riders.

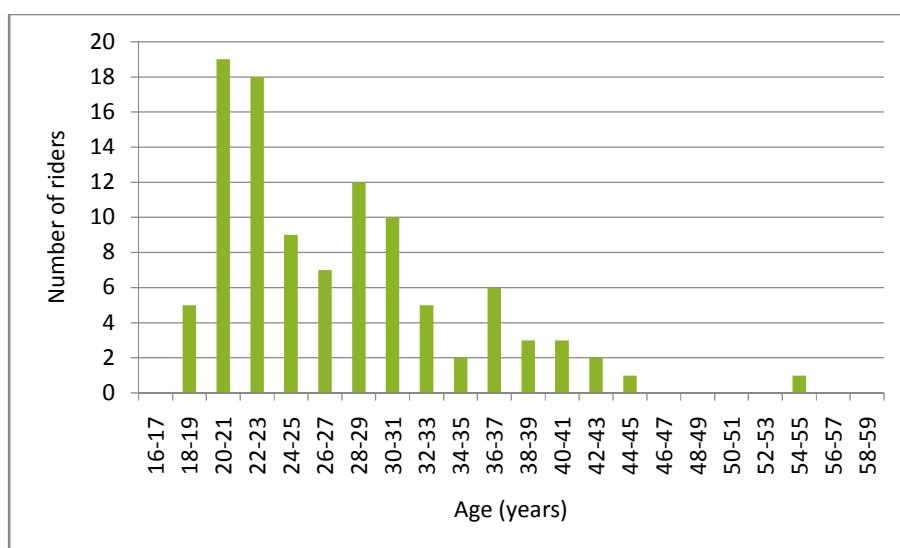


Figure 7 Age profile of riders interviewed, Tanzania

The chart shows that the vast majority of riders who were interviewed were between 20 and 30 years. They had an average age of 27 years. Of the 103 riders interviewed, two were female.

Sixty-five percent of riders had completed no higher than primary school level education, suggesting that it is possible to enter this profession with relatively low levels of formal education.

Only 26% of riders said that they are members of a motorcycle taxi association – the lowest across the four countries.

Seventy-nine percent of riders said that they own a mobile phone in working order, and 24% of all riders said that they have access to internet on their phone.

Figure 8 shows the age and gender balance of passengers.

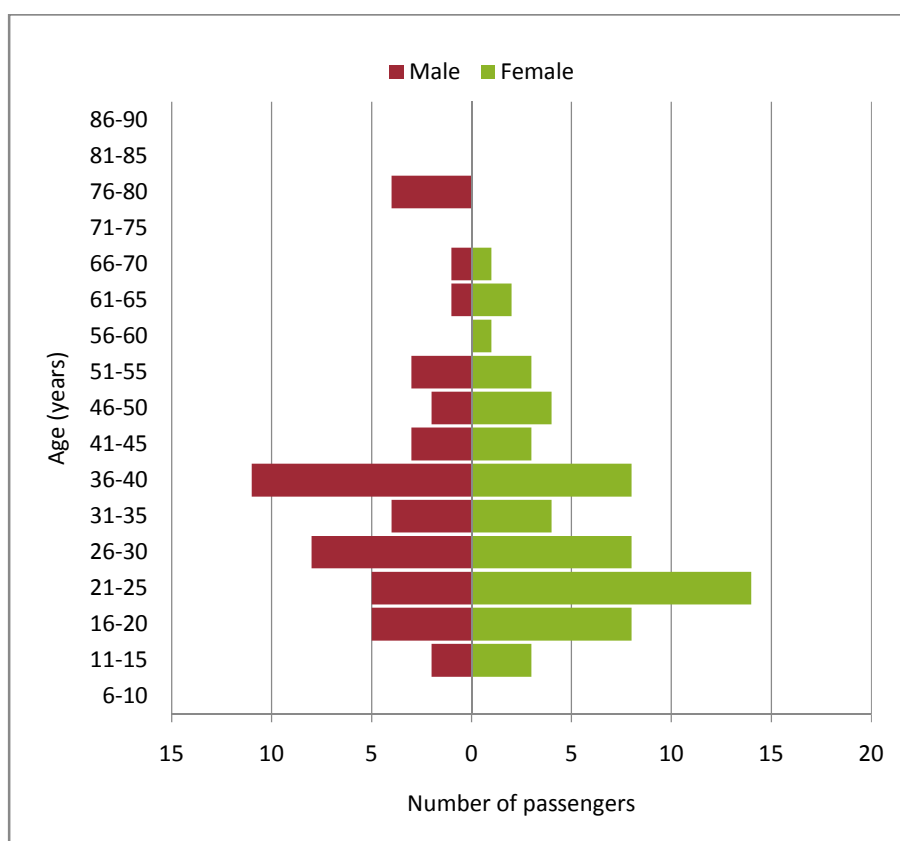


Figure 8 Age profile and gender of passengers interviewed, Tanzania

The chart shows that the majority of passengers who were interviewed were under 40 years old, with slightly more being female than male. The average age of female passengers interviewed was 32 years, and the average age of male passengers interviewed was 38 years. Fifty-seven percent of passengers interviewed were female and 43% were male. One of the passengers interviewed was observed as having a form of disability.

Seventy-two percent of passengers said that they owned a mobile phone in working order, with 42% of phones having access to the internet.

Half(50%) of survey respondents said that their overall opinion of motorcycle taxis is 'Excellent' or 'Good'. Only 4% said 'Very bad' or 'Bad', with the remaining 46% being ambivalent.

2.4.3 Access and mobility

Ninety percent of passengers said that it was either 'very easy' or 'quite easy' to access a motorcycle taxi. Passengers value riders who they know and trust, and who ride safely. The data also shows that in many areas, motorcycles are simply the only type of motorised transport available.

Forty-four percent of passengers most commonly summon the motorcycle taxi by mobile phone, and 41% go to a taxi stand.

Motorcycle taxis provide access to vital health services for rural communities, with sixty-seven percent of passengers interviewed saying that they had used a motorcycle taxi to access health facility in a non-emergency situation, and 92% of riders saying that they transport people to health facilities for non-emergency cases.

Motorcycle taxis are also used in emergency situations, as is shown in Figure 9. As is also the case in the other countries in this study, rural Tanzania has limited ambulance services, especially between the home and the first level health centre.

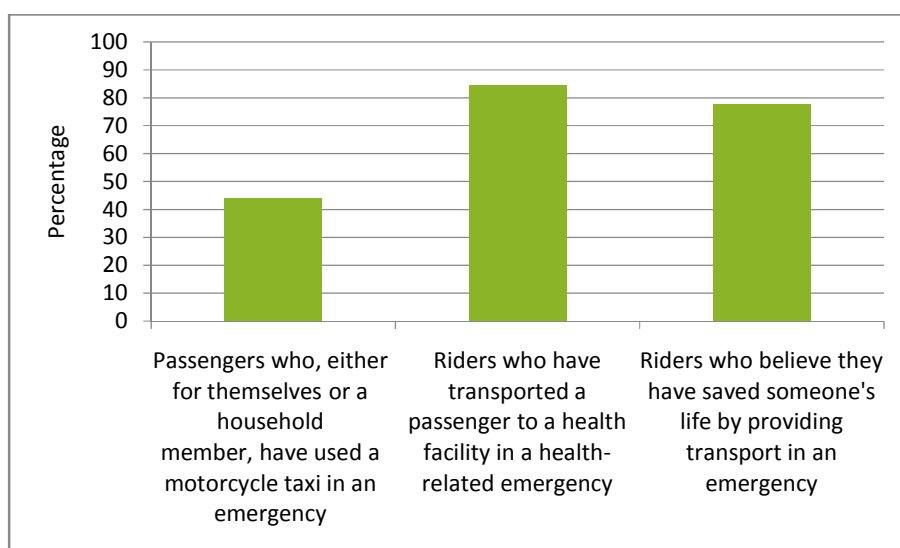


Figure 9 Use of motorcycle taxis in an emergency in Tanzania

The chart shows that 44% of passengers said that either they or a member of their household had used a motorcycle taxi in an emergency. Eighty-five percent of riders reported that they have transported passengers to a health facility in an emergency. And while this is rider perception and has not been verified, 78% of motorcycle taxi riders interviewed believed that they have saved someone's life by providing transport in a health-related emergency.

Of the four interviewees who said they very rarely or never use motorcycle taxis, all said that the reasons were related to safety: three said they were afraid of crashing, and one was concerned for their personal safety. None said that they were unable to afford to use motorcycle taxis, and none said that they were physically unable to use them.

2.4.4 Economics and finance

Motorcycle taxis are used to generate income for both riders and owners in rural areas. The majority of riders (95%) reported that the 'best thing about motorcycle taxis' was earning money or generating employment.

The survey found that after paying all expenses related to operating the motorcycle taxi, the average rider's profit for the last seven days – according to the riders themselves – was around TZS 43,400 (GBP 14.46). Using the latest Gross National Income figures from the World Bank (data.worldbank.org/country/tanzania), average weekly income in Tanzania in 2017 was around GBP 13.44 – although it should be noted that this includes both rural and urban populations. At GBP 14.46 for riders, the survey found that their weekly profits were greater than the national average, at 108%.

The average reported daily profit – after paying all expenses – for riders in Tanzania, was around GBP 2.43. This was only a slight increase from an average daily profit of GBP 2.20 that the riders reported earning from their previous jobs.

Of the 26% of riders who said that they belonged to a motorcycle taxi association, the majority (over 70%) paid a one-off joining fee averaging around GBP 4.94, which is the highest joining fee among the four countries. One-third of riders paid a monthly fee, averaging GBP 1.81. Members of associations were found to have earned slightly higher average profit in the last seven days: around GBP 11.56, compared to non-members with an average profit in the last seven days of GBP 10.44. This is shown in Figure 10.

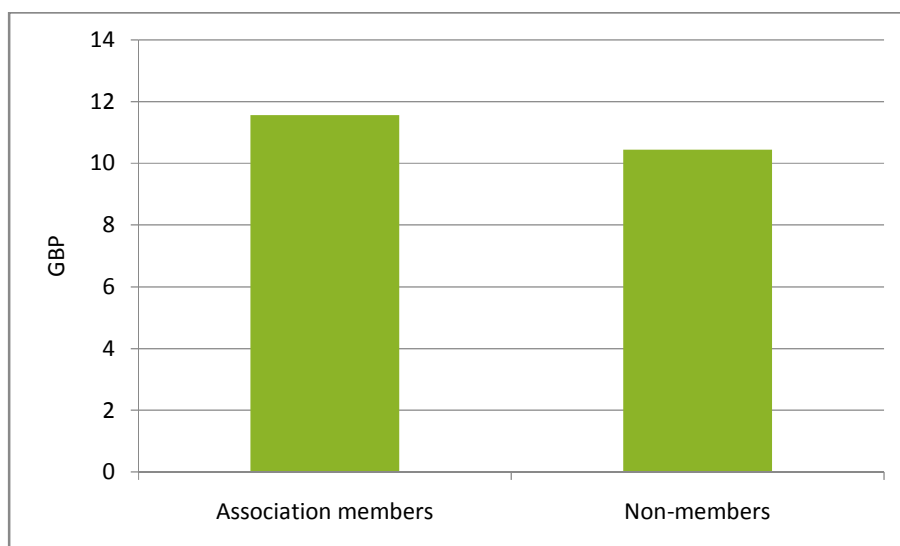


Figure 10 Rider profit in last seven days in Tanzania

Fifty-one percent of riders said that they owned their own vehicle, and 36% were riding the motorcycle as part of a commercial arrangement with the owner of a vehicle.

The average purchase price of the motorcycle was around GBP 619, and 98% of riders who owned the vehicle themselves had bought it as a one-off, lump-sum purchase. For those riders who hired the motorcycle from a third party, the daily hire charge was GBP 3.07.

Riders said they pay an average of GBP 0.27 per day on official fines to police and/or other government officials. For the majority of riders (excluding those who rent the vehicle), official fines constitute the second highest category of expense related to day-to-day operations (after fuel, at GBP 2.64 per day). Riders also pay an average of GBP 0.14 in unofficial bribes or 'dashes'.

For passengers, the average cost of a trip is GBP 0.19 per kilometre, which is the highest of the four countries. The average cost of transporting freight by motorcycle is GBP 0.0100 (1.00 pence) per kilogram kilometre.

During both night-time and when it is wet, the average cost of a trip increases in comparison to when it is day-time and when it is dry, respectively. The night-time fare increase is almost 60%, while the wet weather fare increase is around one quarter (25%).

2.4.5 Injuries

Seventy-five percent of riders and 81% of passengers said that 'the worst thing about motorcycle taxis' was the risk of the rider or passenger being a victim of a crash or injury.

In the study, data was collected only on injuries which riders said occurred while they were riding a motorcycle or three-wheeler taxi on a rural road, and which resulted in them either losing money, requiring medical attention or affecting their family life.

Figure 11 shows the frequency of injuries suffered by motorcycle taxi riders.

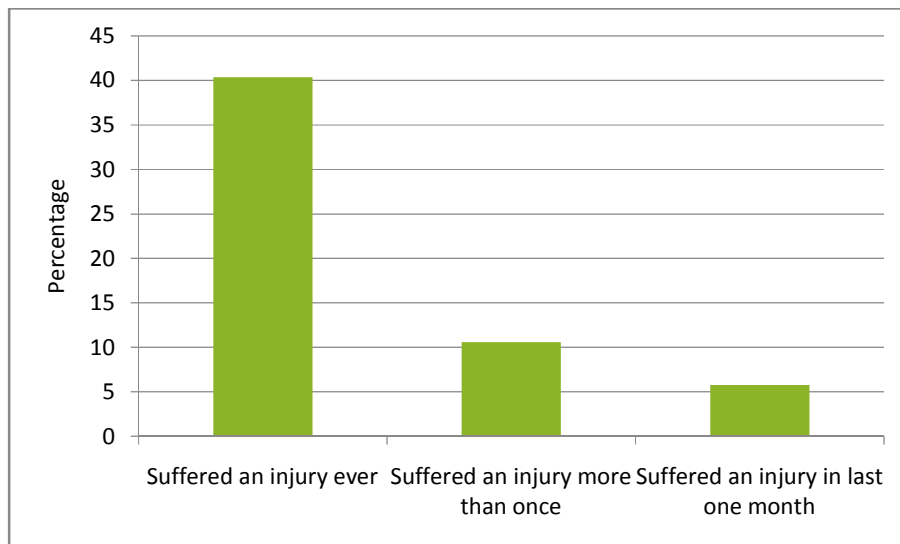


Figure 11 Frequency of motorcycle taxi rider injuries in Tanzania

The chart shows that 41% of motorcycle taxi riders said that they had suffered an injury ever. Eleven percent had suffered more than one injury, and 6% had suffered an injury within the last one month. One of the riders had been injured on four separate occasions.

In the case of the worst injury suffered by riders within the last three years, 52% of riders said the most severely injured part of their body were the legs, feet or pelvis. The head, face or neck was the most severely injured part of the body in 14% of injuries. Thirty-eight percent of all injuries were described by the rider as 'Severe', with 52% as 'Moderate' and 10% as 'Minor'. Eighty-three percent of the injuries sustained by riders were cuts, scrapes, scratches, sprains, strains or bruises.

Again, looking only at the worst injury suffered by riders within the last three years, 88% of riders missed at least one day of normal activity as a result of the injury – the highest of the four countries in this study. Of these, 49% missed more than one week of normal activity. One rider missed over three months. Seven percent of riders said that they are still suffering some physical impact from the injury, and 5% said that they are still suffering some psychological impact. None said that they are still suffering any economic impact.

Of the riders who had suffered an injury, only 31% had been carrying a passenger at the time of the crash that resulted in the injury. 'Single vehicle crash / fall' (37%) was the most common type of incident, and riders most commonly cited 'Roadway condition / damage / obstacle' (36%) as the cause of the incident that resulted in the injury. Other causes mentioned were 'Other road user action' (19%), 'Self error' (17%) and 'Vehicle failure' (12%). Thirty-eight percent of riders said that they had been travelling at over 50 kph at the time of the crash, and 3% had been travelling at over 80 kph.

Seventy-six percent of riders said they were wearing a helmet at the time of the incident that resulted in the injury – the highest of the four countries.

Thirteen percent of passengers reported that while travelling on a motorcycle taxi in a rural area they had suffered an injury that either resulted in them losing money, requiring medical attention or affecting their family life. Passengers judged 'Rider error' to be the leading cause (53%).

Of the four interviewees who said they very rarely or never use motorcycle taxis, three said that this is because they are afraid of crashing.

2.4.6 Health issues

Twelve percent of riders said that they have suffered from health issues, such as respiratory problems, that they attribute to riding a motorcycle. This was the lowest of the four countries included in the study.

2.4.7 Crime and personal security

Twelve percent of riders and 6% of passengers said that they think that the worst thing about motorcycle taxis is something related to crime.

Ten percent of riders said that they have been a victim of crime, verbal abuse or threats. Of these, 50% had been a victim of a robbery that involved force, and 40% had been a victim of verbal abuse and threats. Riders said that 50% of the crimes were carried out by their passengers. Sixty percent of crimes reported by riders happened at night, and 67% occurred at the drop-off point.

Meanwhile, only 3% of passengers said they had been a victim of crime, and all of these were related to verbal abuse – no passengers had been victim of other types of crime.

2.4.8 Access to services and protective equipment

The vast majority of riders interviewed said they had either been taught by friends or family, or were self-taught, while only 3% had ever attended a driving school. The main reason cited for not attending formal training was ‘no training available in the local area’ (53%).

Twenty-nine percent of riders had a driving licence, but only 14% had a road service licence (which is required to operate a motorcycle as a taxi). Twenty-four percent had insurance. Enforcement of licensing in rural areas is reported to be weak: 63% of riders said that they had never been stopped by police officers.

However, 81% of riders reported that they always wear a helmet – the highest of the four countries in this study. Forty-five percent of passengers said that they always wear a helmet, with the main reason provided for not wearing a helmet being that riders do not provide them.



Figure 12 A motorcycle taxi rider wearing his helmet in Tanzania

Training is unavailable, expensive and untrustworthy

In Tanzania, we heard many negative stories about training from riders, such as:

“I want to get training but unfortunately it is not available in our area. I know where to get the training but also it’s very expensive given my income.”

“I was given training but in the end after paying the fee the riders were never given certificates. This has led other drivers to refuse to go for official training in the area.”

2.5 Investigations into the Potential of Technology to Enhance Safe Motorcycle and Three-Wheeler Use

2.5.1 Mobile phone technology

The mobile phone technology identified as being used in relation to motorcycle and three-wheeler taxis in Tanzania includes:

- Simple calls and text messages
- Mobile phone contact lists
- Messaging ‘apps’
- Ride-hailing ‘apps’
- Hotlines and reporting centres

Riders interviewed during the study explained that mobile phones are an integral part of operating a motorcycle or three-wheeler taxi. Riders have the numbers of their customers saved in their phones, and vice versa. As well as communicating with customers, riders use mobile phones to communicate between themselves, sharing advice and intelligence.

Despite the risks of using a mobile phone while driving any type of motorised vehicle on a public road, motorcycle riders are commonly seen using mobile phones while riding. Some riders hold them in one hand, using the other hand to operate the motorcycle. Other riders use hands-free ear-sets, and others lodge the phone inside their helmet next to their ear.

The investigations identified one motorcycle taxi association in Dar es Salaam whose members had set up a single phone hotline through which passengers could summon a rider, and a separate hotline through which passengers could make complaints or suggestions or request other forms of customer service. Initially this improved customers’ confidence of riders who were members of this association, and the number of passengers increased. However, as income increased, arguments began between the members to the point where the association broke down and each member returned to riding independently.

Many motorcycle taxi riders spoken to as part of this study explained that they preferred to use old-style mobile phones rather than smartphones. Reasons given were that old-style mobile phones are cheaper to buy, and also cheaper to replace if one is broken, less desirable to potential thieves, harder and so less likely to break if dropped, and have a longer battery life. Small kiosks offering mobile phone charging services are common in areas with many motorcycle taxis, and some riders own portable solar-powered chargers.

Riders’ preference for ‘non-smart’ phones limits the potential for penetration of smartphone apps, and limits the potential for riders’ to benefit from opportunities provided by apps. However, as more and more customers are using smartphone messaging applications, pressure is on the riders to also have access to such apps. In Tanzania, WhatsApp is particularly popular.

Some motorcycle taxi associations in Dar es Salaam were found to use WhatsApp groups to share information of interest to the members, for example requesting other riders to assist in the case of theft of

a member's motorcycle, or the location of Traffic Police officers, as many members do not have the required paperwork.

Numerous ride-hailing apps exist in Tanzania, including the global giants Uber and Taxify, the Kenyan company Mondo Ride and the local Tigo Twende. Their focus is on regular four-wheel car taxis, although they also offer motorcycle and three-wheeler taxi services. All of these are currently operating exclusively in urban areas. Challenges of operating in rural areas include insufficient customer density, low levels of ownership of smartphones and unstable internet connections.

The NGO Marie Stopes provides sexual and reproductive health and family planning services throughout Tanzania, including remote rural areas. It has a hotline that clients can call for advice on how to access services, which include outreach services provided by nurses using motorised three-wheelers. A smartphone app is used to help manage the outreach services. All Marie Stopes vehicles are fitted with a GPS tracking device to monitor movements.

Targeting high-risk populations through SMS messaging and mobile phones

The organisation North Star Alliance provides healthcare to high-risk mobile populations, including truck drivers.

As part of its 'Star Driver' programme, it uses SMS messaging to provide targeted health advice. Services such as regular HIV testing and treatment are also provided to drivers in Kenya and Tanzania. The provision of free-of-charge HIV self-test kits is an important development. These are available in many North Star Alliance Wellness Centres. Motorcycle riders could collect kits in a matter of minutes and take the test when they finish their shifts and have privacy. The Wellness Centres then follow up by mobile phone to give the result and provide follow up counselling and treatment as required. The research team observed motorcycle taxis are operating around some of the Wellness Centres and riders could greatly benefit from these services in the way that truck drivers are. Associations could play an important role in linking their members to these services.

Separately, a pilot study carried out by Amend in Dar es Salaam, Tanzania, showed that targeted SMS messages have the potential to increase helmet use among motorcycle taxi riders.

The combination of mobile phones is very beneficial for older people and people with limited mobility, as has been demonstrated through research by the organisation HelpAge International. Firstly, their actual need to travel is reduced, as they can communicate with people remotely or can send a motorcycle rider to a shop or clinic to collect something on their behalf. Secondly, when an older person or person with limited mobility does need to travel, they are able to summon a motorcycle taxi directly to their home, even when the roads are in poor condition or if only narrow paths and tracks exist in that location. By saving the phone numbers of riders in their phones, they are able to communicate with those who understand their need, such as driving slowly or avoiding bumpy roads.

Also, since the Research Phase, an organisation that is working to develop a mobile phone app to improve motorcycle safety and other areas of their operations has been identified. Hashtech's 'Akili App' has been in development since 2014 and is currently in a piloting phase, working with motorcycle taxis associations in Dar es Salaam. The app includes features such as monitoring driver behaviour and the ability to immobilise the vehicle remotely, in the case of theft.

Motorcycle taxi riders as first responders

The Tanzania Rural Health Movement uses an SMS/app-based emergency medical dispatching software designed specifically for communities that cannot afford advanced dispatching technologies. By relaying an SMS from the scene of an emergency to trained responders throughout the community, the software enables the nearest available emergency care providers to quickly locate, treat and transport emergency victims to local hospitals.

In Mwanza, through the Community First Response Project, motorcycle taxi riders have been recruited and trained to be first responders. As they always have their phones to hand, and are able to move quickly and independently, motorcycle taxi riders are often far quicker to the scene of an emergency than police or fire fighters.

2.5.2 Anti-lock Braking Systems

Anti-lock braking systems (ABS) prevent wheels from locking up under braking, so prevent skidding. In Europe, ABS fitted to motorcycles have been found to reduce the number of severe and fatal crashes by up to 42% (Rizzi *et al*, 2014). The study concluded that “there is more than sufficient scientific-based evidence to support the implementation of ABS on all motorcycles”.

On 1st January 2016, it became mandatory in Europe for all new motorcycles of 125cc and above to be fitted with ABS. A similar law came into effect in India on 1st April 2018.

A snapshot survey carried out for this study in Dar es Salaam, Tanzania, found that only expensive ‘specialist’ motorcycles have ABS. Of the types of motorcycles that are used as taxis, none were found to have ABS. Very few motorcycle vendors, technicians or riders have even heard of ABS.

No research has been carried out into the use of ABS on motorcycles in Africa. However, there is consensus among the experts interviewed for this research (the Chairman of the International Road Federation (IRF), the Director of Public Affairs for the Fédération Internationale de Motocyclisme, the founders of Pikilily) and experienced motorcycle riders on rural roads in Tanzania and elsewhere in Africa, that ABS would improve motorcycle safety in Africa, including on unsealed rural roads.

In India, investigations are currently being undertaken by IRF into the possibility of retrofitting ABS on used motorcycles. However, numerous challenges have been encountered and a scalable, affordable way to implement retrofitting is yet to be found.

Many of the motorcycles currently being used in Africa are manufactured in India, such as Bajaj, Hero and TVS. As ABS is fitted as standard to these at the point of manufacture, the number of motorcycles with ABS being used in Africa is likely to increase in the coming years. Experience from India has shown that including ABS on newly-manufactured motorcycles has only a small impact on the sale price: an increase of around 2%.

IRF is currently advising the Chinese government on the implementation of a similar law. China is another major exporter of motorcycles to Africa, so a similar law would also have the knock-on effect of increasing the prevalence of ABS on motorcycles in Africa.

2.5.3 Other forms of technology

A researcher at the Vocational Educational and Training Authority (VETA) has developed a technology to improve safety by making sure that a motorcycle does not start unless the driver has put on a helmet. Two computer chips – one installed in the motorcycle and the other in the helmet – require the rider to wear the helmet before being able to start the engine. If the helmet is removed, the engine will automatically cut off. The researcher believes it will also be possible to apply the chip to a passenger’s helmet, if a passenger is on the motorcycle. The current design of the technology costs around GBP 115. No proper trial has yet

been undertaken. As well as improving safety, the VETA researcher also believes the technology will help to reduce motorcycle theft.

Several riders interviewed spoke of the potential of tracking systems to address the problem of motorcycle theft.

The Mwanza-based NGO Pikilily trains women in motorcycle taxi operations, including in repair and maintenance, First Aid, self-defence, road safety and emergency transport. The women who stay with the organisation go on to themselves train other women.

2.6 Developing Manuals for Rider Training and Motorcycle Taxi Associations

2.6.1 Motorcycle rider training instructor's manual

In 2015, in conjunction with SUMATRA and supported by ReCAP, Transaid developed a curriculum for training motorcycle and three-wheeler riders with a focus on motorcycle taxis. However, during the Inception Phase of this project, it was identified that the uptake of this curriculum had been limited.

Between May and July 2018, consultation was undertaken with SUMATRA, Traffic Police, the Tanzania Driving Schools Association (TDSA) and their individual members, motorcycle associations and other relevant stakeholders to review the uptake of the curriculum. This involved paying particular attention to understanding barriers to uptake, and to identifying opportunities to overcome them.

After the official launch of the curriculum in March 2016, responsibility for its dissemination and implementation was taken on by the Traffic Police, in their role of overseeing driver training. However, in mid-2017, changes in leadership within the Traffic Police resulted in a change of approach towards motorcycle training, and the wider strategy related to motorcycle and three-wheeler taxis in Tanzania.

Through the consultation carried out for this project, it was identified that demand for comprehensive motorcycle rider training remains low. Riders' incomes are generally low, meaning that they cannot afford to pay to attend a comprehensive training course, and also cannot take significant periods of time away from income-earning activities. Also, riders are currently able to obtain their licence having undertaken only very basic training.

The quality of motorcycle training in Tanzania remains low. Challenges within the motorcycle training sector include:

- Training is often piecemeal. Those trainers who do use the curriculum, often select very limited sections to teach, but still issue certificates that can be used to obtain a driving licence.
- Training tends to focus on theory, in particular on laws and road signs. There is very little practical training, beyond the most basic ability to start and stop the motorcycle.
- There is a lack of competent trainers able to teach motorcycle riding within driving schools and the Traffic Police.
- While some Traffic Police officers and local government officials perform outreach activities and sensitisation to motorcycle taxi riders, they receive no centralised training and many are unaware of the curriculum.
- Trainers lack training materials. Only the Traffic Police headquarters were found to be in possession of the Swahili version of the 2016 curriculum. Upon finding this, Transaid shared the Swahili version with all other stakeholders who were interviewed.
- There is a lack of coordination, for example with the VETA, which together with the National Institute of Transport (NIT), make up the two largest training institutions in Tanzania, using its own motorcycle and three-wheeler training curriculum.
- Many trainers have insufficient access to motorcycle training vehicles, training space and protective equipment.
- Many training schools and government stakeholders have limited printing and publishing budgets
- There are often difficulties in disseminating sizeable documents via email

Through this project, it was identified that the 2016 curriculum continues to be perceived by all stakeholders as an important tool for implementation of effective motorcycle training. Stakeholders recognise and appreciate the consultative approach to its development, and are in general agreement that its content is appropriate and accurate.

It was also identified that there is need for an instructors' manual to support the curriculum, for instructors to use in delivering effective theory and practical training to riders. This manual has been developed as part of this project, through identifying and expanding on best practice to suit the local context in Tanzania.

This new manual provides the necessary basic information required by instructors, and also offers the opportunity for the authorities to ensure that all schools have the necessary materials for their instructors to deliver training consistent across all driving schools through mandating the use of the curriculum and accompanying manual by all schools. The manual is available in the ReCAP Rural Access Library and the Transaid Knowledge Centre.

Also during this project, the team responded to some of the other challenges, including ensuring that copies of the Swahili version of the curriculum were distributed to the key stakeholders, and championing the uptake with stakeholders such as NIT, VETA and WHO.

2.6.2 Motorcycle taxi associations' operating manual

Through this project, a motorcycle taxi association 'Operations Manual' has been developed. The aim of this is to support riders to establish an association that is clearly defined in structure, transparent in its management, fulfils its obligation to promote legislative compliance and offers effective representation and benefits to its members. The manual is aimed at the association management and the content was determined after discussions with associations (both formal and informal), riders and other key stakeholders including the Traffic Police and SUMATRA.

The Traffic Police and SUMATRA have both suggested that the most appropriate government custodian of this operating manual is PO-RALG, which oversees all local government activities. Motorcycle taxi associations are required to register with their local district council, so it could be appropriate for the operating manual to be provided to an association's leadership at the time that they register. Also, previous DFID-supported research in Tanzania has identified that Community Development Officers within district councils have the capacity and the appropriate skills to work with motorcycle taxi associations to improve their operations.

The manual is available in the ReCAP Rural Access Library and the Transaid Knowledge Centre.

More generic versions of both the instructor's training manual and motorcycle taxi associations' manual are being developed for wider application across sub-Saharan Africa.

3 Stakeholder Consultation

A series of workshops was held in September 2018, to present the draft Country Discussion Papers and share the initial findings from the research activities. Firstly a 4-day workshop was held in Ghana, bringing two key government stakeholders from each of the four countries together with the project team. Secondly, a 1-day workshop was held in each of the four project countries, each one bringing together between 20 and 30 key local stakeholders.

3.1 Draft Country Discussion Papers

Upon completion of the Research Phase, four Country Discussion Papers were drafted – one for each country. These summarised the initial findings of the research, and were presented ideas for points of discussion at the stakeholder workshops.

The points for discussion arising from the research activities in Tanzania were identified as:

- The critical importance of motorcycle taxis for rural transport

- Risk of injury is the ‘worst thing’, about motorcycle taxis, but this does not put people off from using them
- The need to strengthen cooperation between different parts of government
- The need to engage local government authorities
- The need to improve motorcycle rider training, including through increasing the use of the SUMATRA/Transaid curriculum
- The opportunities to improve the motorcycle taxi sector through support for associations

3.2 4-Day, 4-Country Workshop

The 4-day, 4-country workshop was held from Monday 3rd to Thursday 6th September 2018, in Ghana.

A summary of discussions at this workshop is included in the full Final Report for this project.

3.3 1-Day Tanzania Workshop

The 1-day Tanzania workshop was held on Tuesday 25th September, in Dar es Salaam.

The workshop allowed the project team to present the initial findings of the different research activities, including comparisons between the four countries, and provided opportunity for questions to be asked and ideas to be shared. A list of attendees of this workshop is included in Annex 1.

3.3.1 Summary of workshop discussion

Training

The participants of the Tanzania workshop were in agreement about the importance of training for motorcycle riders, including that it should be delivered through suitably qualified and registered training schools. An idea was suggested that training schools should be encouraged to deliver quality training in rural communities, possibly through the provision of subsidies in order to make training affordable.

Widespread use of a standardised curriculum for all schools to follow was identified as key to improving the quality of training. In Tanzania, such a standardised curriculum exists in the form of the AfCAP-funded and SUMATRA-endorsed ‘Competency-based curriculum for training motorcycle and tricycle riders’, although to date its use has been limited. The development of an instructors’ manual to support the curriculum, as part of this research project, was recognised by the participants as being an important step towards standardisation of training. There is need for the curriculum and manual to be disseminated widely and effectively.

Training of trainers (ToT) was also highlighted as an important part of the process to improve motorcycle rider training. The participants were keen to see an effective ToT process developed for driving schools. A monitoring and evaluation process should be developed that includes a quality assurance mechanism in order to ensure all schools continue to meet the required standards.

To help facilitate delivery of training to riders in rural areas it was suggested that in addition to engaging with associations, community leaders should be consulted and involved in engaging with the rider community, encouraging riders to take advantage of the opportunities to be trained. To coordinate the delivery and scheduling of training, it was suggested that ward police officers should be involved.

With associations being identified as key organisations to promote rider training to their membership, it was requested that the motorcycle association operations manual being developed as part of this project, contain a strong focus on road safety and training for riders.

The role of motorcycle associations

Motorcycle taxi associations were suggested as a possible mechanism for supporting law enforcement. Participants said they believe that associations can play a role in enforcing laws related to road safety by encouraging self-regulation within their membership, as well as through engagement with the authorities.

Participants also recommended that associations should mandate training as a prerequisite for membership and then also provide further training to their riders during their membership.

This research project found that Tanzania had the lowest levels of association membership in rural communities, so deliberate efforts are required to form new associations and increase membership uptake. The new operating manual for associations should support this if well disseminated. The Swahili version will be the most useful to associations in rural Tanzania.

Two challenges to effective associations were highlighted in the workshop that would need to be addressed. The first was a lack of trust in the association leadership, particularly related to financial matters. Associations need a transparent and fair way of selecting – and removing – leaders, and also to seek redress in the event of losses. The second is reluctance on the part of older riders, meaning those over 30 years of age, to associate with younger and less disciplined riders. Strict enforcement of an association's code of conduct, and use of older and more respected riders as mentors for the newer, younger riders, may address this.

Vulnerable passengers

Participants discussed the importance of considering vulnerable groups and people with specific and individual needs. Their ability to utilise motorcycle transport to improve their daily lives was raised in the workshop. It was suggested that a database or other mechanism be developed to link these vulnerable individuals with riders who have been trained to understand their needs and respond appropriately.

Smart helmets

The researcher from Tanzania's VETA spoke about a smart helmet system that she and her colleagues are developing. The motorcyclist's helmet would be fitted with sensors and equipment that would link wirelessly with a device incorporated into the motorcycle's ignition system and would prevent the engine from starting if the rider was not wearing the helmet. A GPS tracking module could be included in the device attached to the motorcycle that would enable the motorcycle to be tracked in the event of its theft. With this addition the device could also be marketed as a theft deterrent.

Current costs for the components of the helmet are USD 115, but the VETA team hope to be able to reduce these costs with further development and economies of scale when being produced. This cost was noted with concern at the workshop. This project found that 85% of the motorcycle taxi riders interviewed said that they already wear a helmet all of the time. With a need to primarily focus on the 15% who do not wear a helmet regularly, it was suggested by one of the participants that instead of a blanket requirement for all riders to have this equipment installed on their motorcycle and helmet, that instead riders who are caught and prosecuted for not wearing a helmet be required to have this fitted in lieu of a fine.

Political interference

Political interference was raised as an issue affecting policy development and enforcement. Politicians were said to often influence the motorcycle taxi community through limiting the development and implementation of policy that would impact negatively motorcycle taxi riders (in the eyes of most riders) in order to secure popularity and garner their votes at election time. This was also identified as an issue with politicians' influence over enforcement officials at national and local levels.

Road condition

The condition of rural roads was highlighted in the workshop as a problem, with poor road condition being a contributory factor in many rural motorcycle crashes. Participants requested that rural road rehabilitation should be a recommendation taken to government through this project. In this research in Tanzania, 'Roadway condition / damage / obstacle' was identified by 36% of riders as the main cause of crashes that they suffered. This is far greater than in any of the other countries (Ghana 8%, Kenya 23%, and Uganda 17%). This is also consistent with a previous AFCAP study carried out by Amend in 2013 (AFCAP/TAN/115), which found that the design and condition of low volume rural roads are common contributory factors in motorcycle crashes. The findings of this 2013-14 study contributed to the development of Tanzania's Low Volume Roads Manual, and the drafting of a specific document of advice for District Engineers on how to

consider motorcycle safety on rural roads. Roadway condition should be improved in rural Tanzania, in line with this manual.

3.3.2 Workshop evaluation

An evaluation of the workshop was carried out. The results of this evaluation are included in Annex 2 of this report.

4 Conclusions and Recommendations

The project's full Final Report contains detailed discussion that pulls together the findings from the four project countries, and provides recommendations.

The discussion covers how motorcycle taxis are of critical importance for rural transport in all four countries. Interesting findings in Tanzania include:

- The comparatively high proportion of riders who said that they learned to ride through informal tuition with friends or family but have received formal training since then. However, the quality of the formal training appears questionable.
- The proportion of riders who say they wear a helmet, which is far higher than other countries.
- Attempts by authorities to impose some level of control over the motorcycle taxi sector, which have proven to be unsuccessful – such as the low initial uptake of the 2015 training curriculum and the Memorandum of Understanding between SUMATRA and local government, and the low levels of membership of motorcycle taxi associations.

Of the recommendations made in the Final Report, the following are of particular relevance to Tanzania:

- Effective regulation of the rural motorcycle and three-wheeler taxi sector will involve cooperation between different areas and different levels of government. As well as cooperation between government departments, the government will need to cooperate with the private sector – including, for example, driving schools and the insurance industry – and civil society, including motorcycle taxi associations.
- Legislation should require riders to undergo effective training to obtain a licence. The robustness of the testing and licensing process should be increased.
- Governments should adopt and enforce a national motorcycle training standard.
- Driving schools' capacity to operate in rural areas should be increased, for example through the provision of local government bursaries.
- Governments should require that motorcycle taxi riders belong to associations. Associations should be supported and overseen by local government authorities.
- Enforcement should be strengthened gradually, supported by sensitisation activities.
- The distinction between training and sensitisation must be understood. Sensitisation has a role to play, but is no substitute for training. Driving licences should not be issued to drivers who complete a session or course of sensitisation.
- Research should be carried out into the use of motorcycles and three-wheelers in urban areas and on highways.

Since the Research Phase, further consultation has been carried out with the Traffic Police and SUMATRA to discuss uptake and embedment of the findings of the research, in particular of the instructor's manual. The Traffic Police are keen to see the instructor's manual (as well as the 2016 curriculum) being adopted as the national standard. This will involve recommendation by the Ministry of Home Affairs and then adoption by the Ministry of Works, Transport and Communication.

SUMATRA has been disbanded, and a new Land Transport Regulatory Authority (LATRA) has been formed. LATRA will regulate the motorcycle and three-wheeler taxi sector, and this will include developing new regulations to replace the 2010 SUMATRA Regulations. The new regulations are expected to include a requirement for all commercial drivers – including riders of motorcycle and three-wheeler taxis to undergo testing above and beyond that required to obtain a private driving licence.

The formation of LATRA presents an opportunity to implement some of the recommendations of this project, and to that end, the instructor's manual is currently being translated into Swahili.

5 References

- Amend, 2013. Road Traffic Injury on Rural Roads in Tanzania: Three studies into road traffic injury on rural roads. AFCAP Project Ref. TAN/115. Available from Amend
- Amend, 2015. The magnitude and characteristics of road traffic injury in Kilolo District, Tanzania. Available at: <http://www.research4cap.org/Library/BishopETAL-Amend-Tanzania-2015-KiloloBaseline+Annexes-AFCAPTAN2015B-v150616.pdf>
- Amend, 2016. Improving Rural Access in Tanzania: Local Government Road Safety Programme. Available from Amend
- Bishop, T and Amos, P, 2015. Opportunities to improve road safety through ‘boda-boda’ associations in Tanzania. Amend. Final Report. ReCAP Project Ref. TAN2015G / SC14069. Available at: <http://www.research4cap.org/Library/BishopAmos-Amend-Tanzania-2015-BodaAssocs+Final+Report-AFCAPTAN2015G-v150616.pdf>
- Bishop, T and Jinadasa, D, 2014. Road Traffic Injury on Rural Roads in Tanzania: A study to determine the causes and circumstances of motorcycle crashes on low-volume rural roads. AFCAP Project Ref. TAN/115. Available at: <http://research4cap.org/Library/AFCAP-AMEND-CausesOfMC%20Crashes-FinalReport-25Sep2014.pdf>
- Department for International Development (UK), 2015. Business Case and Intervention Summary – Improving Rural Access in Tanzania. Obtained directly from DFID in Tanzania
- Ministry of Works, Transport and Communication, 2016. Low Volume Roads Manual. Available directly from the Ministry of Works, Transport and Communication, United Republic of Tanzania
- Rizzi et al, 2015. Effectiveness of motorcycle antilock braking systems (ABS) in reducing crashes, the first cross-national study. *Traffic Injury Prevention*, 2015;16(2):177-83. doi: 10.1080/15389588.2014.927575. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/24884403>
- Tanzania Revenue Authority, 2015. Statistics available directly from TRA Headquarters, Samora Avenue, Dar es Salaam, Tanzania
- Transaid, 2014. An investigation into the role of transport operator associations in shaping Transport Services in Africa’s rural areas. AFCAP Project Ref. AFCAP/GEN/127/A. Available at: <http://www.transaid.org/wp-content/uploads/2015/09/AFCAP-Transport-Operator-Associations-and-Rural-Access.pdf>
- Transaid, 2015. Tanzania motorcycle taxi rider training: assessment and development of appropriate training curriculum. Final Report. AfCAP Project TAN2015E. Africa Community Access Partnership (AfCAP), Thame, UK. 22p. Available at: <http://www.research4cap.org/Library/TRANSAID-2015-MotorcycleTaxi-TrainingFinalReport-AFCAP-TAN2015E-v150616c.pdf>
- WHO, 2014. Violence and Injury Prevention: The Facts. World Health Organization, Geneva, Switzerland. Available at: http://www.who.int/violence_injury_prevention/media/news/2015/Injury_violence_facts_2014/en/
- WHO, 2015. Global Status Report on Road Safety, 2015. World Health Organization, Geneva, Switzerland. Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2015/en/
- WHO, 2017. Powered two- and three-wheeler safety: A road safety manual for decision-makers and practitioners. Available at: <http://apps.who.int/iris/bitstream/10665/254759/1/9789241511926-eng.pdf>
- WHO, 2018. Global Status Report on Road Safety, 2018. World Health Organization, Geneva, Switzerland. Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/

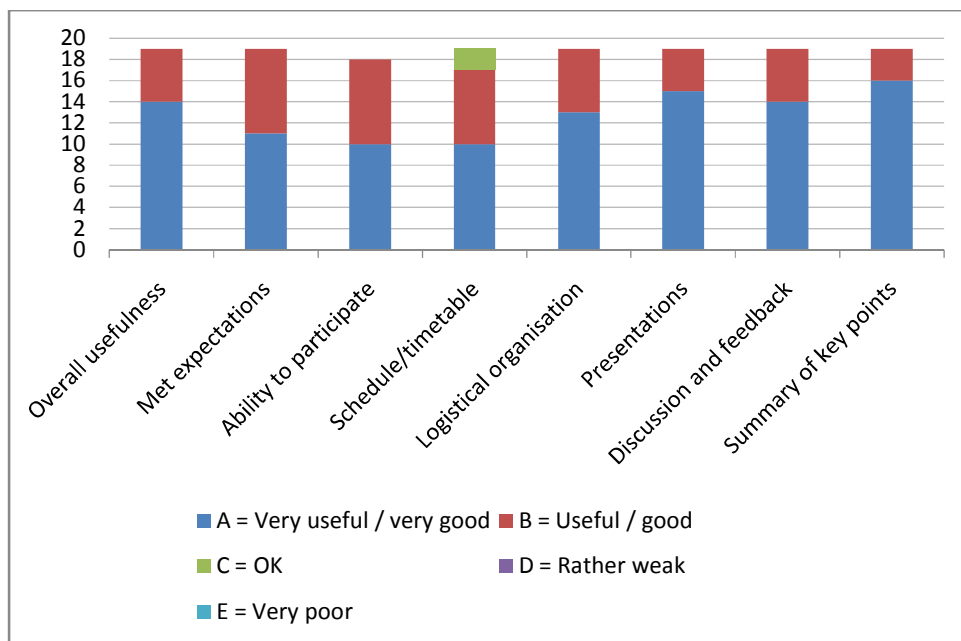
Annex 1 1-Day Tanzania Workshop Attendees

	Name	Organisation	Position
1	Deus Sokoni	Traffic Police	Assistant Superintendent of Police
2	Johansen Kahatano	SUMATRA	Director of Road Transport Regulation
3	Dr. Fikiri Magafu	Division of Infrastructure Development, PO-RALG	Research Director
4	Eng. George Tarimo	TARURA	Regional Coordinator
5	Patrick Makule	National Institute of Transport	Deputy Head of Transport Safety
6	Aneth Mganga	VETA	Researcher
7	Leonard Sempoli	Tanzania Driving Schools	Chairman
8	Dr. Marko Hingi	Tanzania Rural Health Movement	Executive Director
9	Luke Glaude	Tanzania Rural Health Movement	Registered Nurse
10	Zawadi Athanas	Marie Stopes	OR Lead
11	Ladislaus Bigambo	World Bank	Rural Roads Expert
12	Amani Waziri	Kimarang'ombe village	Boda Association Leader
13	Mohamed Shaban Iddi	Ludiga village	Boda Association Leader
14	Noel Joseph Lusinde	Kifuru village	Boda Association Leader
15	Mgeni Abdallah Kidevu	Vigama village	Boda Association Leader
16	Joshua Kindumila Mwandenuka	Lugombo village	Local Leader
17	John Christopher Kilumbu	Tenende Juu village	Local Leader
18	Asukile Mwakibinga	Kandete village	Local Leader
19	Gasto Mwakasege	Ntuso village	Local Leader
20	Hans Mwaipopo	Transaid	Project Tanzania National Expert
21	Neil Rettie	Transaid	Project Motorcycle Safety Specialist
22	Neema Swai	Amend	Senior Programme Officer

Annex 2 1-Day Tanzania Workshop Evaluation

1-Day Tanzania Workshop

This chart shows the responses to the evaluation form completed by the participants in the one-day workshop.



All participants (100%) rated the overall usefulness of the workshop as 'Very useful' or 'Useful'.