

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

Literature Review



Transaid, Amend and TRL

RAF2114A

March 2019

Preferred citation: Van der Weijde, K., et. al, Transaid and Amend (2019). Enhancing understanding on safe motorcycle and three-wheeler use for rural transport in the Democratic Republic of Congo: Inception Report, RAF2114A. London: ReCAP for DFID.

For further information, please contact: Caroline Barber, barberc@transaid.org

ReCAP Project Management Unit
 Cardno Emerging Market (UK) Ltd
 Level 5, Clarendon Business Centre
 42 Upper Berkeley Street, Marylebone
 London W1H 5PW United Kingdom



The views in this document are those of the authors and they do not necessarily reflect the views of the Research for Community Access Partnership (ReCAP) or Cardno Emerging Markets (UK) Ltd for whom the document was prepared

Cover Photo: South Kivu, DRC (courtesy of i+Solutions)

Quality assurance and review table

Version	Author(s)	Reviewer(s)	Date
1	Tom Bishop Caroline Barber Kim van der Weijde		25 th March 2019
		Annabel Bradbury (ReCAP PMU) J R Cook (ReCAP TP)	29 th March 2019
2	Tom Bishop Caroline Barber Kim van der Weijde		1 st May 2019
		Annabel Bradbury (ReCAP PMU)	22 May 2019

ReCAP Database Details: Enhancing understanding on safe motorcycle and three-wheeler use for rural transport and the implications for appropriate training and regulatory frameworks

Reference No:	RAF2114A	Location	Democratic Republic of Congo
Source of Proposal	ReCAP Project Management Unit	Procurement Method	Project extension
Theme	Transport Services	Sub-Theme	Motorcycles and three-wheelers
Lead Implementation Organisation	Transaid	Partner Organisations	Amend and TRL
Total Approved Budget	GBP 51,802.50	Total Used Budget to Date	GBP 10,360.50
Start Date	25 February 2019	End Date	December 31st 2019
Report Due Date	25 th March 2019	Date Received	December 31st 2019

Abstract

This Literature Review was carried out during the Inception Phase of the research project 'Enhancing understanding on safe motorcycle and three-wheeler use for rural transport in DRC'. The purpose of the review was to identify trends in commercial motorcycle and motorised three-wheeler use, regulation and legislation, ongoing development, influences related to transport infrastructure in DRC, and any gaps in the literature. Initially intended to be an annex in the Inception Report, the decision was taken by the ReCAP Project Management Unit to publish it as a standalone document.

The overall aim of the 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 emphasis on rural motorcycle taxis, rider training, appropriate regulatory frameworks and realistic enforcement methods in DRC.

The use of motorcycles has increased greatly in Africa in recent years. Motorcycles are often used as taxis, with riders charging a fare to carry passengers or goods. In rural areas, motorcycle taxis play a crucial role in connecting people to services and farms to markets, and in many countries motorcycles are the most commonly found vehicle on rural roads.

This literature review draws on existing academic and grey literature, although the available literature relating to motorcycle and motorised three-wheeler taxis in DRC is extremely limited and has an urban bias. Nevertheless, it maps the growth in use of motorcycles and motorised three-wheelers in DRC and examines the benefits and disbenefits of their use as a means of public transport. It describes the implications of the existing lack of regulatory frameworks covering motorcycles and three-wheelers, as well as gender, mobility and road safety issues. The review concludes that there are significant gaps in research on this subject in a rural context.

Key words

Motorcycles, motorcycle taxis, three-wheelers, rural transport, rural access, road safety, rider training, regulation, sub-Saharan Africa.

AFRICA COMMUNITY ACCESS PARTNERSHIP (AfCAP) Safe and sustainable transport for rural communities

AfCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa. The AfCAP partnership supports 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 programme follows on from the AfCAP1 programme that ran from 2008 to 2014. AfCAP is brought together with the Asia Community Access Partnership (AsCAP) under the Research for Community Access Partnership (ReCAP), managed by Cardno Emerging Markets (UK) Ltd.

See www.research4cap.org

Acronyms, Units and Currencies

AfCAP	Africa Community Access Partnership
AfDB	African Development Bank
ATAMOI	Ituri Motorcycle Taxi Association
CNPR	Commission Nationale de Prévention Routière/ National Commission for Road Safety
DRC	Democratic Republic of Congo
FC	Congolese Franc
FONER	Le Fonds National d'Entretien Routier de la Republique Democratique du Congo/ The National Road Maintenance Fund of the Democratic Republic of Congo
GBP	Pound Sterling
JICA	Japan International Cooperation Agency
MTP	Multimodal Transport Project
NGO	Non-Governmental Organisation
ReCAP	Research for Community Access Partnership
UK	United Kingdom (of Great Britain and Northern Ireland)
UNDP	United Nations Development Programme
WHO	World Health Organization

Contents

Abstract.....	iii
Acronyms, Units and Currencies.....	iv
1 Introduction	1
2 Methodology.....	1
3 Literature Review Findings.....	3
3.1 DRC Infrastructure and Implications for Motorcycle and Motorised Three-Wheeler Taxis.....	3
3.1.1 DRC’s Transport Network.....	3
3.1.2 Rural Areas.....	4
3.1.3 Urban Areas	4
3.2 Motorcycle Use in DRC.....	5
3.3 Access and Mobility	6
3.4 Motorcycle Ownership.....	6
3.5 Motorised Three-Wheeler Ownership.....	7
3.6 Employment.....	7
3.7 Areas of Operation.....	7
3.7.1 Regulation and Legislation	7
3.8 Licensing.....	8
3.9 Vehicle Registration and Taxation	8
3.10 The Highway Code	8
3.10.1 Helmets and protective gear	9
3.11 Road crashes and personal security	9
3.12 Health.....	10
3.13 Regulation and Legislation.....	11
4 Development Projects.....	11
4.1 Infrastructure funding.....	11
4.2 National Integrated Transport Master Plan.....	11
4.3 World Bank: ProRoutes Second Additional Financing Project.....	12
4.4 World Bank: Multimodal Transport Project.....	13
4.5 UNDP.....	13
5 Conclusion.....	13
6 References	14

1 Introduction

The literature review drew on both academically-published literature and unpublished 'grey literature', with the aim of identifying trends in commercial motorcycle and motorised three-wheeler use, regulation and legislation, ongoing development, influences related to transport infrastructure in DRC, and any gaps in the literature.

The collection of relevant literature related to legislation and training is ongoing and will be reported on in the July 2019 Progress Report.

2 Methodology

The following topics formed the basis of the review and informed the process of formulating key words for the literature search process:

- Existing regulatory frameworks
- Existing training, testing and licensing systems
- Access to motorcycles and motorised three-wheelers
- Mobility of motorcycles and motorised three-wheelers
- Current status of transport related infrastructure in DRC
- Benefits and disbenefits of motorcycle and motorised three-wheeler use experienced in DRC
- Data on motorcycle crashes
- Existing projects relating to infrastructure and/or motorcycle use

A list of key words and phrases was initially created to facilitate as broad a search as possible. Research directly related to DRC drew on both French and English publications.

The two principle data sources used to undertake searches of academic and grey literature were Web of Science and Google Scholar. The Web of Science (formerly Web of Knowledge) is a subscription based service which offers access to relevant multidisciplinary topics for academic researchers. The literature review of the preceding project 'Enhancing understanding on safe motorcycle and motorised three-wheeler use for rural transport' was also referenced. Indicators used in this literature review can be found in the [report](#)¹. Table 1 shows the key word searches that were carried out using this database.

¹Enhancing understanding on safe motorcycle and three-wheeler use for rural transport:
<http://www.transaid.org/wp-content/uploads/2018/05/Bishopetal-AmendTransaid-2017-EnhancingUnderstandingMotorcyclesThreeWheelers-LiteratureReview-AfCAP-RAF2114A-180319.pdf>

Table 1: Web of Science Search Terms

Motorcycle AND DRC OR Democratic Republic of Congo
Two wheeler AND DRC OR Democratic Republic of Congo
Three wheeler AND DRC OR Democratic Republic of Congo
Transport AND DRC OR Democratic Republic of Congo
Motorcycle taxi AND DRC OR Democratic Republic of Congo
Motorcycle regulation AND DRC OR Democratic Republic of Congo
Motorcycle AND enforcement AND DRC OR Democratic Republic of Congo
Road AND Safety AND DRC OR Democratic Republic of Congo
Motorcycle AND Accidents AND DRC OR Democratic Republic of Congo
Road AND Accidents AND DRC OR Democratic Republic of Congo

For Google Scholar searches, a table of key words was formulated (see Table 2). One word was taken from each of the three columns to form the search phrases, for example, ‘DRC OR Democratic Republic of Congo AND Motorcycle AND Helmets’. The review then took into account the first five pages returned for each search.

Table 2: Terms used for Google Scholar Searches

First search term	Second search term	Third search term
DRC OR Democratic Republic of Congo	Motorcycle Taxi	Cultural Issues
	Motorcycle	Culture
	Three Wheeler	Crash OR Accident OR Collision
	Bajaj	Death OR injury
		Use OR Utilisation
		Personal Security
		Affordability
		Profitability
		Personal security
		Gender
		Legislation OR Law
		Registration
		Road Safety
		Ownership
		Helmet
		Training
		Access Uptake

The findings from Google Scholar returned more search results than Web of Science, however the limited number of relevant documents (7) returned by the combined searches highlighted the scarcity of literature on motorcycle and motorised three-wheeler use in DRC. The report ‘Des Conditions d’exercice du transport par taxi-motos dans la ville de Lubumbashi’ by Ndjeko Kalume and Banza Ilungo particularly yielded a large amount of relevant information and was referenced proportionately to this fact.

The documents obtained through the database searches were supplemented by additional academic literature and so-called ‘grey’ literature sourced from partners and projects.

3 Literature Review Findings

3.1 DRC Infrastructure and Implications for Motorcycle and Motorised Three-Wheeler Taxis

3.1.1 DRC’s Transport Network

DRC has approximately 153,200 km of roads, of which 38% are national and provincial roads, 5% are urban roads, and 57% are local roads or agricultural roads. The main transport routes in DRC can be seen in Figure 2 (Ramanian, 2016).

Figure 1: Transport routes in DRC



The Trans-African Highway, the Sub-Saharan Africa Transport Policy Programme Transport Corridors, and the Southern African Development Community Regional corridors make up the international road network spanning DRC. According to the World Bank, the density of paved roads (1 km per 1,000 sq km of land) is 16 times lower than in an average low-income country, and the density of unpaved roads is almost five times lower (Bank, 2018).

Due to war and civil unrest, weak policy, and a lack of capacity and investment, the transport system in DRC has deteriorated since the 1970s. Maintenance of the existing system has been further

challenged by the mismanagement and misappropriation of funds by the government (Murguet, 2018).

Historically, DRC's terrain and climate have presented significant barriers to road and rail construction with an estimated 50 % of the country remaining inaccessible by road or rail. Out of the country's ten provinces, only four are connected by road to the capital, Kinshasa. Surface travel to major centres and access to rural areas are both challenging. Lack of maintenance of the road network since independence in 1960 has been, and continues to be, a challenge and an obstacle to population mobility (Marivoet & Marysse, 2009). This being the case however, road access in DRC increased from 13 % in 2006 to 45 % in 2014 (Democratic Republic of the Congo: Ministry of Infrastructure, 2018).

3.1.2 Rural Areas

No literature was found specifically relating to the use of motorcycles or motorised three-wheelers in rural DRC².

3.1.3 Urban Areas

DRC's largest urban centres are facing pressures from rapidly growing populations. In DRC's largest urban area, Kinshasa, the city's population density is reaching levels of up to 1,181 persons/ha (Democratic Republic of the Congo: Ministry of Infrastructure, 2018). In comparison, inner London sees 113.5 persons/ha (Store, 2019). Despite the growing population in these areas, infrastructure is still inadequate. In Kinshasa, 80% of all roads remain unpaved (Democratic Republic of the Congo: Ministry of Infrastructure, 2018). In the core area where road condition is well maintained, leaking water supply pipes are causing asphalt pavement degradation due to water damage, which causes cracks and potholes (Democratic Republic of the Congo: Ministry of Infrastructure, 2018). These are important considerations for motorcycle and motorised three-wheeler use in these areas.

According to research carried out by JICA, the issues related to transport that are faced by the current transport system are numerous and spread across various sectors. These challenges have been presented in Table 3.

²The research team will continue to source grey literature from stakeholders during Phase 2 (Research) and will collect relevant data where possible.

Table 3: Challenges facing Kinshasa's Transport System
(Democratic Republic of the Congo: Ministry of Infrastructure, 2018)

Sector	Challenge
Road Development, Maintenance and Management and Drainage	<ul style="list-style-type: none"> ○ Poor road network ○ Disrepair of the existing roads ○ Budget shortage and low capacity for road development ○ Shortage of construction equipment for road maintenance ○ Insufficient budget for road maintenance ○ Insufficient data to adequately assess the capacity of the drainage system ○ Insufficient budget for drainage system maintenance
Ensuring Traffic Safety	<ul style="list-style-type: none"> ○ Evidence based approach - Identifying places with frequent traffic accidents and their causes ○ Enhancing education regarding an awareness of traffic safety ○ Inadequate traffic signals at locations with a high risk for traffic accidents ○ Maintaining traffic discipline ○ Improving non-motorised traffic facilities ○ Road safety audit for existing and new roads
Relieving Traffic Congestion	<ul style="list-style-type: none"> ○ Poor road conditions with irregular maintenance ○ Road network with limited connections ○ Lack of maintenance of traffic signals and inflexible signal phasing/cycle ○ Lack of proper enforcement and traffic control ○ Inadequate parking policy and management, including policy and management regarding stopping vehicles ○ Lack of planning and coordination between land use and transportation

Public transport in urban areas is generally comprised of a mixture of public and private providers of bus, train, taxi (small car), and motorcycle taxi transport. The railway has been poorly maintained and is therefore only operational on the South and East lines in the morning and afternoon (Democratic Republic of the Congo: Ministry of Infrastructure, 2018).

The cost of public transport is also a constraint for the Congolese, where the poorest quintile in Kinshasa contributes approximately 31 % of its budget to commuting costs when considering one return journey per person each day (Bank, 2018).

3.2 Motorcycle Use in DRC

The number of motorcycles in the country has increased rapidly in DRC in recent years, although there was no data available documenting the number of registered motorcycles or motorised three-wheelers³. It is also not documented in the literature when the motorcycle was first introduced in DRC, in Lubumbashi the motorcycle phenomenon began around 2007 near to the mining areas (Ndjeko Kalume & Banza Ilunga, 2016).

Motorcycles are now used extensively throughout the country, and are found in both urban and rural areas. The importation of cheap motorcycles, especially from China, have helped to expand

³The research team will collect relevant data regarding the number of motorcycles and motorised three-wheelers in DRC during Phase 2 (Research) where possible.

ownership. In the north-eastern Lubero territory, for example, it is estimated that 80 % of motorcycles are Chinese imports (Luneghe, 2018). Motorcycles are also imported from neighbouring Rwanda, where they are locally assembled (The New Times , 2017).

No data was found on the number of registered motorcycles and motorised three-wheelers in DRC, although it is assumed that the majority of motorcycles are not officially registered or have license plates. Although a relatively new form of transport, motorcycles have become a principle mode of transport in many areas, and a serious competitor to the conventional motorcar taxis. In the hub Lubumbashi, for example, public transport is now dominated by motorcycle taxis (Ndjeko Kalume & Banza Ilunga, 2016).

In the rural areas of many African countries, motorcycles are often the most commonly found vehicles and are replacing journeys that were previously made on foot or by bicycle. Their popularity in rural areas stems from the fact that many areas are inaccessible to four-wheeled vehicles. The newly found mobility offered by motorcycles has made them indispensable in the city (Ndjeko Kalume & Banza Ilunga, 2016). In rural areas, motorcycles connect remotely located villages to settlements that are better-connected to the road network, thereby providing a means of transport not only for passengers, but also to transport food and other goods to markets (EM, et al., 2009).

In Lubumbashi, Ndjeko Kalume and Banza Ilunga found that for 500 FC (0.60 GBP), a motorcycle taxi will transport a passenger to any destination regardless of the distance. Despite restrictions on the hours of allowable operation, a motorcycle can be found at nearly any hour, even late in the evening (Ndjeko Kalume & Banza Ilunga, 2016).

3.3 Access and Mobility

Alongside the deterioration of routes from urban to peri-urban or rural areas, demographic growth and a lack of options for mobility have led to increasing problems related to access (Ndjeko Kalume & Banza Ilunga, 2016).

In urban areas, people experience many difficulties with transportation, especially between September and June during the morning and evening hours (16:00-19:00) when school is in session and workers and students are commuting. Existing means of transport such as the taxi- bus and four-wheeled-taxis do not meet the needs of commuters during these peak hours of transport. A high demand for public transport and the narrowness of roads leads to high levels of congestion and people are forced to abandon larger vehicles for motorcycles that have the ability to avoid traffic (Ndjeko Kalume & Banza Ilunga, 2016).

3.4 Motorcycle Ownership

As the market for motorcycles has grown, several brands dominate the market. These brands are largely Chinese, although other brands are also available. Motorcycles found in Lubumbashi by Ndjeko Kalume and Banza Ilunga include Quin Electro, Liberty ma Maison, Yamaha, and Jambo Group (Ndjeko Kalume & Banza Ilunga, 2016).

In DRC, riders⁴ have been found to either own or lease their motorcycles. In the case of a lessee, an agreement can also be arranged as a lease-to-own, where the lessee can make a daily payment to the owners. In general, the owner of the motorcycle is responsible for its maintenance while any trip related expenses are the responsibility of the rider.

⁴Throughout this discussion paper, the term 'rider' is used to mean the driver or operator of a motorcycle or three-wheeler. The term rider does not include passengers.

In most cases, there are no legal obligations as there is generally no formal agreement put in place between the owner and the lessee or between the buyer and the owner. According to research completed in Lubumbashi, there have been cases where this has led to some riders disappearing with the motorcycle. Payments generally amount to 10,000 FC (17.50 GBP) per day, equivalent to a day's work (Ndjeko Kalume & Banza Ilunga, 2016).

In some cases, riders increase their fare by charging an additional fee to passengers who request "complicated transport". This includes taking three passengers or large loads. The extra fee covers the additional risk that is taken by the rider in respect to being caught by the police or for non-compliance with the Highway Code. Additional fees could equate to up to 1,500 FC (2.62 GBP) or 2,000 FC (3.50 GBP) (Ndjeko Kalume & Banza Ilunga, 2016).

3.5 Motorised Three-Wheeler Ownership

There was no literature found discussing the ownership or use of motorised three-wheelers in DRC.

3.6 Employment

Due to job insecurity and declining incomes, various groups have taken to motorcycle taxis as a source of income including youth, veteran soldiers, and some already employed people (Ndjeko Kalume & Banza Ilunga, 2016). Advantages offered by motorcycles for both riders and users include (Ndjeko Kalume & Banza Ilunga, 2016):

- Opportunity of employment
- Income generation for owners
- Fast moving transport
- Access to hard to reach areas
- Availability of vehicles
- Easy entrance to the profession

Not only do motorcycle taxis offer a form of job security for riders, the need and emergence for motorcycle sellers, assembly workshops and maintenance workers has also created increased employment opportunities. Even when motorcycle owners eventually leave the trade to pursue other specialties, owners often offer their motorcycles for hire and make personal use of it when they are not in use (Ndjeko Kalume & Banza Ilunga, 2016).

3.7 Areas of Operation

Many urban areas impose restrictions on the times and zones in which motorcycles are allowed to operate. This regulation is decided independently by autonomously governed zones. In Lubumbashi, for example, hours of operation are limited to before 20:30 and there is a formal prohibition to drive in the city centre and main roadways ('arteries'). In Kinshasa, limitations were set in place in 2016 to restrict motorcycle use after 18:00 (Okapi, 2016). This decision was made to try to decrease the rate of accidents, which are thought to be due to the increased number of motorcyclists.

The application and regulation of these measures is cited as problematic, as it requires the direct involvement of effective authority (Ndjeko Kalume & Banza Ilunga, 2016).

3.7.1 Regulation and Legislation

The rapidly growing nature of this sector makes it challenging to now regulate and manage. Furthermore, the lack of regulation and enforcement of motorcycles to date has meant that motorcycle and three-wheeler operations remain an informal means of transport in DRC. In

Lubumbashi, for example, the regulation that is in place is related to a motorcycle union that was introduced by the mayor. The repercussions of a lack of regulation and enforcement include a lack of vehicle registrations, a lack of compliance of the Highway Code, an absence of helmets for both riders and passengers, a failure to pay taxes on motorcycles, frequent road traffic crashes, and a lack of vehicle or rider insurance (Ndjeko Kalume & Banza Ilunga, 2016).

Furthermore, responsibilities for urban transport planning and road maintenance were found to be unclearly assigned between the Ministry of Transport and Communication, the Ministry of Public Works, and Local Government in Kinshasa in research carried out by the World Bank in 2014 (Bank, 2018). The police force was also lacking a clear role regarding motorcycle regulation.

On the other hand, the Commission Nationale de la Prévention Routière (National Commission for Road Safety) (CNPR) was seen to be performing functions beyond its scope. In addition to its mandate to develop guidelines and coordinate actions to ensure road safety, its work was seen to be extended to monitoring works, confirming plans, and managing the road network (Bank, 2018).

3.8 Licensing

Legislation regarding the transport of persons and goods by motorcycle requires all riders to have a valid motorcycle license and for all vehicles to be officially registered. According to research carried out in Lubumbashi, however, most riders do not believe it is necessary to obtain a license prior to operating a motorcycle. Approximately half of the riders taking part in this research by Kalume and Ilungo did not have the necessary preliminary registration documents required to operate their vehicle (Ndjeko Kalume & Banza Ilunga, 2016).

3.9 Vehicle Registration and Taxation

A tax liability is mandatory on any public transport operator in DRC, including motorcycles. In Lubumbashi, a motorcycle taxi operator must pay 20,000 FC (35 GBP) per year. Additional fees may include paying a daily parking tax at public car parks, and in Lubumbashi is equal to 500 FC (0.87 GBP) per day.

Cities may also impose specific criteria for how vehicles are identified as registered. This can include colour recognition or specific numbers or codes. In Lubumbashi, motorcycles must have a number and code of the city visible on the motorcycle. This identification costs 18,000 FC (31.50 GBP) (Ndjeko Kalume & Banza Ilunga, 2016).

Lastly, additional fees may be required to pay for membership with a specific association. Unfortunately, no literature was found to shed light on practices associated with associations.

3.10 The Highway Code

There are three books that outline the Highway Code for drivers and riders:

- Book 1: Behaviour of road users
- Book 2: Condition of machinery and animals in traffic, road conditions and respect for road signs
- Book 3: Sanctions

According to Kalume and Ilunga (2016), while a comprehensive highway code is in place, DRC is not properly equipped to assure its application on the roads. For example, roads are generally not paved and signage is minimal, and vehicles continue to be driven regardless of having passed routine mandatory controls. According to the report, traffic police officers are also known to be at the root of many offenses (Ndjeko Kalume & Banza Ilunga, 2016). It was not clear in the literature the specific offenses that were being referred to.

Those drivers and riders who do not comply with the Highway Code can face penalties, including the payment of fines or the temporary or permanent withdrawal of administrative documents authorising the driving of motor vehicles.

Motorcycle transport has found itself outside of the law and lacking regulation, creating a high level of insecurity on the road. Due to a combination of riding without a license and the pressure that riders face to complete jobs quickly in order to obtain more business, there is a general lack of respect towards the Highway Code. Risks that are most commonly seen include passing to the left, a lack of respect for traffic lights, speeding and untimely stops (Ndjeko Kalume & Banza Ilunga, 2016).

3.10.1 Helmets and protective gear

Proper safety equipment including a helmet and 'heavy clothing' is required in DRC⁵. Motorcycle taxi operators are required to have one helmet for the rider and one for the passenger. A mass helmet donation was made in Kinshasa and Lubumbashi to promote and encourage riders to wear helmets. Despite these donations, motorcyclists are still largely observed riding without helmets (Ndjeko Kalume & Banza Ilunga, 2016).

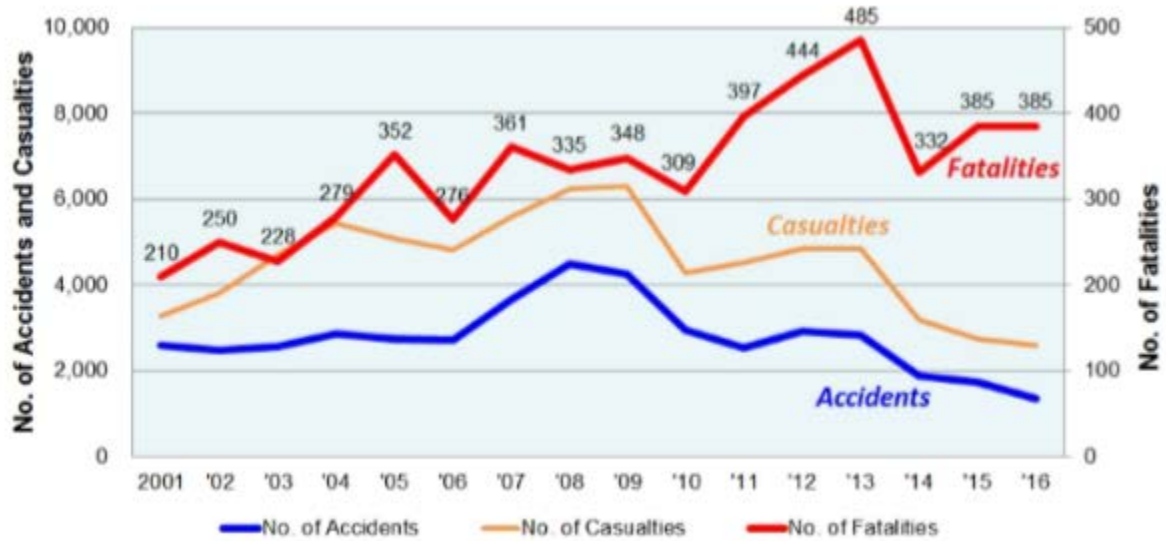
3.11 Road crashes and personal security

In terms of road traffic crashes, according to the WHO Global Status Report for Road Safety (2018), there is a clear lack of data related to road traffic crash related deaths occurring within the country. To illustrate, in 2016 there were 385 reported road crash related deaths across all modes of transport, whereas WHO estimate this number to be 26,529 (World Health Organization, Switzerland).

Through research carried out by JICA, it was reported by CNPR that while the number of reported road crashes decreased between 2008 and 2016 in Kinshasa, the number of fatalities increased (Democratic Republic of the Congo: Ministry of Infrastructure, 2018). The number of reported fatalities, casualties and crashes reported by CNPR can be seen in Figure 2.

⁵The research team is currently investigating whether this is mandated by law.

Figure 2: The number of Accidents, Casualties, and Fatalities in Kinshasa Province as reported by CNPR



In addition to a high level of crashes, motorcycles are also increasingly associated with threats to safety, such as attacks on passengers, kidnapping, rape and robbery. According to Kalume and Ilunga (2016), motorcycles are being used as a principal form of transport by criminals, and riders themselves are also often victims of harassment by police and violent attacks. Riders have also been killed for the sake of stealing their motorcycles (Ndjeko Kalume & Banza Ilunga, 2016).

In addition to this, JICA (2018) reported challenges related to traffic safety in Kinshasa city to also include (Democratic Republic of the Congo: Ministry of Infrastructure, 2018):

- Lack of a scientific (evidenced-based) approach
- Lack of a system to secure safe road infrastructure
- Lack of continuing education and awareness for traffic safety
- Poor post-crash response
- Poor regard for pedestrians and vulnerable road users

It is mandatory that all motorised vehicles must be insured by the owner of the vehicle and of any person that has custody of or that is driving the vehicle. This insurance must cover 'third parties against bodily injury and property damage including pedestrians, cyclists, riders, free or for hire passengers of the insured vehicle and passengers of the opposing vehicle' (Ndjeko Kalume & Banza Ilunga, 2016).

3.12 Health

Motorcycles have been documented to play an essential role in health services in DRC. During the Ebola crisis, for example, motorcycles were cited as the only mode of transport that could pass through 'one of the densest forests on the planet' with 'no roads except some tracks' (Haug, 2018). During the Ebola response, motorcycles were also used as part of contact tracing activities, which required the mass mobilisation of thousands of Community Health Worker's, social mobilisers, contact tracers, community leaders, and volunteers. Motorcycles were cited as a main mode of transport that were acceptable for DRC's climactic and infrastructure limitations (USAID, 2018).

The link between motorcycles and the spread of Ebola in DRC has been widely discussed in the media as well. As was the case in Sierra Leone, motorcycle taxi riders were considered to have a role in the spread of Ebola. In 2018, the city authorities of Goma in eastern Congo advised motorcycle taxi passengers not to wear helmets provided by the taxi riders and to avoid handshakes, in order to prevent the spread of Ebola (Mahamba, 2018).

3.13 Regulation and Legislation

Additional research regarding registration and legislation of motorcycles and motorised three-wheelers will be carried out during Phase 2 (Research). Additional grey literature is being sourced from stakeholders during the continuing phases of the project.

4 Development Projects

4.1 Infrastructure funding

Donor funding for infrastructure makes up approximately 13% of all donor support in DRC, of which the World Bank (31%), the 'European Community' (27%), the African Development Bank (AfDB) (18%) and Belgium (12%) make up the largest donors (Democratic Republic of the Congo: Ministry of Infrastructure, 2018).

There is also a national fund for road development referred to as 'Le Fonds National d'Entretien Routier de la Republique Democratique du Congo' (FONER). This fund is financed by taxes charged on lubricants and fuels and currently generates approximately half of the funds needed to maintain roads.

4.2 National Integrated Transport Master Plan

JICA together with the 'Ministere des Infrastructures, Travaux Publics et Reconstruction' have come together to work on the improved urban development of Kinshasa City, which will incorporate the development of transport infrastructure. This development programme will continue up to 2030. The initial milestone of this project includes a study, which develops an 'Urban Transport Master Plan' based on the verification of current conditions, plan development, and a preliminary feasibility study (Democratic Republic of the Congo: Ministry of Infrastructure, 2018).

Based on the initial research, the following activities have been proposed for the Urban Transport Master Plan:

- Modernisation of Railway
- Development of Bus Rapid Transit (BRT) system
- Bus and Paratransit
- Road development
- Road Maintenance
- Ensuing traffic safety and ensuring smooth traffic flow

The above mentioned traffic safety activities in particular are expected to have a huge impact on the use of motorcycle taxis for urban, peri-urban and rural areas. These activities can be seen in Table 4.

Table 4: Activities associated with traffic safety, control and development

(Democratic Republic of the Congo: Ministry of Infrastructure, 2018)

General Objective	Specific Objective	Plan
Ensure traffic safety	Road safety management	<ul style="list-style-type: none"> Development of road safety action plan for Kinshasa Development and implementation of road traffic accident database system
	Safer roads and mobility	<ul style="list-style-type: none"> Identification and improvement of blackspots Improvement of road signs and road markings Introduction of mandatory road safety audit
	Safer vehicles	<ul style="list-style-type: none"> Update of road safety regulation (traffic rules, regulations for public transport operators)
	Safer road users	<ul style="list-style-type: none"> Improvement of equipment for law enforcement Continuous implementation of road safety education and awareness Construction of a model training school for driving license Introduction of demerit point system for driving license
	Post-crash care	<ul style="list-style-type: none"> Improvement of mobility and medical service for accident rescue
Ensure smooth traffic flow	Eliminate bottlenecks	<ul style="list-style-type: none"> Improvement of major intersections and "Pole" Introduction of upgraded traffic signal control systems Development of regulations for the proper traffic flow
	Improve parking management	<ul style="list-style-type: none"> Revision of parking facility development policy On-street parking management Strict enforcement of illegal parking Development of parking facility operated by PPP model Parking location map and parking guidance system
	Transport demand management	<ul style="list-style-type: none"> Traffic information provision for route choice by utilizing ITS (route change) Shift traffic demand from peak hours in the city centre (peak hour shift) Introduction park and ride (mode change) Restriction of vehicle use in the city centre
	Smooth public transport	<ul style="list-style-type: none"> Installation of bus location system to provide information Consideration of traffic management when introducing BRT

4.3 World Bank: ProRoutes Second Additional Financing Project

The High-Priority Roads Reopening and Maintenance Project (ProRoutes, 2008-2019; US \$238 million) aims to re-establish access between provincial capitals and districts and territories in the north-east to those in the south-eastern of DRC. This project aims to ensure year-round access and reduce travel time on selected high-priority roads of DRC. Since 2008, ProRoutes has rehabilitated 2,300 kilometres and is currently maintaining 3,000 kilometres of the national road network (International Bank for Reconstruction and Development International Development Association, 2018).

4.4 World Bank: Multimodal Transport Project

The Multimodal Transport Project's (MTP, 2011-2018; US\$ 411 million) design was initiated by the Government, in partnership with the World Bank, to support DRC's public enterprise reform in order to support sustainable and equitable economic development. Outcomes of this project are expected to be:

1. Improve transport connectivity in the recipient's territory to support national economic integration
2. Restore the national railway's financial and operational viability
3. Implement a sector-wide governance plan and strengthen the operational performance of state-owned transport enterprises.

4.5 UNDP

In 2014, the United Nations Development Programme (UNDP) undertook a road safety and conflict resolution programme in Bunia and Komanda (Ituri District, Orientale Province), in order to restore trust between riders and the inhabitants of these two localities (UNDP, 2014).

Motorcycles have been the preferred means of transportation due to the nature of the road network in Ituri, which is largely unpaved. In Ituri, motorcycle taxis are used to carry both passengers (it is not uncommon to see four passengers per motorcycle) and materials such as charcoal and construction equipment. In 2014, UNDP estimated that there were 6000 motorcycle taxis in Ituri district. Despite their popularity, motorcycles were poorly perceived by the community due to road security and violence towards customers.

The Ituri Motorcycle Taxi Association (ATAMOI) in Komanda, together with the UNDP, organised training for 330 motorcycle taxi riders focusing on Highway Code compliance and conflict resolution. The Traffic Police delivered the training relating to the Highway Code. The training was held in groups of 50 motorcycle taxi riders, for two to three hours per day, allowing motorcycle taxis to continue their activities in parallel.

At the end of the training, the participants received a certificate and a vest that identifies them as having completed this particular training, to passengers. The aim of the training was specifically focused on behaviour change regarding conflict resolution. After the programme, riders reportedly demonstrated skills on how to solve problems with customers in an amicable manner, instead of violently such as through acts of vandalism or vehicle damage.

5 Conclusion

Overall, there is very little literature available relating to motorcycles and motorised three-wheelers in DRC, especially in rural contexts. While motorcycles have been shown to have been widely adopted and increased both employment opportunities and access, there have been numerous challenges associated with this including a lack of enforcement of regulations, a lack of adherence to the Highway Code, and a lack of registration and licensing. This has in turn increased the apparent number of road accident related fatalities.

The dearth of information relating to motorcycle and motorised three wheelers in DRC, especially in rural areas, highlights a large gap in the literature and the need for investigation into training practices, legislation and regulation, vehicle registration, rider and user perceptions and perceived needs.

6 References

- Bank, T. W., 2018. Democratic Republic of Congo urbanization review, s.l.: The World Bank .
- Democratic Republic of the Congo: Ministry of Infrastructure, P. W. a. R., 2018. Project for Urban Transport Master Plan in Kinshasa City -PDTK-. Interim Report Summary. , s.l.: Japan International Cooperation Agency .
- EM, L. et al., 2009. Human Ebola Outbreak Resulting from Direct Exposure to Fruit Bats in Luebo, Democratic Republic of Congo. 9(6).
- Haug, C., 2018 . Keeping Your Cool — Doing Ebola Research during an Emergency. The New England Journal of Medicine , Volume 378.
- International Bank for Reconstruction and Development International Development Association , 2018. Management report and recommendation in response to the inspection panel investigation report : Second Additional Financing for the high priority roads, s.l.: The World Bank .
- Luneghe, M. K., 2018. Motorcycles Made in China Are a Cheap, Fast Solution to Travel Through Rural DRC. [Online]
Available at: <https://globalpressjournal.com/africa/democratic-republic-of-congo/motorcycles-made-china-cheap-fast-solution-travel-rural-drc/>
[Accessed 13 March 2019].
- Mahamba, F., 2018. No handshakes, no helmets in eastern Congo city preparing for Ebola. [Online]
Available at: <https://uk.reuters.com/article/us-health-ebola-congo-goma/no-handshakes-no-helmets-in-eastern-congo-city-preparing-for-ebola-idUKKBN1L123W>
[Accessed 2 27 2019].
- Mahamba, F., 2018. No handshakes, no helmets in eastern Congo city preparing for Ebola.. [Online]
Available at: <https://uk.reuters.com/article/us-health-ebola-congo-goma/no-handshakes-no-helmets-in-eastern-congo-city-preparing-for-ebola-idUKKBN1L123W>
- Marivoet, W. & Marysse, S. e. a., 2009. Decentralizing the Challenges of Poverty Reduction in the DRC, Perspectives, in L'Afrique des grands lacs: annuaire 2008-2009 , Paris: s.n.
- Murguet, B., 2018. Implementation Completion and Results Report (Rep.), s.l.: The World Bank.
- Ndjeko Kalume, A. & Banza Ilunga, A., 2016. Des Conditions d'Exercice du Transport Par Taxi-Motos dans la Ville de Lubumbashi, s.l.: KAS African Law Study Library - Librairie Africaine d'Etudes Juridiques.
- Okapi, R., 2016. Levée de la mesure contre la circulation des taxis-motos après 18 heures à Kinshasa. [Online]
Available at: <https://www.radiookapi.net/2016/11/25/actualite/societe/levee-de-la-mesure-contre-la-circulation-des-taxis-motos-apres-18>
[Accessed 26 March 2019].
- Ramania, D., 2016. Transport, Economic Growth, and Deforestation in the Democratic Republic of Congo (Rep.), s.l.: The World Bank.
- Store, L. D., 2019. Land Area and Population Density, Ward and Borough – London Datastore.. [Online]

Available at: <https://data.london.gov.uk/dataset/land-area-and-population-density-ward-and-borough>
[Accessed 27 02 2019].

The New Times , 2017. Rwandan bikes attract regional buyers. The New Times .

UNDP, 2014. En Ituri, la résolution des conflits passe par les taxis motos. [Online]
Available at:
<http://www.cd.undp.org/content/rdc/fr/home/ourwork/povertyreduction/successstories/ituri-taxis-motos.html>
[Accessed 13 03 2019].

USAID, 2018. Evaluation of the USAID/OFDA Ebola Virus Disease Response in West Africa 2014–2016, Washington, DC: USAID .

World Health Organization, Switzerland. Global Status Report on Road Safety, 2018. [Online]
Available at: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/
[Accessed 27 2 2019].