



FINAL REPORT

# Policies for Sustainable Accessibility and Mobility in Cities of Rwanda

December 2018

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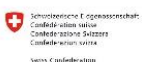
# Policies for Sustainable Accessibility and Mobility in Cities of Rwanda





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## Acknowledgements

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## List of Acronyms

AFC	Automated Fare Collection
AfDB	African Development Bank
BIA	Bugesera International Airport
BOT	Build, Operate and Transfer
BRT	Bus Rapid Transit
CBD	Central Business District
CoK	City of Kigali
CRBC	China Road and Bridge Corporation
DRC	Democratic Republic of Congo
EAC	East African Community
EDPRS2	Second Economic Development and Poverty Reduction Strategy
FONERWA	Rwanda’s Fund for the Environment and Climate Change
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOR	Government of Rwanda
HOV	High Occupancy Vehicle
ICT	Information and Communication Technology
INDC	Intended Nationally Determined Contributions
KBS	Kigali Bus Service
KCMP	Kigali Conceptual Master Plan
KCTMP	Kigali City Transportation Master Plan Report
LOV	Low Occupancy Vehicle
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Environment
MRT	Mass Rapid Transit
MTCO2E	Million tons of CO2 equivalent
NISR	National Institute of Statistics of Rwanda
NMT	Non-motorized transport
NUP	National Urbanization Policy
OEM	Original Equipment Interchange
PTI	Public Transport Interchange
PTV	Public Transport Vehicle

RALGA	Rwandan Association of Local Government Authorities
REMA	Rwanda Environment Management Authority
RFTC	Rwanda Federation of Transport Cooperatives
RHA	Rwanda Housing Authority
RITCO	Rwanda Inter-Link Transport Company
RMF	Road Maintenance Fund
RNP	Rwanda National Police
RSSB	Rwanda Social Security Board
RTDA	Rwanda Transport Development Agency
RURA	Rwanda Utilities Regulatory Authority
SEZ	Special Economic Zone
SSP	Sector Strategic Plan
TNC	Third National Communication
UNFCCC	United Nations Framework Convention for Climate Change
UN	United Nations
VAT	Value Added Tax
WHO	World Health Organization

## Executive Summary

Within the framework of its urban transport and mobility pillar, the Africa Transport Policy Program (SSATP) launched an activity to support eight pilot countries (Ivory Coast, Ethiopia, Guinea, Ghana, Kenya, Nigeria, Rwanda, and Senegal) in the development of policies to improve accessibility and mobility in urban areas of Africa. Six thematic areas have been considered as priorities: strengthening the institutional framework for urban transport management, creating funding sources dedicated to the management of urban transport, promoting the effective participation of civil society in urban transport management, improving multi-modal planning and operation of city centers, improving the performance of public transport (in particular the reform of paratransit services), organizing and implementing National Government assistance for the management of urban transport in secondary cities.

In Rwanda, this work has been led in close partnership with the National Ministry of Infrastructure (MININFRA) and within this Ministry, the Minister of State for Transport. A field diagnostic cutting across the six above priority areas helped in identifying most pertinent issues that affect Rwandan cities. Based on this diagnostic preliminary findings and recommendations were formulated. The findings and initial recommendations were widely discussed on 19 and 20 April 2018 as part of the Urban Mobility Forum organized under the auspices of the Ministry of Infrastructure. The Forum allowed for a refined set of recommendations to be formulated.

### Urban mobility issues

Kigali, the economic, political and administrative hub of Rwanda, houses around 1.3m people out of a total national population of 11.9 million. To relieve some of the urbanization pressures on the capital city the national government is developing six regional cities across the country: Rubavu, Musanze, Huye, Rusizi, Nyagatare and Muhanga. Most of these cities currently have population sizes approaching the 100 000 mark. Despite the planned decentralization approach, Kigali is still growing rapidly, at around 4% p.a.

With its central physical positioning in the country and being at the crossroads of north-south and east-west traffic corridors extending to neighboring states, the city of Kigali is the direct point of arrival for migrants coming from rural areas and beyond. Significant improvements have been made in the living conditions of a large percentage of the Kigali urban population, though due to the continuing population influx, the predominant housing pattern remains informal, often creeping up hillsides that characterize the city's geography.

From a national perspective, there has been a clear trend of increasing motorization in Rwanda. The motorized fleet across all vehicle classes excluding motorcycles had grown from around 106,000 in 2011 to 184,000 in 2016. The average annual fleet growth rate in this time period was 11.8%. The national fleet of motorcycles has also grown significantly, with its current size estimated to be around 80,000. In terms of road safety, in 2017 road traffic accident fatalities in Rwanda totaled 3,815, or 6% of total deaths in the country in that year. Since 2007, the government has imposed and enforced strict speed limits in urban areas and on intercity roads, as well as a strict penalty regime in respect of drunk driving. Fitment of speed governors on public transport and commercial vehicles is mandatory, with an imposed speed limit of 60km/h. The use of helmets for motorcycle riders and their passengers is mandatory and actively enforced.

From a transport infrastructure point of view, since 2010 notable progress has been made particularly in extending the existing paved road network and constructing one-stop border posts in the country. The length of paved national roads increased from 1,279 km in 2015 to 1,355 km in 2016, while the

Air pollution is a growing issue across the country. The transport sector is the main contributor to urban air pollution, and being the main urban center, the issue is most pronounced in Kigali. The 2014 Strategy for Reduction of Traffic Congestion and Air Pollution in the City of Kigali notes that suspended particulate matter (PM10) has already significantly exceeded the recommended WHO allowable limit

(50 µg/m<sup>3</sup>)<sup>1</sup>. This suggests that the inhabitants of Kigali are exposed to unacceptable levels of PM10 during most of their time outdoors, especially during the evening hours when concentrations reach their peak.

At the urban scale, key mobility and transport developments in Kigali in recent years include: the conversion of all paratransit services to scheduled bus operations; the launch of an automated fare collection system on these buses; in line with increasing motorization, substantial growth in general traffic congestion allied with the rise of motorcycle taxis as a key mobility option in the city; inclusion of walking and cycling infrastructure in all new major road construction projects; the planning and initial stages of a bus rapid transport systems; and the imminent relocation of the international airport to Bugesera. In terms of Rwanda's secondary cities, main developments and challenges have centered on: the expansion of paved roads, also as in Kigali accompanied by the construction of non-motorized transport infrastructure; the provision and improvement of public transport interchanges in the urban core; limitations in intercity connectivity and transport services; and again, the rise in prevalence of motorcycle taxis.

### Main study findings

There is a strong system of inter-governmental relations regarding Urban Mobility Planning between the key Central Government Agencies, the City of Kigali, and the provincial and district levels of government. Furthermore, inter-governmental cooperation pertaining to urban, inter-city and cross border mobility is highly structured and underpinned by a well-established planning, programming, budgeting, implementation, and monitoring and evaluation system.

National and urban transport is well governed with clear demarcation of roles and responsibilities for Planning (MININFRA), Implementation (RTDA) and Regulation (RURA). The absence of a national passenger or land transport act (i.e. transport sector legislation) was, however, mentioned as a particular challenge to provide the necessary framework of these roles and responsibilities in law. Kigali currently serves as the main center for transport administration services, e.g. vehicle licensing and vehicle testing. Mobile centers are being deployed on a decentralized basis, but in their absence at a particular site, attending to transport administration matters requires travel into Kigali.

The fuel levy provides for dedicated road infrastructure funding. In addition to this, there is a well-established system of loan and grant funding for road construction and maintenance at national and city level. There is however no current program to explore alternative dedicated funding sources for urban mobility.

Public transport operations are mainly financed by the fare box. During the last five years, the bus fleet renewal in Kigali has been funded by the operators themselves and they do not receive any subsidies covering operations (moto-taxi services are based on the same business model). Relying on fares only, without any significant complementary source of funding, severely constrains the possibility of expanding public transport services.

There is a highly structured and systemic process of civil society participation in priority setting in the urban mobility sphere. Urban transport infrastructure priorities are set in a “bottom-up” fashion – with local area inputs being coordinated at District level, moderated by professional inputs from RTDA and aligned with Presidential Priority Programs. National structures also exist through which the Government (as Contracting Authority) engages with transport operators at the collective level. Through this structure, government, as contracting authority, and bus operators can deal with contract related matters such as the introduction of higher occupancy vehicles in a collective manner.

The City of Kigali put a Transportation Master Plan in place in 2013, which directs planning and development across all modes of transport in the city. This plan is currently being updated. In practice, however, traffic management improvements at main intersections in the Kigali city road network are

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<sup>1</sup> Presidential decree No 25/1 of 25/02/2015

insufficient or absent. Intersection control for vehicular traffic is managed by traffic police in peak periods. The impact on non-motorized transport users is exacerbated by a shortage of formal and managed pedestrian crossings, which is particularly pronounced at intersections. However, there is a well-located network of major public transport interchanges in the city that are heavily utilized.

The improvement of the management of moto taxis as part of the urban transport system is not being addressed or regulated at the same tempo as the rapid growth of and reliance on this mode of travel. As such this is a missed opportunity, since motorcycle taxis can have a clear place in a multimodal system as a last-mile-home service provider. Riders and their passengers consistently wear safety helmets, but as a group moto taxis impact negatively on the safety of non-motorized users, particularly at intersections, and, in the high concentrations observed particularly in peak periods can also impact negatively on over vehicular traffic flow and management.

Paratransit operations in Rwanda have been formalized into formally contracted bus operations over the period 2006-2013. Public transport supply in Kigali and other main urban areas is therefore formalized by means of contracting arrangements between the national regulator (RURA) and bus operators, though outside Kigali local public transport services are largely unscheduled. Public transport supply between cities is formalized and regulated by an agreement between the national regulator (RURA) and the intercity bus operator (RITCO). The regulator (RURA), using its contracting powers, has initiated a process of obliging bus operators to systematically increase the number of high occupancy vehicles in their fleet.

Specifically, in relation to secondary cities, with national support they have made significant progress with investment in road infrastructure as well as the regulation of bicycle and motorcycle taxi operations. Progressive upgrading of public transport interchange facilities is also in evidence and linked to multi-modal planning with the co-location of international, national and local bus and minibus services as well as moto taxi ranking facilities. There remains a need to strengthen district capacity (staff and resources), as well as to increase the budget allocated to districts for road maintenance.

## Recommendations

The process of formulating recommendations followed the EASI (Enable-Avoid-Shift-Improve) framework. *Enable* recommendations aims to establish an efficient and responsible system of governance capable of anticipating needs, guiding public action and ensuring the integrated management and development of urban transport systems. *Avoid* recommendations are put forward to minimize the need for individualized motorized journeys through appropriate land use, planning and management. *Shift* recommendations focus on maintaining or increasing the modal shares of public transport and non-motorized transport such as walking and cycling. *Improve* recommendation aim to enhance the efficiency and safety of transport modes while minimizing their environmental footprint.

**E1: Enact passenger transport legislation.** MININFRA assumes the primary responsibility for preparing the required draft papers and the Bill to be enacted. In order to have a participatory process, it is further proposed that MININFRA engages RTDA, RURA, MINECOFIN, RNP, City of Kigali and the Districts on the contents of the legislation as these government sector actors will all play an important part in giving effect to a national land transport law. It is also important that public transport users, public transport service providers, vehicle and equipment suppliers and financiers be engaged in this process.

**E2: Avoid inappropriate consolidation of powers and functions with specific reference to regulation and contracting.** The authority currently responsible for the Contracting Function (i.e. RURA) must be engaged in this process and the institutional capacity of RTDA, must be prepared in order to enable it to assume responsibility for the Contracting Function. The City of Kigali as planning and infrastructure implementation authority should also be consulted in this process.

**E3: Enhance coordination between environmental and transport sectoral agencies to reduce fossil fuel reliance.** It is recommended that REMA (with support from MINIRENA), RTDA (with support from

MININFRA) and the Center of Excellence for Urban Mobility (under development) partner with FONERWA and international development partners to build momentum and dialogue around a shift towards electric mobility, focusing on public transport vehicles as a priority.

**E4: Build the requisite spatial planning and urban mobility capacity at City and District level.** It is proposed that MININFRA assumes responsibility for preparing the required skills development program and the eventual establishment of a Center of Excellence for Urban Mobility. MININFRA can assign the implementation responsibility to RTDA. The City of Kigali and the Districts must participate in the design and implementation of the program as they will be the main beneficiaries of the program.

**E5: Develop a clear finance and fiscal framework for funding of urban mobility.** The objective is to develop an inter-governmental finance and fiscal framework as part of development of the National Land Transport Act with a similar timeframe. The implementation of this recommendation should follow the same time frame as that for the development of the National Land Transport Bill and should be dealt with as an integral part of the process of settling a National Land Transport legislative and Finance and Fiscal Framework for and transport.

**S1: Extend the duration of bus operating contracts in order to encourage fleet renewal.** The most important steps are to undertake the required route viability studies, restructure future contracts to better respond to demand, review the fare system, assess the need for public funding for new and/or to “top up” fare revenue, and to implement such new contracts for period of at least 7 years with a view to future negotiated extensions also of 7 years.

**S2: Establish a central home for public transport data and leverage the existing investment in urban mobility data and ICT to further improve planning and management processes.** This includes mining existing fare system data, reviewing the current flat fare system and planning the advancement to a distance-based fare, investing in passenger information systems and harnessing local ICT capacity to support Public Transport improvements. This process should commence with these steps during the second half of 2018.

**S3: Establish the appropriate role of the moto taxi in the multi-modal system and regulate accordingly.** This includes undertaking a demand and supply survey of moto taxis in Kigali as well as the major urban centers, developing a regulatory model that speaks to the unique value offer of the moto taxi in a multi-modal urban transport system, and engaging moto taxi ownership structures as well as drivers on the proposed regulatory model for this mode. It is proposed that the implementation be undertaken in a phased fashion and that the commercial viability of this mode be enhanced rather than diminished through this process.

**S4: Introduce a public transport vehicle (PTV) local assembly, maintenance and repair program.** As a first step in actioning this recommendation, it is proposed that MININFRA and RTDA undertake an assessment of relevant fleet modernization processes, (e.g. in leading African cities), that an OEM procurement policy framework be agreed with MINECOFIN and that relevant aspects of this framework be captured in the National Land Transport Bill.

**I1: Optimize urban road use in Kigali through improved traffic management and dedicated bus lanes in order to facilitate the development of Mass Rapid Transit.** This recommendation is an action already in progress to be expedited in order to support the improvement of the public transport system. It also involves updating traffic counts at key intersections in Kigali, the completion of the road widening scheme, comparative case studies into the introduction of dedicated lanes, as well as the prioritization of signaling systems at intersections

**I2: Prioritize public transport interchange and bus termini improvements in Kigali.** Actioning this recommendation involves, amongst others, updating traffic counts at the key public transport interchanges (PTIs), undertaking comparative case studies into the implementation of multi-modal and mixed-use PTIs, and the prioritization of non-motorized transport movements.



**I3: Improve the public transport system by expanding its capacity and integrating public transport modes.** It is proposed that MININFRA be assigned the responsibility to drive this process and that the first-generation public transport contracts be replaced by second generation contracts (as proposed in S1 above) that enhances the attractiveness of the public transport service offer and better integrates the functioning of the various public transport modes.

**I4: Develop a non-motorized transport infrastructure network in Kigali and secondary cities.** The steps involved in actioning this recommendation should include a comprehensive assessment of the current infrastructure, improvement of the public transport system to attract non-motorized transport users (i.e. distance-based fares) and) the design of an integrated system of infrastructure aimed at enhancing access and mobility (include stairwells and footbridges where applicable).

**I5: Assess the impact of various initiatives undertaken to date.** It is recommended that MININFRA as the authority responsible for policy and review assume responsibility for actioning this recommendation. A committee could be created, involving the main government institutions (RTDA, RURA, MINECOFIN, City of Kigali, Districts, etc.) but also private sector representatives, academia and civil society. Studies using standards impact assessments methods and tools could be undertaken on specific topics and reviewed by the committee.

Rwandan decision makers are now at a particular moment to accelerate the implementation of a sustainable urban mobility policy in the capital city and promote its deployment in all cities of the country. To do so, it is recommended to go through a clarification of the powers, duties and functions of the various stakeholders involved in urban mobility matters, outline the financial and fiscal arrangements, as well as the rules in accordance with which urban mobility funding is allocated and applied for; propose a clear inter-governmental relations framework for the governance and management of urban mobility matters and set out how urban mobility planning processes should align with land use planning and urban development processes.

The recommendations contained in this report identify practical action levers to ensure, from an economic point of view, the role of Kigali and the country's largest cities as drivers of growth while optimizing public spending; from a social point of view, access to jobs and services for a maximum of urban households while reducing the risk of road mortality, and from an environmental point of view to put the country on a more sustainable path improving the energy efficiency of the sector and reducing air pollution.

## Introduction

Urban transport and mobility is one of the three pillars of the African Transport Policy Program (SSATP), which aims to provide African policymakers with tools to develop sustainable, safe and affordable urban transport in the cities of the continent. The actions of the program thus aim to support the implementation of Sustainable Development Goal 11: "Making cities and human settlements inclusive, safe, resilient and sustainable".

To this end, SSATP has launched a program to support the development of policies to improve accessibility and mobility in urban areas of Africa, based on an empirical study of a representative sample of African cities. **This work led to the publication in June 2015 of the Working Paper No. 106 entitled "Sustainable mobility and accessibility policies in African cities" (Stucki, 2015).**

### The EASI conceptual framework

The "EASI conceptual framework", described in this document, outlines a set of specific policy actions according to four areas of intervention:

- **ENABLE:** to establish an efficient and responsible system of governance capable of anticipating needs, guiding public action and ensuring the integrated management and development of urban transport systems;
- **AVOID:** minimize the need for individualized motorized journeys through appropriate land use, planning and management;
- **SHIFT:** maintain or increase the modal shares of public transport and non-motorized transport such as walking and cycling;
- **IMPROVE:** improve the efficiency and safety of transport modes while minimizing their environmental footprint.

The specific measures proposed may be adopted by African cities on each of these pillars of intervention. The EASI conceptual framework is presented schematically below.

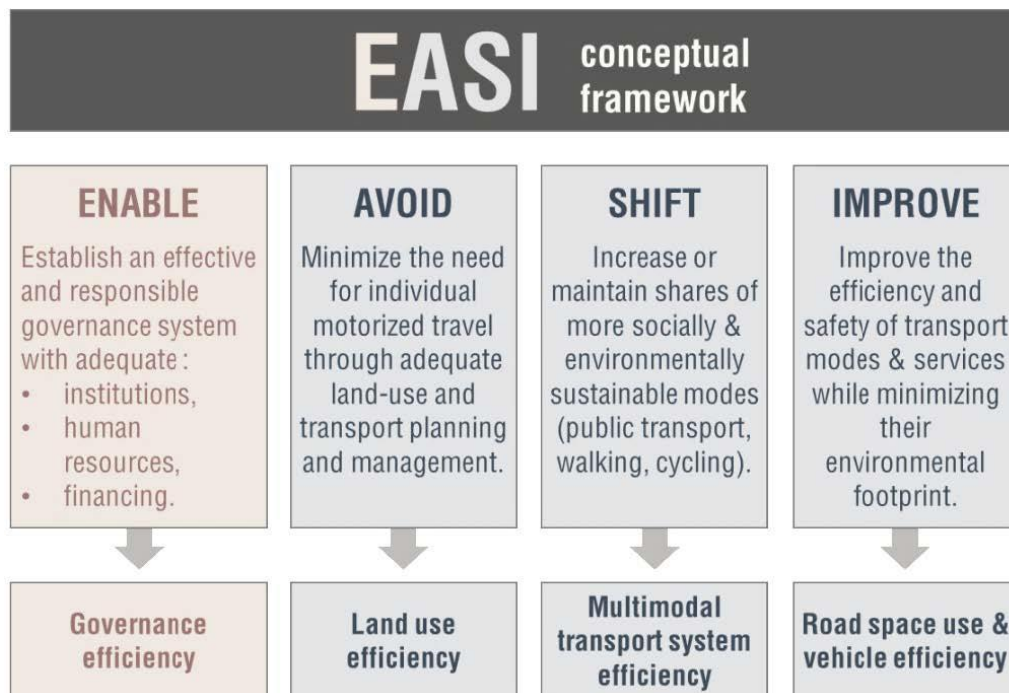


Figure 1: EASI, a conceptual framework to guide public action towards sustainable accessibility and mobility in African cities

## Implementation in Rwanda as a pilot country

Following this publication, a complementary work program has been defined for the implementation of these guidelines in eight program member countries (Ivory Coast, Ethiopia, Guinea, Ghana, Kenya, Nigeria, Rwanda, and Senegal), the result of the present study.

The methodology used for these studies in the eight countries concerned was the same in order to enable cross-national comparisons and to encourage the exchange of good practices. **This study aims to bring a change in the way of thinking about accessibility and mobility, and to sensitize decision-makers for the adoption of good policies, strategies and operational practices at both the national and local levels that effectively contribute to the improvement of urban transport and mobility in African cities.**

This report therefore proposes to start with a diagnosis of urban mobility in Rwanda. This was established through the experience of the mobilized experts, field visits to Kigali and Musanze, interviews with national and local political and technical leaders, as well as an in-depth analysis of the documents and data that have been collected and transmitted.

Led by the Ministry of Infrastructure (MININFRA), this work focused primarily on the main issues of mobility and accessibility in Rwandan cities by focusing on six priority areas:

- Strengthening the institutional framework for urban transport management;
- The creation of funding sources dedicated to the management of urban transport;
- Promoting the effective participation of civil society in urban transport management;
- Improvement of multi-modal planning and operation of city centers;
- Improving the performance of public transport (in particular the reform of small-scale transport);
- Organization and implementation of national government assistance for the management of urban transport in secondary cities.

This analysis led to the proposal of a list of priority recommendations, which are intended to be pragmatic and realistic, based on the EASI concept, as well as the drafting of an action plan to transform the mobility conditions for the population living in urban areas.

These recommendations were widely discussed on 19 and 20 April 2018, as part of the Urban Mobility Forum organized under the auspices of the Ministry of Infrastructure (MININFRA). This forum, introduced by the Minister of State in charge of Transport, brought together around 60 national actors and decision-makers who were invited to discuss these proposals. The results of this consultation are outlined in the last section of this report. The series of recommendations confirmed by the Urban Mobility Forum has been enriched with feedback provided by participants at the Urban Mobility Forum as well as decision-makers.

## Process and methodology

The process leading to the formulation of these recommendations (and of this final report), is presented schematically in the following flowchart. The Consultant started this assignment by submitting a Country Approach Document presenting the intended methodology, after carrying out a preliminary desk study of available documentation. During the first mission, this methodology was discussed with the beneficiary and the World Bank country team, who also contributed to the identification of relevant stakeholders to be consulted on the six thematic areas of the study. Interviews were conducted at both the national and the local level, and the Consultant travelled to a secondary city (Musanze) to meet county officials. The main findings of the missions were subsequently presented to the Steering Committee for validation. The first field mission also allowed the Consultant to gather additional data and documentation, as well as to make observations on the field. Building on the rich material gathered up to this point, the Consultant prepared its draft interim report, structured in three main sections. The first section provides a general diagnosis of urbanization

and mobility trends in the country. The second section narrows down the diagnosis to the six thematic areas, providing a critical and synthetic assessment of each area. Based on these findings, recommendations are formulated in the third section of the report, organized along the four pillars of the EASI framework:

- Enable – How to enhance governance efficiency?
- Avoid – How to enhance land-use efficiency?
- Shift – How to enhance multimodal mobility efficiency?
- Improve – How to enhance road-space use and vehicle efficiency?

These recommendations occupied a central place in the National Urban Mobility forum organized in Kigali on 19 and 20 April 2018. Following a presentation of the study's findings, the recommendations were discussed in plenary session with high-level decision makers from the main ministries, agencies, authorities, and counties holding responsibilities in urban mobility. Break-out groups focusing on each of the six thematic areas engaged the participants in a technical review of the recommendations. This exercise was facilitated by the Consultant's team, starting with a SWOT analysis of each thematic area and continuing with a structured discussion on the proposed recommendations. The revised recommendations, amended with the inputs received, were then presented and collectively approved during the closing plenary session of the forum. The final recommendations presented in this report thus constitute the main output of the national urban mobility forum.

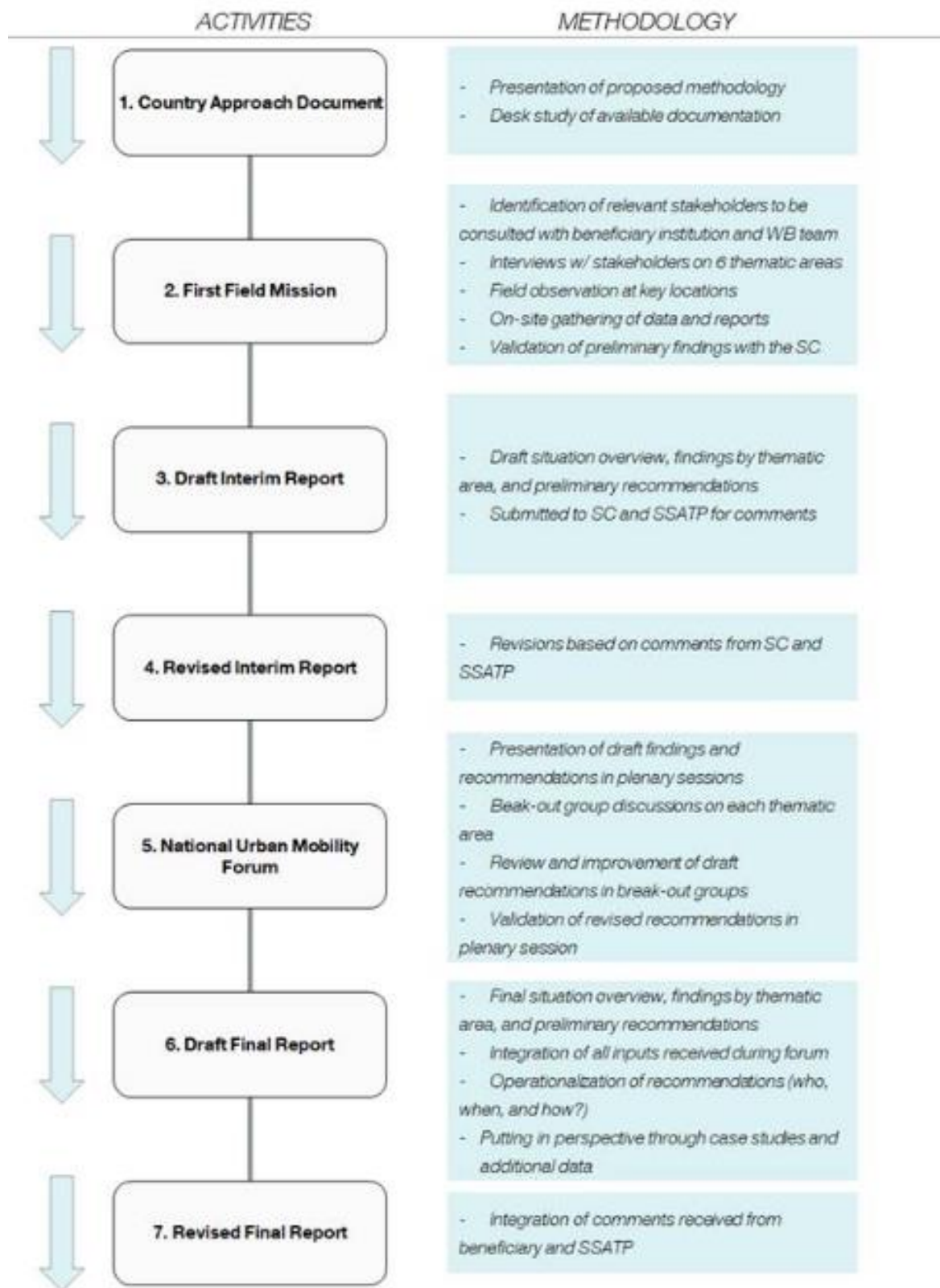


Figure 2: Process and Methodology followed

# 1. Urban mobility issues in Rwanda

## 1.1 National urban development

### 1.1.1 National trends

Rwanda is a hilly and fertile country with a population of 11.9 million people (World Bank, 2016). The urban population in Rwanda has grown rapidly over the past two decades, which poses a major challenge for the Rwandan government. From 1990 to 2016, the Rwandan population living in urban areas increased from 5.4% to 29.8% and will most likely reach 53% by 2050 (UN Habitat, 2015). The country's annual urban growth rate was 6.14% in 2017 and is expected to reach 7.45% by 2020 (World Bank, 2017). Rwanda is also experiencing migration within and between provinces and from rural to urban areas: 12% of the total population has migrated within Rwanda or to Rwanda from neighboring countries in the past six years.

In terms of physical and geographic structure, Kigali dominates the urban system and represented almost half of the total Rwandan urban population of 3.5 million people in 2015. By contrast secondary cities are much smaller with an average of 90 000 inhabitants each in Musanze, Huye, Muhanga and Gitarama. These smaller cities are however of critical importance to government as it starts pursuing an urbanization strategy that is based on planned decentralization to secondary cities and a reduction of urbanization pressure on Kigali (GoR, 2000).

In 1998-1999 the Office of the President initiated a reflection process aimed at determining where Rwanda stood as a country at the time and where it might head in future. In 2000 this process culminated in the publication of Vision 2020, expressing the aim to make Rwanda a middle-income country in the intervening 20-year period. Seven key challenges facing Rwanda were identified at the time: (1) diminishing agricultural productivity and arable land distribution, (2) natural barriers to trade, (3) a narrow economic base, (4) weak institutional capacity, (5) a low level of human resource development, (vi) public debt, and (vii) the social and economic consequences of the 1994 genocide.

Vision 2020 prioritized action at three timescales. It was resolved that in the short term, macroeconomic stability and wealth creation should be promoted to reduce dependency on foreign aid. The medium-term priority was to transform the country from an agrarian economy to a knowledge-based economy. The priority in the long run is to create a productive middle class and to foster entrepreneurship.

Across these three timescales, Vision 2020 rests on six pillars and three cross-cutting themes. The six pillars driving the new vision for the country are; (1) good governance and a capable state; (2) human resource development and a knowledge-based economy; (3) a private sector-led economy; (4) infrastructure development; (5) productive and market-oriented agriculture; and (6) regional and international economic integration. Cutting across these pillars are the themes of gender equality, protection of environment, sustainable natural resource management, and science and technology, including information and communication technologies. Concerning urban mobility, special importance was paid to the transport sector as it plays a strategic role in ensuring a flourishing the socio-economic context.

Since the government institutional reform process introduced in 2005, the country has been structured in accordance with two tiers of government, namely central and local. There is hierarchy of six administrative levels: i) central government, followed by five levels of local government: ii) the province, iii) the district, iv) the sector, v) the cell and vi) the village. The central government is responsible for formulating policies as well as regulating and supporting local governments. Local governments have the role of implementing policies and service delivery. Each province is headed by a Governor and is responsible for coordinating district development planning with national policies

and programs, supervising the implementation of the national policy in the districts within the province, coordinating governance issues in the province, as well as monitoring and evaluation. The sector is a territorial administrative entity responsible for implementation of development programs, service delivery, and promotion of good governance and social welfare. The cell is an entity that provides basic services and helps the population to achieve sustainable development. The village is an administrative entity in which the population directly participates in their own affairs and where they can reconcile their differences. It is the basic population mobilization entity entrusted with citizen participation at the fundamental level of service delivery. Civil Society participation in planning and priority setting processes, although not legislated, is highly structured and facilitated in a bottom – up (Village) to District level. All capital project plans are annually discussed at Village level by national and district level officials and local political representatives and budget priorities are set in agreement with Village level leadership structures. This process is particularly evident in decisions about road and NMT construction processes at District level.

During the last decade, Rwanda enjoyed one of the highest economic growth rates among African countries. The construction industry has been a lead actor in job creation albeit mainly in Kigali. Growth in the informal sector is however also on the increase and this in turn points to an increase in the risk of poverty and inequality. According to the World Bank (2016), it is estimated that ±1.25 million people in Rwanda currently find economic opportunities in the informal sector, out of an overall population of 11.9 million inhabitants. In 2016, the country registered a slight decrease in economic growth to 6% (World Bank, 2016). This occurred due to a combination of drought, weak export prices, reduction in construction activities and limited largescale investment.

	COTE D'IVOIRE	ETHIOPIA	GHANA	GUINEA	KENYA	NIGERIA	RWANDA	SENEGAL
<b>DEMOGRAPHY</b>								
Country population (million, 2016)	23,7	102,4	28,2	12,4	48,5	186,0	11,9	15,4
Country population projection (million, 2030)	28,1	137,1	34,2	16,2	62,8	226,9	16,7	19,6
Country density (pop. / sq. km)	75	102	124	50	85	204	483	80
<b>URBANIZATION</b>								
Urbanization Rate (% , 2016)	53%	20%	55%	38%	26%	49%	30%	43%
Urban Growth Rate (% , 2010-2015)	3,9%	5,0%	3,7%	3,5%	4,3%	4,6%	6,3%	3,6%
Urban areas with more than 300 000 inhabitants (2015)	3	2	4	2	4	42	1	1
<b>ECONOMY</b>								
GDP per capita (\$PPP, 2016)	3 693	1 734	4 293	1 966	3 151	5 861	1 913	2 567
Average economic growth rate (% / year, 2010-2015)	5,8%	10,6%	7,7%	4,5%	6,0%	5,2%	7,5%	4,1%
Poverty headcount ratio w/r to the international poverty line (2011 PPP, % of pop.)	28%	34%	14%	35%	34%	54%	60%	38%
Human Development Index (0-1 scale, 2015) 0 - low , 1 - high human development	0,47	0,45	0,58	0,41	0,56	0,53	0,50	0,49
<b>BUSINESS AND GOVERNANCE</b>								
Doing Business (Distance to Frontier, 2017) 0 - lowest, 100 - highest performance over time or "frontier"	52	46	57	49	63	48	70	49
Corruption Perceptions Index (1-100, 2016) 1 - low transparency or high corruption, 100 - high transparency or low corruption	34	34	43	27	26	28	54	45
<b>MOTORIZATION</b>								
Gazoline Price / Diesel Price (US\$/ L, 2016)	0,93 / 0,93	0,75 / 0,64	0,92 / 0,85	0,9 / 0,9	0,95 / 0,82	0,46 / 0,64	1,17 / 1,13	1,14 / 0,97
Private vehicules in use (2015)	430 000	90 000	560 000	N/D	848 000	2 970 000	N/D	340 000
Motorization Rate (private vehicules / 1 000 inhabitants, 2015)	19	1	20	N/D	18	16	N/D	23
Road Safety Casualties (nb of casualties / 100 000 people, 2015)	24	27	26	28	30	21	33	28

Table 1: Statistical Data in the eight pilot countries<sup>2</sup>

### 1.1.2 Rapid urban growth, especially in the Capital City

This section discusses urban dynamics in Rwanda’s primary and secondary cities. For the purposes of clarity, the City of Kigali is an administrative unit that is classified as a province, and comprises three

<sup>2</sup> Data from World Bank, Doing Business, OICA, UNDP, UN Habitat, Transparency International, sources are detailed in appendix.

districts. The urban area of Kigali is contained within the geographic boundaries of the City of Kigali and is spread over these three districts. (See Section 1.3.1 for a map of the City of Kigali)

Six districts earmarked for urban development and intensification, as discussed below, are spread across the remaining provinces (Eastern, Northern, Western and Southern). These secondary cities are currently much smaller in scale than Kigali. In contrast to Kigali that is spread over different districts, these secondary cities are spread over different sectors. (See Appendix 2 for maps of each of these six districts and their urban areas.)

### **Kigali, an engine for national economic growth**

Kigali is the political, administrative and economic capital of the country. The city currently hosts a population of 1.26 million inhabitants growing at an annual rate of 4%. The city holds approximately 10% of the total Rwandan population of 11.9 million on 730 km<sup>2</sup> (CoK, 2013), but in an area comprising only around 0.03% of the national territory. As such the urban area of Kigali is one of the most densely populated cities in Africa with approximately 1,060 inhabitants per km<sup>2</sup>. Kigali also comprises a number of rural clusters which accounts for 65% (Nduwayezu, 2015) of the total city area.

Kigali is located at high altitude, ranging from 1335 m to 2050 m above sea level. As the variation in altitude might suggest, the city is located in a steeply mountainous geography, which extends north-westwards across Rwanda. Constrained by this geography, the built-up area and supporting transport infrastructure has historically focused along the valleys between these mountains.



*Figure 3: Hilly geography of Kigali*

With its central physical positioning in the country and being at the crossroads of north-south and east-west traffic corridors extending to neighboring states, the city of Kigali is the direct point of arrival for migrants coming from rural areas. As a proportion of all rural-urban migration in the country, the share of migrants from the rural areas to Kigali increased from 19% in 2007 to 27% in 2012 (MININFRA, 2012). This increase is primarily driven by the economic opportunities that Kigali provides as it represents one third of the economy of Rwanda (MININFRA, 2012). The service sector employs increasingly more workers, with banks and multinational organizations moving their offices to Kigali. But the informal sector continues to contribute a large share of employment – It represented 60 % of employment opportunities in 2011 (Niyonsenga, 2012).



Significant improvements have been made in the living conditions of a large percentage of the Kigali urban population, though due to the continuing population influx, the predominant housing pattern remains informal, often creeping up hillsides. According to the 2015 Draft National Informal Settlement Upgrading Strategy published by the Ministry of Infrastructure, a significant 79% of people in Kigali live in informal settlements (as opposed to 62.3 % for other urban areas in the country). There has however been a marked degree of change since 2007, at which time the same figure for Kigali stood at 90%.



*Figure 4: Unplanned residential settlement on Kigali's periphery*



*Figure 5: Kigali CBD with car-free street*

Following the Kigali City Master Plan, the Central Business District (CBD) has seen a rapid transformation during the last five years, particularly with taller buildings dedicated to the tertiary sector as well as a new headquarters for the municipality. On other hills in the city, new multi-story buildings along main roads are being developed. Valleys have been preserved for agricultural activities and even the old industrial area, close to the CBD, will be moved and converted to green open space.

Kigali, as the main focal point of urban development in Rwanda, has an extensive framework of catalytic urban development projects as reflected in and integrated into the 2013 Kigali City Master Plan. The Plan ultimately intends to attract further investment. Short-, medium- and long-term projects have been conceived to span the employment, housing, infrastructure and recreation and tourism sectors. The short-term projects had a timeline spanning to 2017 – with many if not all having been completed – and subsequent increments spans to 2025 and 2040. The key emphasis was on the 2017 and 2025 horizons (as highlighted in Table 2 below).

	Short Term (2017)	Medium Term (2025)	Long Term 2040
<b>EMPLOYMENT</b>	Development of Kigali CBD – Phase 1	New CBD Core Development	Gahanga Regional Center subsequent phase
	Development of Gahanga Sports Hub	Nyamirambo Fringe Center	Kimironko Stadium Redevelopment
	Development of Airport Boulevard	Gahanga Regional Center – Phase 1 (Expo and Business Park)	Ndera Regional Center
	Kigali SEZ – Phase 2	Kicukiro Fringe Center	Masaka Regional Center
	Light industrial Estate at Gahanga	Kinyinya Fringe Center	Rusororo Industrial Estate
		Kigali SEZ – Phase 3	Masaka Industrial Estate
	Gikondo Regeneration (Mixed-Use)		
		Kimironko Redevelopment	
<b>HOUSING</b>	Development of affordable housing at Akuminigo and Rugarama	Incremental Housing in unplanned neighborhood at Kimironko	Redevelopment of unplanned neighborhood at Kimironko
	Upgradation of unplanned neighborhood at Kinyinya (OZ Subarea)	Development of affordable housing at Kinyinya – Phase 1	Redevelopment of unplanned neighborhood at Kicukiro
	Redevelopment of unplanned area in Kimisagara and Gitega	Incremental housing in unplanned neighborhood at Kicukiro	Development of affordable housing at Masaka
	RSSB affordable Housing Development	Development of affordable housing at Gahanga – Phase 1	Development of affordable housing at Gahanga – Phase 2
		Development of affordable housing at Ndera	
<b>INFRASTRUCTURE</b>	Nyabugogo Transport Hub	Nyamirambo – Nyabugogo – Ndera BRT (Line 1)	Extension of BRT Line 1 to Rusororo Industrial Estate
	Reservation for BRT Corridor	Nyabugogo – Gahanga BRT Line (Line 2)	Nyabugogo – Kinyinya BRT Line (Line 3)
	Development of STP in Gitikinyoni and Gikondo		Kicukiro – Masaka BRT (Line 4)
	Development of Landfill in Nyarugenge		New MRT Lines

<b>RECREATION AND TOURISM</b>	Nyarugenge Heritage Village	Kigali CBD Wetland Park and Kimicanga Entertainment District – Phase 1	Lake Muhazi Adventure Theme Park
	Lake Muhazi Development – Phase 1	Agro Tourism Valley	Kigali CBD Wetland Park – Phase 2
	Pottery Village	Wetland Biodiversity Park – Phase 1	Wetland Biodiversity Park – Phase 2
	Kigali Cultural Village		Flower Valley

Table 2: Catalytic development projects in Kigali<sup>3</sup>

	Kigali	Musanze
<b>DEMOGRAPHY</b>		
<b>Metropolitan population</b> ( <i>million, 2015</i> )	1,3	N/D
<b>Percentage of the national population residing in the urban agglomeration</b> ( <i>%, 2015</i> )	10%	N/D
<b>Urban population growth rate</b> ( <i>% / year, 2015-2020</i> )	3,3%	N/D
<b>QUALITY OF LIFE</b>		
<b>Quality of life in African cities</b> ( <i>EPFL-AMB ranking, 2017</i> )	54/100	N/A
<b>Urban mobility Index 2.0 - UITP</b> ( <i>grade 0-100, 2014</i> )	N/D	N/D
<b>MOBILITY DEMAND</b>		
<b>Motorization rate</b> ( <i>vehicules / 1'000 inhabitants</i> )	40	N/D
<b>Number of trips per day</b> ( <i>million</i> )	N/D	N/D
<b>Number of motorized trips per day</b> ( <i>million</i> )	N/D	N/D
<b>Number of motorized trips per day per inhabitants</b> ( <i>million</i> )	N/D	N/D
<b>Average trip distance</b> (km)	N/D	N/D
<b>Modal split - Personal Vehicles</b> (%)	23%	N/D
<b>Modal split - Public Transport, including paratransit</b> (%)	64%	N/D
<b>Modal split - Non Motorised Transport</b> (%)	11%	45%
<b>TRANSPORT SUPPLY</b>		
<b>Number of public buses</b>	2 020	N/D
<b>Number of paratransit vehicules</b> (taxis excluded)	N/D	N/D
<b>Length of existing urban rail road and/or reserved bus lanes</b> (km)	N/D	N/D
<b>Length of planned urban rail road and/or reserved bus lanes</b> (km)	0	N/D

Table 3: Statistical data in Kigali and Musanze

### Development of secondary cities as a strategy for poverty reduction

The national government is strongly focused on the development of secondary cities to encourage migration to urban areas outside of Kigali City. A system of secondary cities is supported through measures anchored in EDPRS2 (MINECOFIN, 2013), and by prioritizing investment into chosen poles of growth, to support local development which is spatially well distributed over the country. Six secondary cities have been selected for the promotion of urban development outside the capital: Rubavu, Musanze, Huye, Rusizi, Nyagatare and Muhanga (see Appendix 2 for maps showing their urban areas and administrative boundaries).

<sup>3</sup> CoK, 2013

The development process aims at transforming the economic geography of the country as well as avoiding pressure on peri-urban land of Kigali and urban sprawl in secondary cities. By virtue of their relatively small size, development pattern, topography and natural environment, Rwanda's secondary and other small cities have opportunities to grow in such a way as to respond to the requirements for both green and inclusive development (World Bank, 2017).

The focus on these six cities reflects the government's approach to concentrate resources in strategic regional points across the country, rather than everywhere at the same time.

District	Town	2012 District Population	2012 Urban Population	% of District Population
<b>Nyagatare</b>	Nyagatare	466,944	17,076	3.7%
<b>Rusizi</b>	Rusizi	404,278	28,488	7%
<b>Rubavu</b>	Rubavu	404,278	149,209	37%
<b>Musanze</b>	Musanze	368,563	68,930	18.7%
<b>Huye</b>	Huye	328,605	52,768	16%
<b>Muhanga</b>	Muhanga	318,965	50,608	15.9%

Table 4: Population of the six focused secondary cities in Rwanda<sup>4</sup>

The designated role of the six secondary cities in the National Urbanization Policy (NUP) is to help create a “functional network of development poles” which can “cost-effectively provide socio-economic opportunities to all”. The way in which the cities are characterized as economic growth poles in the NUP is defined as follows:

- Huye as the city of "Education, Knowledge and Cultural History";
- Rubavu as the "International Gateway City and Tourism";
- Musanze as the city of "Eco-friendly Mountain Tourism and Industry";
- Nyagatare as the city of the "Cattle and Dairy Region, Commercial Hub of Eastern Region";
- Rusizi as the city of "Cross-border Trade and Transportation Logistics, Nyungwe Forest";
- Muhanga as the city of "Hydropower and Mining Center; Creative Economy; Pottery and Fashion".

Among them, the six secondary cities account for 19% of total non-agricultural GDP (13% of total GDP) while Kigali contributes 61% of total non-agricultural GDP (41% of total) indicating the primacy of Kigali in the Rwandan Economy.

Currently, none of the secondary cities has the full set of plans in place which can help guide efficient and inclusive urban growth. Many of the master plans present ambitious visions for urban growth and development but which do not adequately consider the current institutional and financial capacities and constraints.

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<sup>4</sup> World Bank, 2017

City	Share of national non-farm GDP	Non-farm employment	Economic density (jobs per population)
Nyagatare	1.8%	5,598	0.32
Rusizi	3.5%	9,329	0.33
Rubavu	3.7%	12,855	0.09
Musanze	3.3%	6,109	0.09
Huye	4.1%	9,141	0.17
Muhanga	2.8%	3,560	0.07
Kigali	61%	113,093	0.13

Table 5: Economic activity indicators for Rwanda cities<sup>5</sup>

City	Urban Master Plan	Local Plans	Comments
<b>Secondary Cities</b>			
Huye	2011: Prepared at a large scale and provides only a generic development plan for city growth areas	None—Master Plan lacks detail required to support plan execution for the city as a whole	Plan focuses on diagnostic but is not implementable for lack of detail
Nyagatare	May 2015: Conceptual level only	UN-supported local plans covering 10% of planned developed area	No phased development; ignores existing structure
Muhanga	May 2013: Prepared at a large scale and provides only a generic development plan for city growth areas	None—Master Plan lacks detail required to support plan execution for the city as a whole	Only covers proposed new development areas, not the existing developed and partially developed urban area
Rusizi	2015: Covers Greater Rusizi area but focus on existing urban core	Area plans for Central Business District in the Master Plan	Contains detailed housing and servicing concepts and costs
Rubavu	May 2015: Conceptual level only, although phasing proposed	None—Master Plan lacks detail required to support plan execution for the city as a whole	Main focus on new development areas outside existing urban core
Musanze	July 2014: Provides a realistic overall development plan for the city	UN-supported local plans covering 20% of developed area	Sound plan which requires further detailing through local plans

Figure 6: Status of urban Master Plans in secondary cities<sup>6</sup>

The new urban master plans and development plans proposed for preparation in the near future are being developed on the basis of the new planning framework (2015) which clarifies plan hierarchies, content, elaboration, scale, planning principles, etc. The Ministry of Infrastructure (MININFRA) and Rwanda Housing Authority (RHA) are providing support to the districts with plan preparation.

The development priorities for each secondary city are outlined below:

<sup>5</sup> NISR, 2014

<sup>6</sup> World Bank 2017

City	Economic transformation priorities
<b>Nyagatare</b>	<p>Establish agro, livestock and animal feeds plants to develop dairy industry;</p> <p>Urban and rural infrastructure development (tarmac roads, 20km), feeder roads (300km), housing and electrification to tap rural-urban forward and backward linkages;</p> <p>Position Nyagatare district as a secondary city focusing on the livestock, dairy and building materials.</p>
<b>Rusizi</b>	<p>Implement the Kivu belt project (construct roads, modern ports, hotels) to smoot tourism, promote cross-border trade (mainly to South Kivu) and inter-connection between Rusizi, Nyamasheke, Karongi, Rutsiro and Rubavu;</p> <p>Develop business infrastructure while focusing mostly on feeder roads, airport extension, shipping, shipyard and industrial park (i.e. cement and rice).</p>
<b>Rubavu</b>	<p>Implement the Kivu belt project (construct roads, modern ports, hotels) to smoot tourism, promote cross-border trade (mainly to North Kivu) and inter-connection between Rubavu, Karongi, Rutsiro, Nyamasheke and Rusizi;</p> <p>Increase agricultural and livestock production (build carrot juice transformation entities in Nyakiliba, Rugerero sectors; modern slaughterhouse construction, leather collection and preparation, exportation of processed meats (pork, beef and poultry);</p> <p>Enhance urbanization though development and implementation of the City’s Master Plan (hard: roads, hotels, artificial park, and soft infrastructure) and develop water transport and tertiary services.</p>
<b>Musanze</b>	<p>Modernize agriculture with a special focus on promoting agro processing industries for the main districts products for exports (Irish potatoes, wheat and pyrethrum);</p> <p>Facilitate private investors in the district to promote and improve tourism by liaising with relevant central government agencies to avail necessary infrastructure like roads and electricity and partner with higher learning institutions to develop and avail a pool of competent and skilled personal in tourism and hospitality.;</p> <p>Finalize Musanze district land use master and the district detailed physical master plan and enforce their implementation to position the district as a secondary city and attract private sector to develop low cost houses in the district.</p>
<b>Huye</b>	<p>Promote Public Private Partnership in layout and development of district industrial park;</p> <p>Attract private investors in the development of pharmaceutical industry within the district;</p> <p>Extension of electricity infrastructure to Rwaniro and Kigoma sector and supply electricity to 25 new villages to attract education investments.</p>
<b>Muhanga</b>	<p>Construction and operationalization of Agakiro Center (handcraft and exploitation of mining and quarries)</p> <p>Processing of mining products to be done especially in areas not suitable for agriculture.</p>

Table 6: Economic transformation priorities for the six secondary cities<sup>7</sup>

<sup>7</sup> EDPRS, 2013

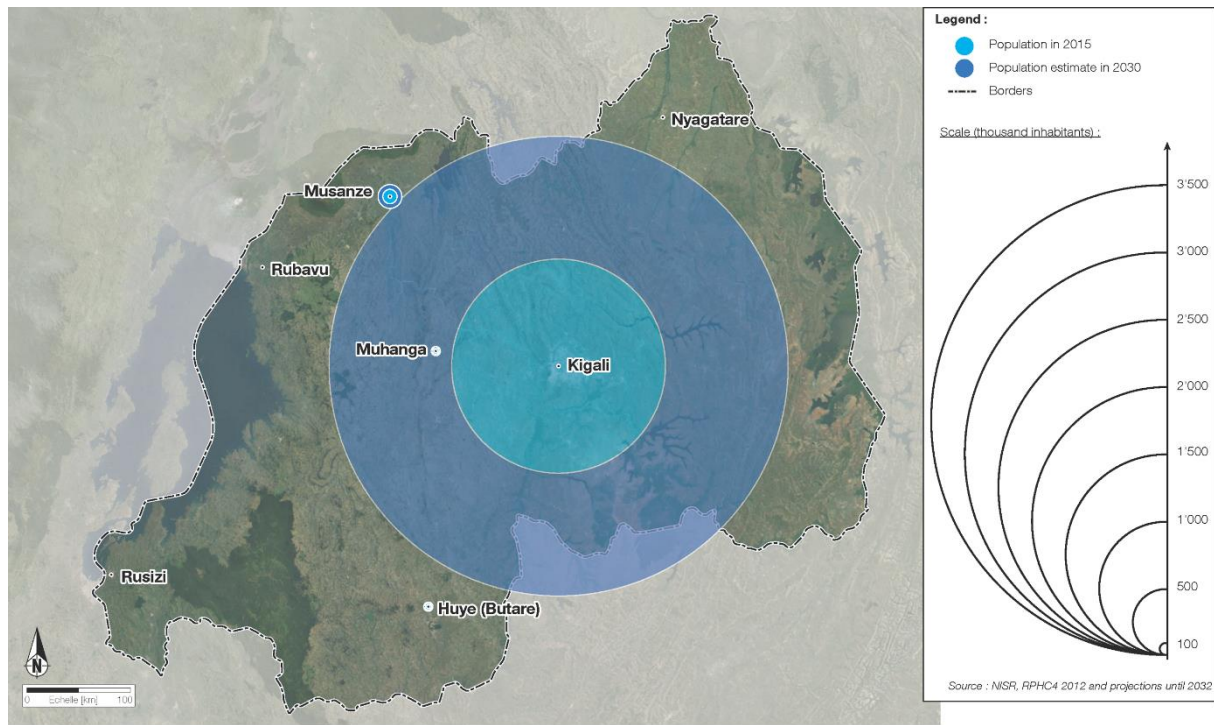


Figure 7: Main cities in Rwanda

## 1.2 Rapid Motorization growth

### 1.2.1 Motorization trends

From a national perspective, there has been a clear trend of increasing motorization in Rwanda. As per the 2017 Rwanda Statistical Yearbook, the motorized fleet across all vehicle classes excluding motorcycles had grown from around 106,000 in 2011 to 184,000 in 2016. The average annual fleet growth rate in this time period was 11.8%. It represents an increase of 9 vehicles per 1,000 inhabitants in 2011 to 15 vehicles per 1,000 inhabitants in 2016. The detailed fleet breakdown by vehicle category appears in the 2017 Rwanda Statistical Yearbook (sourced from the Rwanda Revenue Authority), as shown below:

Category	2011	2012	2013	2014	2015	2016
Caterpillar	0	3	25	75	105	126
Bus	426	489	549	769	1,059	1,264
Trucks	3,089	3,378	3,738	4,070	4,961	6,049
Pick-up	13,213	14,472	15,163	15,734	16,402	17,245
Special Engine	537	638	733	832	1,187	1,726
Jeeps	13,349	15,828	17,361	18,583	20,276	22,292
Microbus	138	147	151	153	254	545
Minibus	5,043	5,528	5,827	6,058	6,160	6,283
Cars	19,109	22,699	24,834	26,850	30,238	33,080
Motors	49,718	60,980	67,382	74,774	85,072	93,866
Trailers	721	750	812	851	887	920
Semi trailers	184	186	186	194	218	232
Tricycle	18	61	63	68	73	73
Unknown	0	0	0	1	1	2
Forklift	0	0	0	0	0	0
<b>Total</b>	<b>105,545</b>	<b>125,159</b>	<b>136,824</b>	<b>149,012</b>	<b>166,893</b>	<b>183,703</b>

Table 7: Cumulative number of vehicles registered by category



Though not as detailed as other vehicle categories, the national fleet of motorcycles has also grown significantly. Estimates by the Rwanda National Police suggests an overall motorcycle fleet of 80,000 in the country as at 2017. This should be compared with previous estimates of around 58,000 in 2012, 38,500 in 2010 and 6,700 in 2004. Though the data is not detailed, the available figures suggest an average annual fleet growth rate of 8.5%.

Till 2018, all the vehicles in use in Rwanda were imported (expected farm vehicles assembled in the country). The applicable tariffs are from East African Community (EAC). To import a new vehicle, you must pay 25 % import duty, 18 % VAT, between 5 % to 15 % excise duty, depending on the size of the engine (5% for 1,500 cc; 10% between 1,500 cc and 2,500 cc : 15% for vehicles over 2,500 cc). Since 2016, a new law aiming at curtailing importation of used cars into the East African frontier in a bid to avoid dumping and also at controlling carbon emissions from old cars came into force. If an imported vehicle is more than ten-years-old, a depreciation rating provides up to a maximum of 80% for 10 years-old vehicles. It is 20% for two-years old vehicles. Under the new conditions, the price of most preferred second – hand car brands have almost doubled. For EAC, this is a way to start its automobile industry and to phase out imported vehicles.

In 2018, Volkswagen opened an assembly plant in Rwanda, the first Integrated Mobility Solution in Africa, situated in the Special Economic Zone. The automaker expects to reach annual production of 5,000 cars in the first phase<sup>8</sup>.

### 1.2.2 Strong measures for Road safety

According to the latest WHO data published in 2017, road traffic accident fatalities in Rwanda reached 3,815 which attributed to 6% of total deaths in the country in 2017. Rwanda has in the past decade made substantial efforts to improve road safety by focusing on prevention, education, regulation and enforcement strategies and has set in motion a national strategy that sets targets for reduction of road accident fatalities and injuries.

Since 2007, the government has imposed strict speed limits in urban areas and on intercity roads, as well as a strict penalty regime in respect of drunk driving. The national speed limit on urban roads is 50km/h and local authorities can reduce the speed limit further if required. A national law compels seatbelts to be worn by all private car occupants (front and rear seats). This law is supported by strong enforcement. The use of helmets for motorcycle riders and their passengers is mandatory and is actively enforced.

However, as a result of the increase in the number of motorized vehicles (especially motorbikes), the number of accidents continue to increase in urban areas. According to the Kigali Transport Master Plan in 2013, 79% of annual accidents in Rwanda occurred in Kigali.

As a result of the number of accidents involving public transport vehicles (PTV s), the fitment of speed governors to PTV s became mandatory on public transport and commercial vehicles in 2016. The device prevents these vehicles from traveling at speeds of more than 60 km/h.

### 1.2.3 National roads network

Since 2010, progress has been made with the development of transport infrastructure particularly extending the existing paved road network and constructing one -stop border posts in the country. The length of paved national roads increased from 1,279 km in 2015 to 1,355 km in 2016, while the Cumulative Number of vehicles registered increased from 166,893 in 2015 to 183,703 (NISR, 2017).

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<sup>8</sup> <https://www.reuters.com/article/us-volkswagen-rwanda/volkswagen-opens-rwandas-first-car-plant-idUSKBN1JN0NF>

Year	2010	2011	2012	2013	2014	2015	2016
National paved Roads	1,205	1,205.28	1,224	1,211	1,291	1,279	1,355
National and districts earth Roads (km)	3,493	3,493	3,474	5,386	5,289	5,298	5,212
District paved road Class I				58	75	78	88
<b>Total (km)</b>	<b>4,698</b>	<b>4,698</b>	<b>4,698</b>	<b>6,655</b>	<b>6,655</b>	<b>6,655</b>	<b>6,655</b>

Figure 8: Classification of roads in the City of Kigali in kilometer<sup>9</sup>

#### 1.2.4 Increasing Air pollution in Kigali

Air pollution is a growing issue in Rwanda. The transport sector is the main contributor to urban air pollution, and being the main urban center, the issue is most pronounced in Kigali. The 2014 Strategy for Reduction of Traffic Congestion and Air Pollution in the City of Kigali notes that suspended particulate matter (PM10) has already significantly exceeded the recommended WHO allowable limit (50 µg/m<sup>3</sup>)<sup>10</sup>. This suggests that the inhabitants of Kigali are exposed to unacceptable levels of PM10 during most of their time outdoors, especially during the evening hours when concentrations reach their peak.

#### 1.2.5 Greenhouse gas emissions

Concerning greenhouse gas emissions, Rwanda has one of the lowest carbon dioxide emissions per capita in the world, estimated at 0.65 tons CO<sub>2</sub>/person (GoR, 2011). And according to the following table, its economy is one of the most efficient if we consider the CO<sub>2</sub> intensity of GDP.

Rwanda is considered as a leader on climate change in East Africa: Rwanda's Fund for the Environment and Climate Change (FONERWA) was the continent's first dedicated national climate change fund and is among the largest such funds, despite Rwanda's relatively small size and very low carbon emissions. These examples illustrate the country's strong political and institutional commitment to green growth.

According to the World Bank, the total greenhouse gas (GHG) (kt of CO<sub>2</sub> equivalent) in Rwanda was reported at 6,690 in 2012 compared to 4,806 in 2002, representing an increase of 39% in 10 years. The Rapid Assessment of a National Energy and Low Carbon Path (2009) considers Rwanda's emissions will increase by 50% from 2009 to 2020.<sup>11</sup>

In 2005, the transport sector represented more than a third of energy related CO<sub>2</sub> emissions (UNFCCC). The Rwandan Intended Nationally Determined Contribution (INDC) published in 2015, includes a transport pillar. It aims at increasing climate resilience by creating affordable, reliable and accessible transport services to the community. The INDC policy includes promotion of public transport, improvement of transport infrastructure, setting vehicle emission standards and regulations, and integrated national transportation planning.

<sup>9</sup> NISR, 2017

<sup>10</sup> Presidential decree No 25/1 of 25/02/2015

<sup>11</sup> The Third National Communication (TNC) report on Climate Change was submitted to the Secretariat of the United Nations Framework Convention for Climate Change (UNFCCC) in 2017. This report has not yet been released.

Country	Total GHG Emissions (MtCO <sub>2</sub> e) <sup>2</sup>	% of global emissions	Population (thousands)	tCO <sub>2</sub> e per capita	GDP (Million US\$) <sup>3</sup>	tCO <sub>2</sub> e/ million US\$ GDP	Change in GHG emissions (1990–2011) (MtCO <sub>2</sub> e)
Burundi	7	0.01%	9,540	0.70	1,450	4,608	-5 (-40%)
Central African Republic	64	0.14%	4,436	14.39	1,958	32,593	+12 (+23%)
Democratic Republic of Congo	208	0.44%	63,932	3.26	16,747	12,441	+6 (+3%)
Djibouti	1	0.003%	847	1.47	954	1,301	+0.29 (+31%)
Ethiopia <sup>4</sup>	141	0.30%	89,393	1.58	23,107	6,108	+65 (+86%)
Kenya	70	0.15%	42,028	1.67	25,394	2,761	+25 (+56%)
Rwanda	6	0.01%	11,144	0.49	4,149	1,329	-8 (-60%)
Somalia <sup>5</sup>	N/A	N/A	9,807	N/A	N/A	N/A	N/A
South Sudan <sup>6</sup>	N/A	N/A	10,510	N/A	N/A	N/A	N/A
Tanzania	172	0.37%	46,355	3.70	20,658	8,310	+25 (+17%)
<b>Regional Total</b>	669	1.43%	287,991	2.50 (weighted average)	94,417	7,081 (weighted average)	+121 (+42%)
World	46,906	100%	6,964,618	6.73	\$54,034	868	+12,969 (+38%)

Table 8: Greenhouse gas emissions data in East Africa<sup>12</sup>

### 1.2.6 Data availability

There is a general five-year government reporting and planning cycle in Rwanda. The reports from the 2013 cycle, commissioned or produced by various government institutions involved in transport and mobility, were the primary existing sources of data used in producing the country report.

These reports seemed not to be underpinned by comprehensive transport surveys or data, except insofar as they drew on the limited number of sources listed in the table below. The new reporting and planning cycle start in 2018, but it is as yet unclear what data is and will be collected for the production of these reports. The only recurring data collection process encountered in the production of the country report was the predominantly socio-demographic data captured annually by the National Institute of Statistics of Rwanda in its Statistical Yearbooks.

<sup>12</sup> USAID, 2015

Data	Scope/area	Mode and year of acquisition	Owner/custodian of data	Availability and format of data	Regular updates	Comment
<b>Land use</b>						
Spatial distribution of population and jobs	National	2017	National Institute of Statistics of Rwanda	Aggregated data available online in annual Statistical Yearbook	Yes	
<b>Travel demand</b>						
Household Survey	n/d	n/d	n/d	n/d	n/d	No data available with regards to origin destination data
Origin-Destination data	n/d	n/d	n/d	n/d	n/d	
<b>Traffic</b>						
Traffic counts	n/d	2012	MININFRA	Report available online, but not raw data	5-year cycle	
<b>Parking</b>						
Occupation and rotation data	n/d	n/d	n/d	n/d	n/d	No data on occupation and rotation
<b>Public transport</b>						
Route itineraries and stops	Kigali	2017	City of Kigali	.kmz	n/d	data available on route itineraries and stops
Level of service	n/d	n/d	n/d	n/d	n/d	No data available on level of service
Users satisfaction data	n/d	n/d	n/d	n/d	n/d	No data available on user satisfaction
<b>NMTs</b>						
Pedestrian/bicycle counts	n/d	n/d	n/d	n/d	n/d	No data available beside that there are over 5,000 non-regulated bicycle operators in Kigali No data available
Users satisfaction data	n/d	n/d	n/d	n/d	n/d	
<b>Models</b>						
Traffic model	n/d	n/d	n/d	n/d	n/d	No traffic model available
Transport model	n/d	n/d	n/d	n/d	n/d	No transport model available
<b>Externalities</b>						
Road Safety	National / Kigali	2017 / 2013	WHO / CoK	Aggregated data available online	Yes	No specific data for mobility
Air Quality	National	2014	WHO	Aggregated data available online	Yes	
Gender issues	National	2013/14	National Institute of Statistics of Rwanda	Aggregated data available online	Yes	

Table 9: Inventory of existing data in urban mobility in Rwanda

## 1.3 Different Urban Mobility issues

### 1.3.1 Kigali: a transforming city

Kigali sits at the geographic and economic center of the country. This causes a confluence of both national and local traffic into the city, which in turn brings infrastructural, environmental and safety challenges that all have significant local impacts.

As clearly framed in both the Transportation Master Plan (2013) and Kigali City Master Plan (2013), there are concerted plans in place to improve the transportation conditions within Kigali with an emphasis on encouraging the use of non-motorized transport as well as a coordinated transport and traffic control system to reduce the escalation of traffic congestion. At the time these plans were being framed, the transport modal share in Kigali was as shown in Figure 9 (drawn from the MININFRA report on the Planning and Design of a Public Transport System for Kigali City, 2012). This figure shows both the significant reliance on public transport as well as the increasing dependence on moto taxi trips. Though detailed modal split data in later years is not available, some progress has been made to attend to transport challenges in the city, as discussed later in this section.

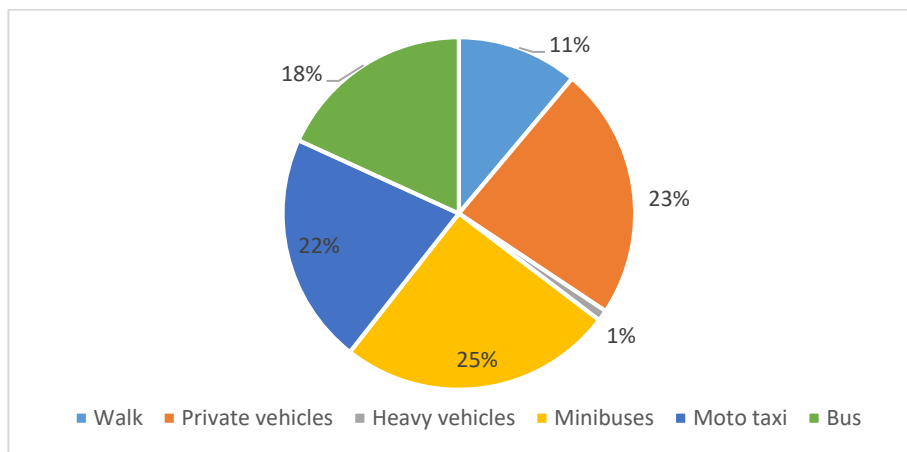


Figure 9: Transport modal shares in Kigali, Planning and Design of a Public Transport System for Kigali City<sup>13</sup>

In 2013, the Kigali City Master Plan Report noted that the local road network was ageing and required upgrading, repairs and maintenance. At the time, the city’s road network consisted of about 1,000 km of which only 15% was paved.

<sup>13</sup> MININFRA, 2012

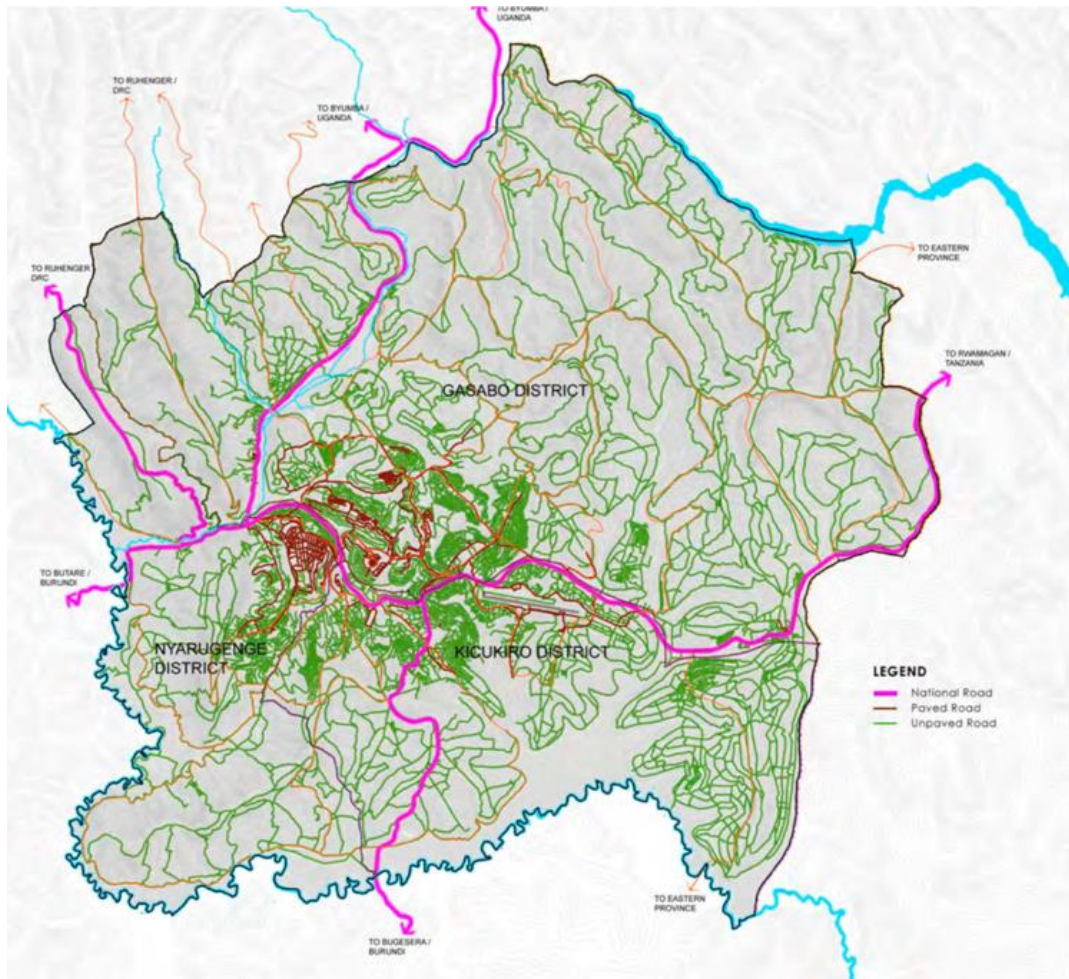


Figure 10: Map of Kigali<sup>14</sup>

■ **Developing public transport supply**

For the last 10 years, the city has suffered from an inadequate supply of public transport. In 2013, in order to develop public transport services, Rwandan Authorities changed the public transport regulation framework. All paratransit operators in the City of Kigali were integrated into a defined number of public transport operating companies. The Rwanda Utilities Regulation Authority (RURA) signed four concession-based contracts with three companies called, Kigali Bus Service, Royal Express and the Rwanda Federation of Transport Cooperatives (RFTC).

Each company is assigned a zone or number of zones to serve with a total of 78 routes being contracted in this manner. In terms of the 2013 contracting model the zones were allocated as follows: KBS-Zone 1 (23 routes), Royal Express-Zone 2 (18 routes), RFTC-Zone 3 (23 routes) and RFTC Zone 4 (14 routes). The three companies currently deploy a total number of 464 vehicles (Their fleet mix typically consists of Toyota Minibuses (14-seater), Toyota Coaster buses (30-seater) and standard 10.5 m buses (60-seater)).

Types of cars used	2011	2012	2013	2014	2015	2016
Minibuses	1,339	3,592	1,608	2,029	2,679	2,023
Coasters	323	747	801	939	1,123	1,468
Buses	6	51	83	120	261	273
<b>Total</b>	<b>1,668</b>	<b>4,390</b>	<b>2,492</b>	<b>3,088</b>	<b>4,063</b>	<b>3,764</b>

<sup>14</sup> CoK, 2013

Table 10: Types of vehicles used for road passenger transport in Rwanda<sup>15</sup>

The Rwanda Utilities Regulatory Authority (RURA), which entered into contracts with the three public transport companies, estimated in 2013 that there were 250,000 daily commuters in Kigali and this figure would double in 2015 to reach 500,000. Most recent indications by AC Group the company that provides the automated fare system to the three operating companies is that 250,000 passengers use the automated fare system on a daily basis<sup>16</sup>.

The Rwandan authorities also invested in public transport infrastructure, notably in the improvement of the main bus terminals in Kigali as well as the improvement of road infrastructure in key parts of the Kigali network.

However, improvement of the quality of infrastructure, vehicular flow and passenger safety at the main interchanges is still required and some of these improvements are currently in progress. In view of congestion levels and the absence of dedicated rights-of-way, this means that the current public transport fleet (supply) remains insufficient to deal with peak hour demand.

#### ■ **An innovative cashless fare system**

After a successful 8-month pilot for the introduction of a cashless system, the AC Group, leading provider of smart and interactive IT solutions in Rwanda, launched the smartcard Tap & Go in 2015 in partnership with the Government and the Kigali bus operators. According to the New Times (2018), 300,000 passengers have been issued with a card from 2015 to 2016 which rose up to 1.2 million in 2017. Today, the Tap & Go system covers 97% of the routes in Kigali. The Regulatory Authority (RURA) recently (April 2018) increased the fares on the public transport system (New Times, 2018). The fare has been adjusted from Rwf 20 to Rwf 22 per kilometer representing an average increment of 5% and 7% for the City of Kigali and the intercity public transport respectively.

#### ■ **Regulated Moto taxis and Bicycle taxis**

A key urban mobility challenge across the country is the rapid growth in the number of motorcycles being used as a means of transport. This directly links to high levels of car and commercial vehicle congestion, particularly in and around Kigali.

The motorcycle taxi (or moto taxi) is a popular means of transport offering a quick and efficient way to travel, especially to rural areas with unpaved roads and steep slopes. There are between 10,000 and 15,000 moto-taxis operating in Kigali. This mode of transport makes 200,000 trips per day (Le Monde, 2016) and is managed by various private operators. However, there is a significant number of motorcycle taxis that operate without licenses in addition to the above-mentioned number. Fares of these moto taxis are loosely regulated (they range from 300-1000 Rwf). Registered motorcycle taxis operate only within the registered sector. In 2015 the application SafeMotos was launched « the Uber (e-hailing system for moto taxis) ». Having been downloaded 10,000 times, the app today counts for more than 5,000 regular users and 28,000 daily trips. RURA has set itself the goal of establishing an online platform to register all moto taxis in Rwanda.

In 2011, the Rwanda National Police banned bicycle taxis from all roads across the country. Affecting thousands of Rwandans, this decision was modified by the President to be applied only to the main roads of Kigali with the view to reduce accidents. The law was amended in 2016 as this mode of transport represents a mean of earning a living for many people. There are over 5,000 bicycle operators in Kigali and in the secondary cities. Organized in independent cooperatives, non-regulated by the government, bicycle taxis operate in Kinamba, Karuruma, Nyacyonha, Gisozi, Nyabugogo and Kabeza where unit price per single ride is Rwf100. Kigali, like many urban centers in the country, has

<sup>15</sup> NISR, 2017

<sup>16</sup> Interview with AC Group representatives August 2018

seen a rapid increase in the number of bicycles taxi but not all roads are designed for or safe to accommodate cyclists.

■ **Relatively limited taxi services**

There are currently 370 registered metered taxis operating in Kigali City. Online automated navigation for direction with the newly implemented street and home addressing and automated taxi meters are some of the new ICT innovations in transport. In 2016, the company 250 TAXI launched a taxi hailing app for professional drivers already licensed and registered. Regarding fares, the application is fitted with a meter that calculates the fare in relation to the distance covered and the fares are computed using the tariff set by Rwanda Utilities Regulatory Authority.

At a national, and not local level, the 2017 Rwanda Statistical Yearbook captures RURA data on both the number of public transport operators (in comparison to overall road transport operators) and the types of vehicles being used for public transport. This data is presented below.

Category	2011	2012	2013	2014	2015	2016
Public transport companies and cooperatives	25	42	48	57	53	47
Taxi cab companies and cooperatives	13	18	32	50	49	53
Rental car hires companies and cooperatives	N/A	N/A	10	15	15	30
Transport of goods companies and cooperatives	N/A	N/A	N/A	30	35	25
Driving Schools	N/A	52	65	56	74	91

Table 11: National number of licensed road transport operators<sup>17</sup>

■ **Traffic increase and congestion**

According to MININFRA, due to the rapid increase of population and car ownerships (as presented in Figure 11 below), traffic volumes, traffic congestion and the deterioration of overall transport system have increased significantly in Kigali City in recent years. The City’s traffic management service remains inadequate and much of traffic management is still done manually, with fewer than 30 junctions being signalized in the City. According to RTDA, the upgrading of Kigali urban roads (54, 56 km) is currently ongoing and is expected to enhance social and economic development, divert traffic and reduce traffic jams in Kigali City. The roads are being upgraded by the China Road and Bridge Corporation (CRBC) a process that started in February 2017 and is expected to be completed by September 2019. The scope of project consists of rehabilitating and widening of the existing pavement, upgrading of the existing gravel/earth road to asphalt finish surface standard, construction of new bridges and box culverts, improvement of the road drainage, etc. It is expected that when the project is completed, it will address the challenge of traffic jams, especially during peak hours (mornings and early evenings) as there will be more access roads and bypasses as well as alternative routes connecting various parts of the city. The road infrastructure improvement process in Kigali also opens the opportunity to introduce dedicated public transport vehicle lanes in key parts of the city network.

In addition to road infrastructure improvement the government plans to phase out the use of private cars in the capital Kigali and instead use public transport as a way of curbing rising congestion. One of the measures to discourage the use of private cars is to restrict street parking. In the long term, the city is looking at creating five corridors covering about 92 kilometers, which will be fully dedicated to bus transport by 2026 (New Times, 2017).

<sup>17</sup> NISR, 2017



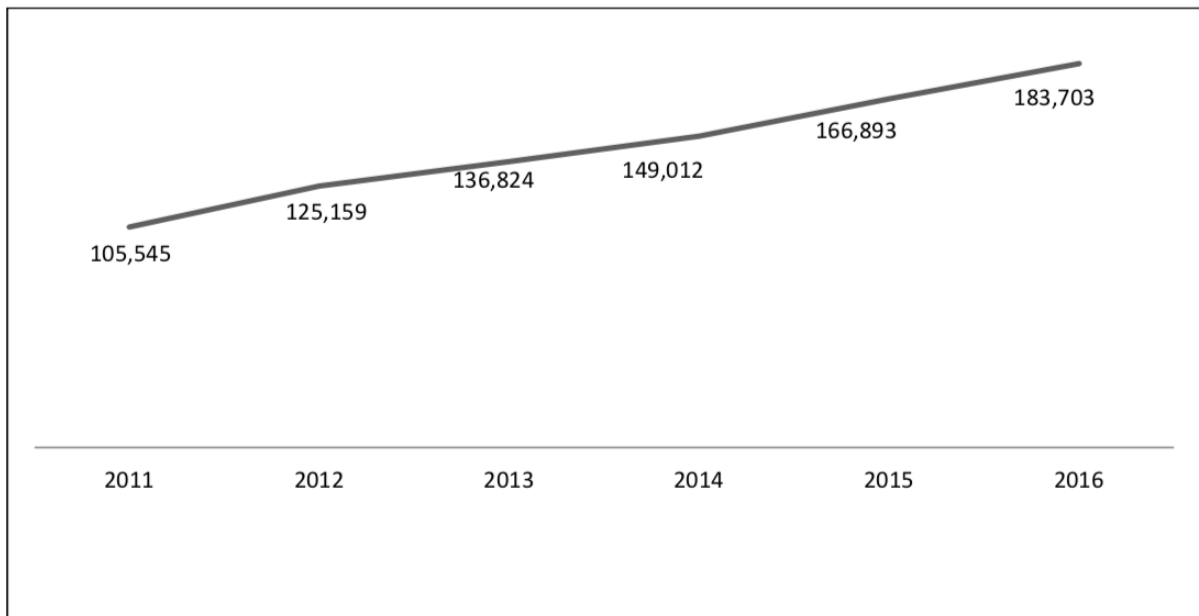


Figure 11: Cumulative number of Registered Vehicles in Rwanda<sup>18</sup>

■ **Walking and cycling are clearly considered**

Non-motorized transport infrastructure is lacking in the City of Kigali and especially in the rural areas. According to the Kigali Transport Master Plan (2013), the road cross-sections are not standardized and a large number of the roads in Kigali do not have separate pedestrian and cycle paths. Moreover, there is no cycle network in the City. Walking and cycling are not mentioned explicitly in the 2008 Transport Sector Policy, although there is a clear focus on the need to improve access, contribute to poverty reduction, and reduce air-pollution and congestion. In 2011, Rwanda partnered with UN Environment Share the Road to develop a concept paper for the development of walking and cycling facilities for urban and semi-urban roads.

In 2016, the City of Kigali began the implementation of a car-free zone policy. At present only one street has been converted into a car free zone, but the City aims in coming years to ban all cars from the CBD and to create a pedestrian-friendly city core. The Car Free Day in Kigali happens every first Sunday morning of each month from 7am to 12am in the Central Business District through Sopetrad–Kimihurura–Gishushu to Stade Amahoro. It aims to promote active mobility, reduce car emissions and in this manner reduce greenhouse emissions as well as encourage people to exercise and interact with each other. In addition, free medical check-ups are also available on these days. According to the City of Kigali, during the last three editions of Car Free Days, over 8,000 persons took part in the medical tests.

<sup>18</sup> NISR, 2017



Figure 12: Marketing campaign to promote Car Free Days organized by the City of Kigali<sup>19</sup>

■ **A Kigali Bus Rapid Transit project under study**

According to Kigali City (2017), the BRT system project, which was conceived in 2014, will constitute a network of 160 km linking Nyabugogo, the city center and the five main arteries (shown in Figure 11 below). The BRT will offer buses with a capacity of more than 100 passengers. The feasibility study may be launched soon, and the project is expected to be completed by 2025. While general main road construction is making allowance for the later inclusion of BRT rights-of-way, the construction of dedicated BRT facilities is yet to be completed.

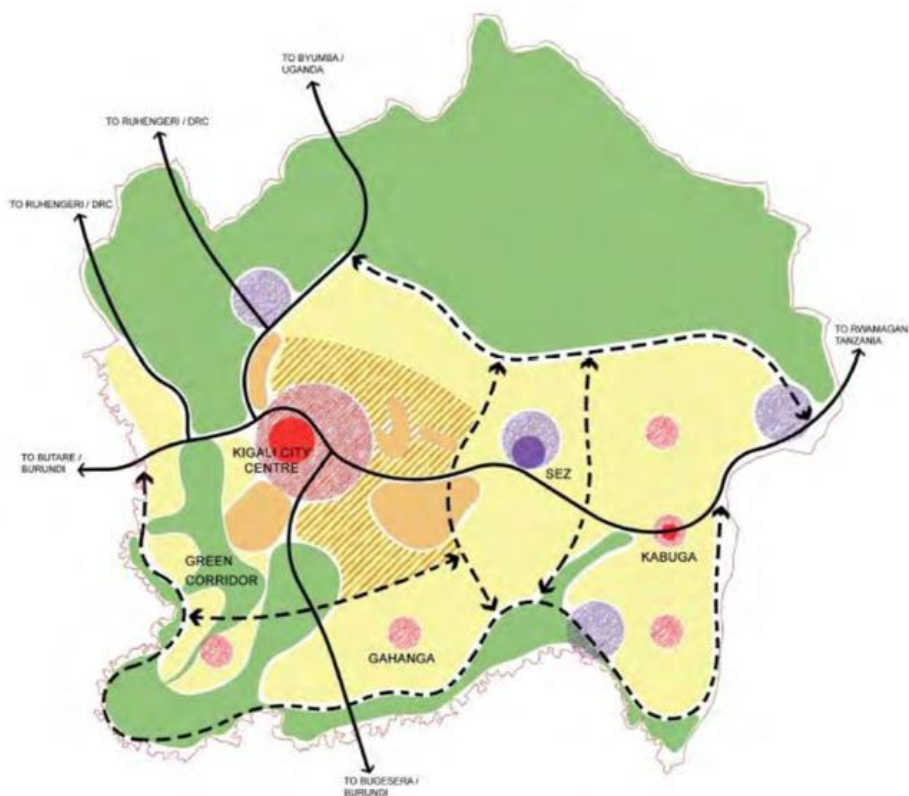


Figure 13: Map of commercial nodes in Kigali<sup>20</sup>

<sup>19</sup> CoK, 2017

<sup>20</sup> CoK, 2013

■ **An international railway network under construction**

Currently, Rwanda has no railway network. However, in 2012 the African Development Bank provided funding for work to commence on a project for a new standard (1,435mm) gauge line to connect the capital, Kigali, with the Tanzanian Railways network at Isaka, Tanzania. 139km of the new rail line will be in Rwanda. As of January 2018, the feasibility studies for this project have been concluded and construction is expected to start in October 2018 at an estimated total cost of US\$2.5 billion. The opening of the Osaka-Kigali railways is expected to take place in 2022.

■ **Relocation of Kigali's international airport to Bugesera away from Kigali Special Economic Zone near existing international airport**

From a large-scale infrastructure development point of view, it is worth noting that the Bugesera International Airport (BIA) is currently under construction in the Rilima Sector, Bugesera District, in the Eastern Province. Construction started in 2017, and the first phase of the project is expected to be completed by 2019, with full project having a 25-year timeframe. The new airport site is located 25km south-east of Kigali and once completed will replace the existing Kigali International Airport. In view of the current location of the Kigali Special Economic Zone (SEZ) near the existing airport, care will have to be taken that urban freight traffic does not impede urban mobility in Kigali once the new airport becomes fully operational. The construction of the planned ring road may alleviate the challenges posed by the potential mixing of freight and urban passenger traffic.

1.3.2 Main issues in secondary cities: Musanze case study

■ **Improved urban transport services and supporting road network as priority**

EDPRS II aims to implement Rwanda's Vision 2020, ensuring that the country achieves middle-income status by 2020 by accelerating economic growth to 11.5% average, reducing poverty to below 30%, and restructuring the economy towards services and industry. Its main targets relate to strategic infrastructure investment for exports, more private sector financing to increase exports, urbanization and a green economy approach to sustainability. With the EDPRS2 and the Urbanization and Rural Settlement SSP, six secondary cities were selected for the promotion of urban development outside of the capital city: Rubavu, Musanze, Huye, Rusizi, Nyagatare, and Muhanga. The secondary cities were identified not only to transform the economic geography of the country, but also to avoid pressure on peri-urban land of the Capital city Kigali and urban sprawl, including sprawl of urban functions into rural areas and provide socio-economic opportunities.

The study and field visit focused on Musanze as a benchmark secondary city. The findings pertaining to secondary cities outlined in this report are therefore predominantly based on observations made during our field visit to Musanze as well as interviews conducted with the District Executive Secretary and District Roads Engineer. Improving the urban transportation system and urban road network is the top priority of the Musanze District.

■ **Twinned provision of paved roadways and non-motorized transport facilities**

In pursuit of urban mobility Master Plans in secondary cities such as Musanze, it is noticeable that impetus has been given to the expansion of non-motorized transport (NMT) facilities.

It is however unclear what the impact of current investment in NMT is, and whether or not progress has been made towards the establishment of an NMT network, as opposed to disconnected sections of NMT infrastructure. In view of the fact that close to 45% of people in urban areas collectively walk rather than make use of motorized transport it is suggested that as road improvement implementation processes unfold priority be given to the planned rolled out of safe pedestrian walkways.



Figure 14: Roadway and NMT facility improvement needed in some parts of Musanze

■ **Public transport service expansion**

As in Kigali, in secondary cities like Musanze, moto taxis play a significant part in the motorized urban mobility system. Musanze has developed a system of regulating its moto taxis at the city’s main transport terminus in a manner which appears to address passenger safety, traffic flow, and particularly the last-mile-home challenge that plays a significant role in passenger convenience.

But the main challenges regarding the public transport sector concerns the improvement of intercity transport and connectivity, the upgrading of public transport interchange facilities, the increase of the supply of buses on routes according to demand as well as the development of local maintenance capacity.



Figure 15: Dedicated moto taxi rank directly outside main Musanze public transport interchange

## 1.4 National Context

### 1.4.1 Legal framework: bias for action

Rwanda is in the process of enhancing the legal framework for the governance of national transport and urban mobility. The most significant law governing transport at the national level is Law No 55/2011 Governing Roads in Rwanda. At the time of this study, the Ministry of Infrastructure was well advanced with the process of preparing a National Public Transport Act. It will provide role clarity between the various national government departments and national authorities involved in public transport, provide clarity on the public transport powers and functions of cities, and will provide clarity on the funding of public transport.

In addition to the emerging legislative framework governing roads and public transport, a number of important policy and strategy documents have been adopted and a number of critical master plans are in the process of being implemented. It is evident that Rwanda has adopted a strong "bias for action" while perfecting "laws, plans and strategies", and that the country actively applies a process of reviewing laws, policies and plans by assessing the outcomes of its actions.

The existing legislative and regulatory framework as well as main policies, strategies and plans governing roads and public transport in Rwanda is outlined below:

#### ■ **Law n°55/2011 of 14/12/2011 Governing Roads in Rwanda**

Prepared by the Ministry of Infrastructure, this law establishes the maintenance of roads, classify the roads as well as determine the management, financing and the responsibilities for the roads. It provides for regulation of road works, putting the responsibility for all national roads and adjoining roads under the Rwanda Transport Development Agency as well as putting the district and adjoin feeder roaders under the responsibility of the local authorities.

#### ■ **Passenger Roads Transport Regulations n°007/TRANS/RT/RURA/2015**

This regulation was established in 2015 by the Rwanda Utilities Regulatory Authority. It includes the Passengers Bus Transport Regulation, the Goods Transport Regulation and the Routes tendering with the goal to establish a regulatory framework for the undertaking of passenger road transport activities so as to achieve an efficient and sustainable development and operations of public transport services.

#### ■ **National Feeder Road Policy and Strategy**

Issued by the Ministry of Infrastructure in 2017, this policy aims at enabling and stimulating rural socio-economic development, providing an institutional framework in feeder roads operations as well as an efficient use of means and resources. The policy and strategy have the major objective to execute the provision of roads through intelligent prioritizing, design, implementation and quality assurance, optimize cost-effectiveness, facilitate cost-effective investments and operations to reduce and control transport costs (relative to other prices) and supply of transporters and traders especially in rural zones with high agriculture productivity.

#### ■ **Fleet Policy of Government of Rwanda**

Issued by the Government in 2014, this policy aims at reducing capital cost, maintenance and running costs as well as minimizing waste and abuse of public facilities. It also intends to reduce the task of the government to manage, maintain and oversee the fleet of vehicles and delegate the responsibility to the private sector for ensuring transparency and efficiency in the allocation and use of government resources.

#### ■ **Public Transport Policy and Strategy for Rwanda**

Prepared by the Ministry of Infrastructure in 2012, this policy aims at assessing the existing public transport problems and submit a report outlining the potential policy remedial measures on short, medium and long-term basis.

■ **National Transport Policy (under the Vision 2020)**

Published in 2008 by the Ministry of Infrastructure, this policy aims at strengthening institutional and legal framework to support the creation of a favorable environment for the development of the transport sector. It is also aimed at encouraging the private sector to play a greater role in the development of infrastructure and provision of transport services. The policy also as a role of encouraging to support provincial and district administration in the implementation of the decentralization policy as well as supporting local communities in the maintenance or rural access transport infrastructure.

■ **National Decentralization Policy**

Since 2000, decentralization has been a key policy for the Government of Rwanda for promoting good governance, service delivery and national development according to the Ministry of Local Government (MINALOC). The goal of the Decentralization Policy is to deepen and sustain democratic governance and promote equitable local development by enhancing citizen participation and strengthening the local government system, while maintaining effective functional and mutually accountable linkages between Central and Local Government entities.

■ **Kigali Transport Master Plan**

The Kigali Transportation Master Plan (TMP) 2013-2020, commissioned by the Government of Rwanda and prepared by Surbana International Consultants, provides a framework for the long-term development and expansion of existing transportation systems that will support the City of Kigali in a smart and a sustainable manner. The TMP presents long-term plans and proposals at both policy level and network improvement level for the design horizon of 2040 while preparing interim designs for implementation in the short term. The vision report identified several areas for improvement in terms of transport: to become a Transit-Oriented City; to establish a Complete Transport System, and; to create a Sustainable Transport Network.

■ **Kigali Conceptual Master Plan**

Issued by the Government of Rwanda in 2013, the Kigali Conceptual Master Plan (KCMP) was initiated as a vision by President Kagame. It was completed by the OZ Architecture Team in 2007 and adopted by Rwanda Parliament in 2008. The KCMP presents a broad vision and guidelines for the entire city, serving a for more specific planning at the District, CBD and Sub Area level. This plan aims at developing a conceptual transportation master plan, infrastructure and land use planning and environmental management strategy for the entire city.

■ **Rwanda Green Growth and Climate Resilience Strategy**

Created in 2011 and issued by the Rwanda Environment Management Authority, the Rwanda Green Growth and Climate Resilience Strategy emphasizes energy security and a low carbon energy supply, appropriate urban development as well as social protection, health and reduced vulnerability to climate change.

■ **The National Investment Strategy**

In the transport sector, the National Investment Strategy focuses on the support of the private sector for infrastructure development.

#### 1.4.2 Main Actors in urban mobility

The main actors in urban mobility in Rwanda, and their core roles, are described below.

## Ministries

### ■ **Ministry of Infrastructure (MININFRA)**

The Ministry of Infrastructure (prior to 2002 the Ministry of Public Services, Transport and Communication) is tasked to ensure the sustainable development of infrastructure and contribute to economic growth with a view to enhancing the quality of life of the population. To develop institutional and legal frameworks, national policies, strategies and master plans relating to transport, energy, habitat and urbanism, meteorology, water and sanitation subsectors; to initiate programs to develop, rehabilitate and maintain an efficient and integrated national transport infrastructure network, including roads, bridges, airports, railways, and water transportation which will contribute towards economic development and regional integration.

### ■ **Ministry of Lands, Housing and Urban Development**

The Ministry of Lands, Housing and Urban Development is responsible for putting in place policies and initiating laws that ensure sustainable land management promote sustainable housing for all and foster orderly urban development in the country. The Ministry also provides support to Local Government on these matters.

### ■ **Ministry of Finance and Economic Planning (MINECOFIN)**

The Ministry of Finance and Economic Planning (MINECOFIN) was formed in March 1997 by amalgamating the Ministries of Finance and of Planning. It is in charge of all public investments in the country and manages the public finances of Rwanda. In this context, the Ministry has to engage with the Cities, Regions and the Ministry of Local Government in order to agree on budgets. MINECOFIN's key aims are the economic growth of the country and to open new economic opportunities that enhance and improve the living conditions of the Rwandans.

### ■ **Ministry of Local Government (MINALOC)**

The Ministry of Local Government is responsible for promoting the wellbeing of the population by ensuring good governance, community development and social affairs. It is also responsible for the collaboration and coordination between all government institutions in their support for local government.

It ensures the coordination of good governance and high-quality territorial administration programs that promote economic, social and political development throughout the nation.

### ■ **Ministry of Environment (MINIRENA)**

The Ministry of Environment and Natural Resources ensures the protection and conservation of the environment and ensure optimal and rational utilization of natural resources for sustainable national development. The Ministry is responsible for environment, climate change and natural resources management at the local and national level.

## National Authorities

### ■ **Rwanda Transport Development Authority (RTDA)**

The Rwanda Transport Development Agency (RTDA) is a public institution with legal personality, administrative and financial autonomy. It is under the Ministry of Infrastructure responsible for managing all day-to-day aspects of the transport sector in Rwanda. It was put in place by Organic Law No 02/2010 of 20/01/2010 establishing its mission, structure and functioning.

### ■ **Rwanda Housing Authority (RHA)**

The Rwanda Housing Authority (RHA) is a public institution under the Ministry of Infrastructure, established by Law n°40/2010 of 25/10/2010. Its main areas of responsibility are planning, organizing and spearheading rural settlement, urban settlement, public building construction, management of

public office spaces and government assets, affordable housing, and regulation of the construction industry.

■ **Rwanda Utilities Regulatory Authority (RURA)**

The Rwanda Utilities Regulatory Authority was created in 2001. Its role includes oversight over all utilities. In terms of transport its responsibilities include ensuring that roads are performing well, government regulatory policy is appropriate and effective and environmental concerns are addressed. The Rwanda Utilities Regulatory Authority handles matters specific to urban transport and assess road transport performance. It decides on regulations concerning public transport and freight operations and is responsible for setting fares and issuing licenses. RURA is also in charge of the department of Air Transport (Rwanda Transport Sector Review and Action Plan, African Development Bank, 2013), and ensures fair competition within the transport sector. RURA is administratively and financially autonomous and is one of the main actors of the transport policy-making processes in Rwanda. The Rwanda Utilities Regulatory Authority notably created in 2015 a "Code of Conduct of Public Road Transport Drivers in Rwanda".

■ **Rwanda National Police (RNP)**

The Rwanda National Police was reorganized in June 2000 after a merger of the Gendarmerie National (under the Defense Ministry), the Communal Police (under the Ministry of Interior) and the Judicial Police (under the Ministry of Justice). The Traffic and Road Safety Department of the Rwanda National Police is responsible for ensuring road traffic and road safety regulation as well as implementing measures including enhanced sensitization of drivers, closer collaboration with driving schools, and more acquisition of modern road security policing equipment.

■ **Rwanda Environment Management Authority (REMA)**

REMA, a non-sectorial institution, operates under the Ministry of Environment and is governed by a Board of Directors appointed by the Prime Minister. The structure of REMA is separated into two functions namely, the Sectoral Environment Management Functions (relating to specific natural resources or environment services as agriculture, water, mining, forestry, waste management) and the Coordination and integration of environmental management functions in relation to cross-cutting issues such as monitoring and evaluation of environmental policy and implementation of environmental legislations. REMA's role is to facilitate coordination and oversight the implementation of national environmental policy and the subsequent legislation. More precisely, the authority works closely with the public and private sector and civil societies to coordinate, supervise and regulate environmental management for sustainable development in the country. REMA also plays a major role in the achievement of the national goal of sustainable development set in the National Development Vision 2020.

■ **Rwanda's Fund for the Environment and Climate Change (FONERWA)**

The FONERWA green fund was created to respond to Rwanda's current and future financing needs for environment, climate change, and green growth in order to accelerate goals of national sustainable economic development. Its strategy is to provide unheralded technical and financial support to the best public and private projects that align with Rwanda's commitment to a green economy. The fund, that started to operate in 2013, is the primary mechanism through which Rwanda accesses, programs, disburses and monitors international and national extra-budgetary climate and environment finance. Funds are distributed to Government, private sector, civil society and communities to implement a range of projects linked with climate change.

■ **National Institute of Statistics (NISR)**

The National Institute of Statistics of Rwanda is a government-owned agency created in 2005 which operates under the Department of Statistic in the Ministry of Finance and Economic Planning (MINECOFIN) and the National Service of Census. It is responsible for the collecting, analyzing,



archiving and disseminating national statistical data. As the primary data producer, NISR produces statistics as the Gross Domestic Product, Consumer Price Index, Producers Price Index, External Trade figures, Population Statistics, Demographic and Health Survey, Household Living Conditions Survey, Census and others. It also conducts specific joint survey such as Agriculture Survey, Service Provision Assessment Survey in partnership with the relevant institutions.

### Local Authorities

As stated above, since 2000, decentralization has been a key policy for the Government of Rwanda for promoting good governance, service delivery and national development according to the Ministry of Local Government (MINALOC). The goal of the Decentralization Policy is to deepen and sustain democratic governance and promote equitable local development by enhancing citizen participation and strengthening the local government system, while maintaining effective functional and mutually accountable linkages between Central and Local Government entities.

The responsibilities of the Provinces are the coordination of activities in connection with economic planning of Districts, the implementation of national policies in districts and the monitoring of activities related to the security of property and persons.

Province	Districts Akarere	Sectors Imerenge	Cells Utugari	Villages Imudungu	Population 2012 Census <sup>1</sup>	% rural
Northern Province	5	89	414	2,744	1,726,370	90.7
Eastern Province	7	95	503	3,792	2,595,703	92.8
Western Province	7	96	538	3,624	2,471,239	87.8
Southern Province	8	101	532	3,501	2,589,975	91.1
Kigali City	3	35	161	1,176	1,132,686	24.1
<b>Total</b>	<b>30</b>	<b>416</b>	<b>2,148</b>	<b>14,837</b>	<b>10,515,973</b>	<b>83.5</b>

Table 12: Local Authorities in Rwanda<sup>21</sup>

### ■ Rwanda Association of Local Government Authorities (RALGA)

The Rwandan Association of Local Government Authorities (RALGA) is an organization that represents local governments in Rwanda. Established after the creation of the decentralization process, this organization is meant to transfer authority, resources, responsibility and accountability from Central to Local Government. This responsibility is framed in the context of promoting good political and economic governance as formulated in the long-term country’s vision 2020. Although its establishment goes back to 2002, RALGA was inaugurated and officially launched in 2003.

### Funding and development institutions in urban mobility

#### ■ African Development Bank (AfDB)

The African Development Bank is one of the main institutions that funds urban mobility and public transport projects in Rwanda with projects such as the 208 km Regional Road Project, the Uganda-Rwanda Transport Project and the Standard Gauge Railway Project. Under the CSP (country strategy paper) 2017-2021, aligned with Rwanda’s Vision s 2020 and EDPRS2, has supported Rwanda to improve its energy and transport infrastructure and promote private sector development, contributing to Rwanda’s overall socio-economic development.

#### ■ Belgium Development Agency

Belgium Development Agency intervenes in three sectors chosen with the Rwanda government in function of its priorities namely the health sector (where the agency provides direct financial support

<sup>21</sup> MINALOC, 2015

and improve access to primary health care), the energy sector (where it focuses on rural electrification or the production of electricity from renewable sources and reforestation for remote areas) and decentralization where it advises and trains local administrations to improve public service delivery and provides local authorities with means for projects to stimulate and diversify the economy. In May 2011, a new Indicative Cooperation Program 2011-2014 (to be completed in 2012) was signed for a total amount of €160 million (€55 million for the health and energy sectors and €28 million for decentralization).

■ **Japan International Cooperation Agency (JICA)**

Japan International Cooperation Agency concentrates its support on the sectors where Rwanda has expressed a need that can be met by Japanese expertise. On close partnership with the Government of Rwanda, it currently focuses its activities in four priority areas: strengthening education and training in science and technology agriculture and business, economic infrastructure and water and sanitation.

■ **United Nations Development Program (UNDP)**

United Nations Development Program is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. It works with governments and people on their own solutions to global and national development challenges. In Rwanda, UNDP works in the areas of Governance, Poverty and Environment in alignment with EDPRS2 and Vision 2020. The total UNDP budget for 2018 is about \$9 million.

■ **United Nations Human Settlements Program (UN-HABITAT)**

United Nations Human Settlements Program (UN-HABITAT) is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all. It fights urban poverty and the scourge of climate change due to poor urban planning.

■ **United States Agency for International Development (USAID)**

United States Agency for International Development (USAID) is working closely with the government, civil society, private sector and communities to build on this progress and address remaining challenges in health, economic growth, education and democracy and governance. USAID also advance the objectives outlined in the EDPRS2 and Vision 2020. In 2016, annual funding to USAID/Rwanda is over \$128 million.

■ **World Bank**

The World Bank is another active institution in funding projects in various sectors in Rwanda such as Energy, Agriculture, Housing, Finance, Poverty Reduction etc. as well as in urban mobility with projects as the Feeder Roads Developments Project of \$113 million, the Transport Sector Project \$107 million the Highway Project \$49 million, Roads project \$9 million and Urban Infrastructure and City Management project \$20 million since the beginning of the World Bank assistance in Rwanda in 1970.

## Academia

■ **University of Rwanda**

The University of Rwanda, in partnership with MININFRA and the World Bank, is in the process of establishing a Center of Excellence for Transportation Research (CETR) over a timeframe spanning 2017-2023. CETR is intended to be a national and regional hub for transport research and teaching, with a broad scope that includes planning, design, construction, and maintenance of transport infrastructure across all land, water and air modes. Specifically, in terms of land transport, CETR will be tasked with responding to a number of current and local challenges, including highway planning, design and maintenance; road safety; materials for low-volume roads; databases for physical inventory; and sustainable financing of highway infrastructure.

## Public transport service providers

### ■ Three Kigali bus companies

Prior to 2013 all paratransit operators in the City of Kigali were integrated into three public transport operating companies. At the time the Rwanda Utilities Regulation Authority (RURA) signed four concession-based contracts with the three companies called, Kigali Bus Service, Royal Express and Rwanda Federation of Transport Cooperatives (RFTC). Each company is assigned a zone to serve with a total of 78 routes operated in these zones. RURA ensures a monopoly on each zone for each of the three companies which are committed to increase the number of high occupancy vehicles in their fleet as well as the quality of their service (comfort, headways, etc.). During the last five years, the three companies have consistently invested in fleet renewal. The three public transport operators currently own and operate a total fleet of 464 vehicles (these are Toyota Minibuses (14-seater), Coaster buses (30-seater) and standard buses (60-seater)).

Operating Companies and zones	Number of Buses				Total Seat Capacity	
	Hiace	Coasters	Standard Buses	Total		
KBS – Zone I		17	82	99	6,022	23
Royal Express -Zone 2		46	44	90	4,064	18
RFTC - Zone III		142	20	162	5,460	23
RFTC - Zone IV	13	100		113	3,134	14
<b>Total</b>				464	18,680	78

Table 13: Types of vehicles used for road passenger transport in Kigali

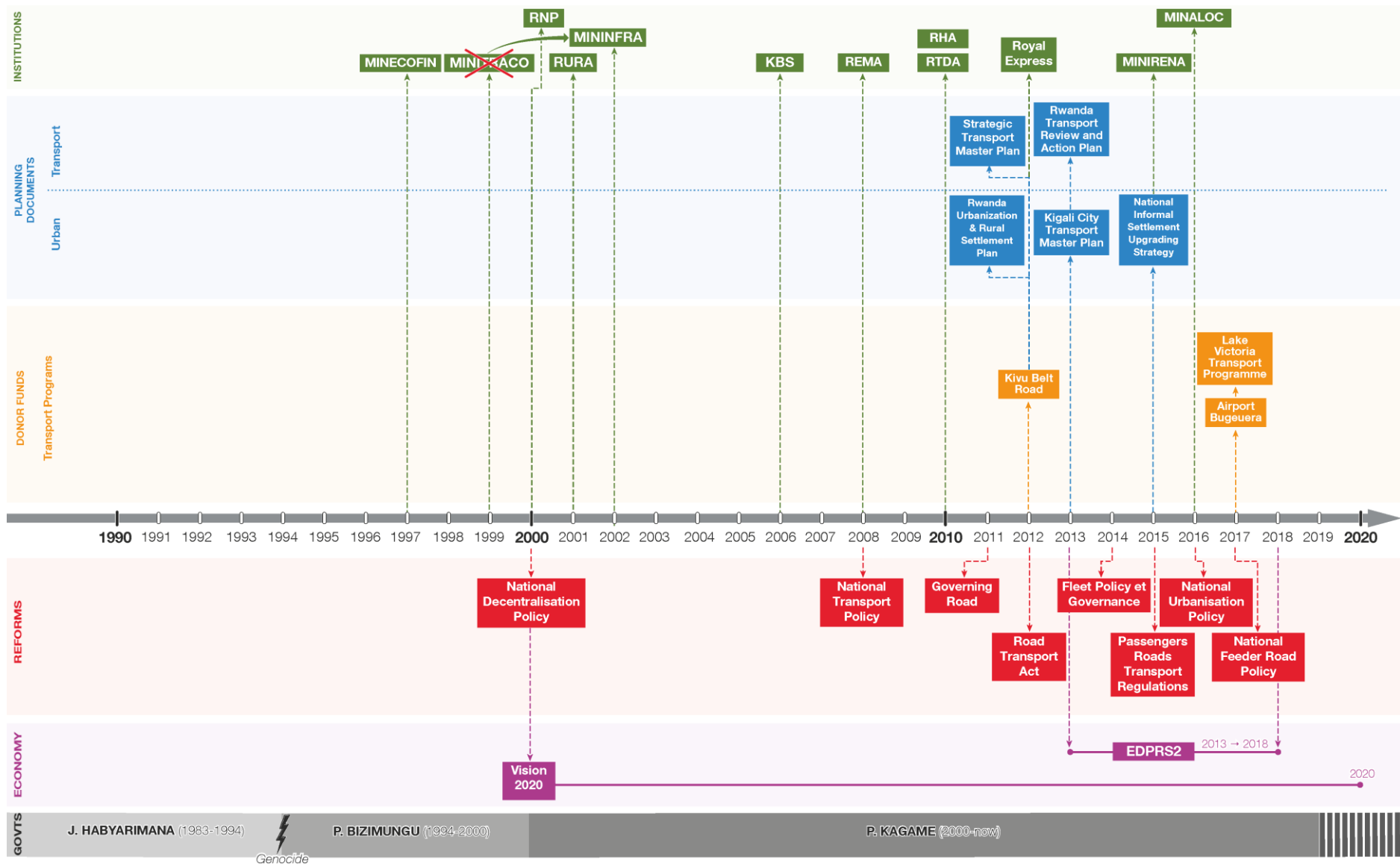


Figure 16: Timeline of urban mobility in Rwanda

## 2. Main findings in respect of urban mobility in Rwanda

### 2.1 Institutional framework for urban transport management

#### ■ Strong inter-governmental relations

There is a strong system of inter-governmental relations regarding Urban Mobility Planning between the key Central Government Agencies, the City of Kigali, and the provincial and district levels of government. Furthermore, inter-governmental cooperation pertaining to urban, inter-city and cross border mobility is highly structured and underpinned by a well-established planning, programming, budgeting, implementation, and monitoring and evaluation system.

Currently the Regulator (RURA) is the authority responsible for bus operator contracting. There is thus no distinction between the contracting authority and the regulatory authority functions. There is, however, already a clear differentiation between the planning (City of Kigali, RTDA) and regulatory (RURA) authorities.

The role of the Regulator is that of regulating supply and demand by means of the granting of operating licenses. It is not ideal (in terms of the principle of the separation of powers and functions) for a Regulator to be responsible for the contracting of the services it regulates.

#### ■ Absence of land passenger transport sector legislation

National and urban transport is well governed with clear demarcation of roles and responsibilities for Planning (MININFRA), Implementation (RTDA) and Regulation (RURA). The absence of a national passenger or land transport act (i.e. transport sector legislation) was, however, mentioned as a particular challenge to provide the necessary framework of these roles and responsibilities in law.

In order to arrive at greater clarity, on amongst others dedicated funding for urban mobility, transport sector legislation should be promulgated. Such legislation is in preparation and it is critical that the promulgation be expedited.

#### ■ Additional specific urban transport management challenges:

- Kigali currently serves as the main center for transport administration services, e.g. vehicle licensing and vehicle testing. Mobile centers are being deployed on a decentralized basis, but in their absence at a particular site, attending to transport administration matters requires travel into Kigali.

<p><b>Strengths</b></p> <p>Clear separation of powers and functions</p> <p>Strong inter-governmental relations framework;</p> <p>Delineation between the planning and the regulatory functions.</p>	<p><b>Weaknesses</b></p> <p>Absence of Land Passenger Transport legislation;</p> <p>No distinction between the contracting authority and regulatory functions.</p>
<p><b>Opportunities</b></p>	<p><b>Threats</b></p>

Legislate the allocation of the planning, contracting and regulatory functions;	Protracted or delayed devolution of urban mobility powers and functions to the appropriate level of government.
Move towards the establishment of a Metropolitan Transport Authority for Kigali.	

*Table 14: SWOT matrix of stakes linked to institutional framework and management of urban transport*

Sector		Urban Planning	Public Transport				Public spaces					
			Bus stations (or bus terminals)	Bus	Taxis			Road infrastructure and road network	Traffic management	Parking	Non-motorized modes	
					Moto taxis	Taxis (passenger cars)	Bicycle taxis				Walking	Cycling
<b>Strategical level</b> <i>What strategies? With which resources?</i>	Policy and planning	City of Kigali	City of Kigali + RTDA				City of Kigali + RTDA	City of Kigali + RTDA	City of Kigali			
	Funding		Operators									
<b>Tactical level</b> <i>What services ought to be developed? How to go about it?</i>	Regulation		RTDA + RURA	RTDA + RURA + City of Kigali			RTDA	MININFRA + Police				
	Licensing, permits and contracting		RURA									
	Fare system					MININFRA						
	Infrastructure, Equipement	RDTA	City of Kigali				City of Kigali					
<b>Operational level</b> <i>How to produce services efficiently?</i>	Operations / Maintenance		Operators (KBS, RTFC, Royal Express)	Operators (cooperatives, associations)			City of Kigali		Association	City of Kigali + Districts		
Problematic		<i>Responsibilities not allocated, unexercised or conflicts between actors annihilating the action</i>										
Insufficient		<i>Responsibilities not sufficiently defined and latent conflicts between stakeholders</i>										
Non applicable												

Table 15: Governance Matrix in Kigali

## 2.2 Funding for urban transport management

### ■ Dedicated funding sources exist only for road infrastructure

The fuel levy provides for dedicated road infrastructure funding. In addition to this, there is a well-established system of loan and grant funding for road construction and maintenance at national and city level. There is however no current program to explore alternative dedicated funding sources for urban mobility.

East African Community (EAC) member states have agreed to enact public transport vehicle and general emissions standards. It is often the case that authorities impose taxes on the owners of vehicles that do not meeting such standards. Rwanda has not yet enacted such legislation, foregoing the revenue that this might generate, and which might in turn contribute to road infrastructure funding.

### ■ Public Transport Services are financed by the fare box

Public transport operations are mainly financed by the fare box. During the last five years, the bus fleet renewal has been funded by the operators themselves and they do not receive any subsidies covering operations (moto-taxi services are based on the same business model). Relying on fares only, without any significant complementary source of funding, severely constrains the possibility of expanding public transport services.

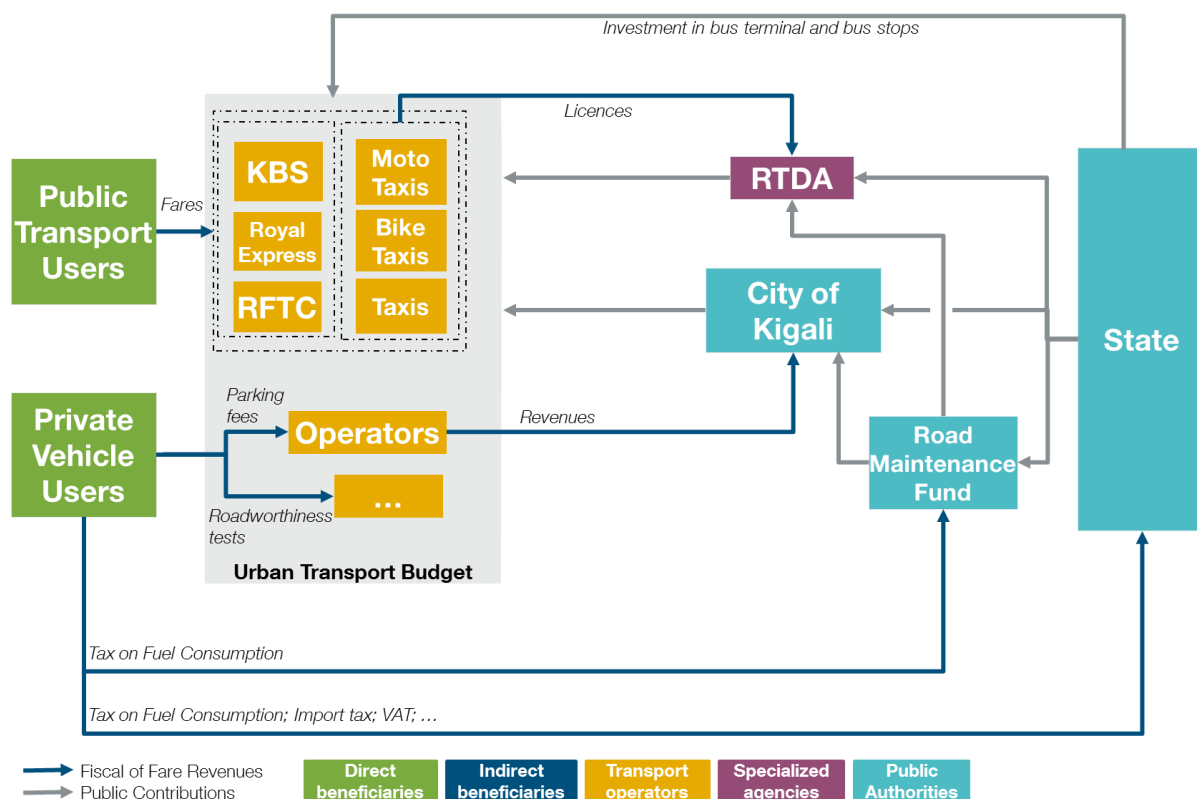


Figure 17: Financial flows in Urban Mobility in Kigali



<p><b>Strengths</b></p> <p>Existing fuel levy;</p> <p>Dedicated Road Maintenance Fund;</p> <p>Established inter-governmental system of prioritization;</p> <p>Dedicated funding for Public Transport infrastructure;</p> <p>Established systems of motor vehicle licensing, parking levies and traffic fines.</p>	<p><b>Weaknesses</b></p> <p>Limited certainty on annual funding allocations;</p> <p>Lack of exploration of alternative funding sources.</p>
<p><b>Opportunities</b></p> <p>Establish a legible inter-governmental finance and fiscal framework for urban mobility;</p> <p>Explore alternative funding solutions related to green energy initiatives.</p>	<p><b>Threats</b></p> <p>Limitations of a single dominant funding solution for urban mobility;</p> <p>Limited ability to deal with infrastructure requirements;</p> <p>Inability to direct funding to Public Transport operations.</p>

Table 16: SWOT matrix of issues and options linked to dedicated funding sources of urban transport

**Box 1 - The challenges of urban public transport pricing**

Public transport fare policy is, as with other urban service rates and fees, an important political issue. Fare policies must conciliate potentially contradictory objectives: fares should be high enough to contribute to the operational financing of urban transport networks (or even capital investment) but fares should also be low enough that public transport remains an attractive travel option. Fare affordability is especially important for poor households as they do not necessarily have access to other modes of travel.

Public transport pricing must be considered in terms of the purchasing power of households and the cost of traveling with other modes (private car, taxis, moto taxis, etc.). In light of such modal competition, the attractiveness of public transport will depend above all on the quality of the service rendered (frequency, regularity, comfort, service hours, etc.) compared to that of the other modes and their relative costs to the user.

Pricing can include a social dimension to promote the use of public transport by certain categories of population, whether for students, the elderly, or other particular groups. In some countries unemployed or low-income households also benefit from low tariffs to prevent them from being stranded.

Pricing can also favor regular users in order to retain them. Through a monthly or annual subscription system, the unit cost of the trip decreases. However, this system can penalize people who cannot afford to pay the full cost of a month’s or year’s travel in advance, and who will continue to pay trip by trip at a higher rate.

Pricing can also favor certain types of travel. A distance-based fare makes it possible to have a level of revenue proportional to the cost of providing the services; a flat fare, irrespective of distance, will favor longer trips. A "zonal" tariff, where the price increases step-by-step according to the number of traversed zones, will allow a compromise between the two aforementioned fare types,

but can create threshold effects at the borders of the defined zones. A ticketing system can also be used to differentiate fares according to the hours of the day in order to incentivize off-peak travel. Pricing must be flexible. It is essential to adjust tariffs over time in relation to inflation and other economic factors in order to not widen operating deficits. Ticketing systems can also make it possible to better control revenue by overcoming some of the limitations of using cash: non-cash-based fare systems in this sense help to fight against fraud and ensure transparency in terms of revenue collected by operators.

## 2.3 Civil society participation in urban transport management

■ **Participation structures are in place at multiple levels in Rwandan society**

There is a highly structured and systemic process of civil society participation in priority setting in the urban mobility sphere. Urban Transport infrastructure priorities are set in a “bottom-up” fashion – with local area inputs being coordinated at District level, moderated by professional inputs from RTDA and aligned with Presidential Priority Programs.

National structures exist through which the Government (as Contracting Authority) engages with transport operators at the collective level. Through this structure, government, as contracting authority, and bus operators can deal with contract related matters such as the introduction of higher occupancy vehicles in a collective manner.

Structured and formal public participation processes regarding planning and service delivery priorities are also in place between local, district and national spheres of government.

<p><b>Strengths</b></p> <p>Highly structured civil society engagement process in place (down to village and cell level);</p> <p>Bottom-up priority setting;</p> <p>District level coordination;</p> <p>Collective engagement with transport operators.</p>	<p><b>Weaknesses</b></p> <p>Lack of engagement on transport sector conditions of service.</p>
<p><b>Opportunities</b></p> <p>Formalize consultations with organized business, NGOs and Academic &amp; Research institutions and include them in engagement cycles</p>	<p><b>Threats</b></p> <p>Long lead time in priority setting.</p>

Table 17: SWOT matrix of issues and options linked to civil participation in urban transport

**Box 2 - Kenya Alliance of Resident Association (KARA): Case Study of Constructive Civil Society Engagement in the Transport Sector**

Formed in 1999, the Kenya Alliance of Resident Association is an apex body representing residents. It advocates for improved and accelerated access to public service delivery and has been playing an increasing role in the transport sector given the widespread concerns of residents around congestion and road accidents. KARA is a membership organization that allows individuals and resident associations to join and also attracts some corporate sponsorship, which gives it a strong base in the society it represents. While KARA tends to represent middle and upper-class

neighborhoods, the organization also makes an effort to be inclusive and include poorer neighborhoods in its fora and activities.

KARA works most directly with counties as this is the level of government closest to residents. In 2016 KARA successfully worked with the Nairobi City County to pass the Nairobi City County Community and Neighborhood Associations Engagement Act which sets out a formal framework of cooperation between resident associations and the city to deliver services. The organization also engages in policy dialogues with national government and often plays an important coordinating role by bringing them together in forums with key civil society actors to render account and engage on issues.

In this manner KARA has worked over the years to improve public transport, engaging with Nairobi County, linking the County to residents and their concerns. KARA has conducted focus groups and forums on the Thika Highway Improvement Project and lobbied for the need for more footbridges and consideration of safety (KARA 2012). The association also served on the NCC Nairobi Transport and Decongestion Committee (Nairobi City County 2014) which involved an inclusive, consultative process to determine a number of actions that could be done to address Nairobi's severe traffic congestion. However, to date the recommendations from the report do not appear to have been implemented.

More recently, KARA successfully led a collaboration with the city, UNEP, University of Nairobi and other key actors to develop and pass through the county assembly a Non-Motorized Transport (NMT) policy which was adopted in 2017. This took two years of dialogue with both the Nairobi governor's office and transport committee of the city county along with public policy fora to gather views from civil society and create engagement with policymakers. The NMT policy provides a solid framework for harmonization, prioritization and coordination of NMT infrastructure and facility development and maintenance in Nairobi, and KARA is currently talking to NCC to follow up on implementation.

Overall, KARA has been helping to facilitate meaningful public participation in the transport sector in Kenya in line with article 10 of the Kenyan constitution which mandates such participation in governance. In this way, the resident associations are helping to bring the formulation of transport policy and implementation closer to the needs of pedestrians and public transport users. KARA is an exemplary case of how citizen participation in urban mobility matters can be allowed to evolve when government and civil society both value participatory decision – making.

## 2.4 Multi-modal planning and operations for city centers

### ■ Multi-modal planning is directed by a master plan

The City of Kigali put a Transportation Master Plan in place in 2013, which directs planning and development across all modes of transport in the city. The planning process that was followed in completing the Master Plan is shown in Figure 18.

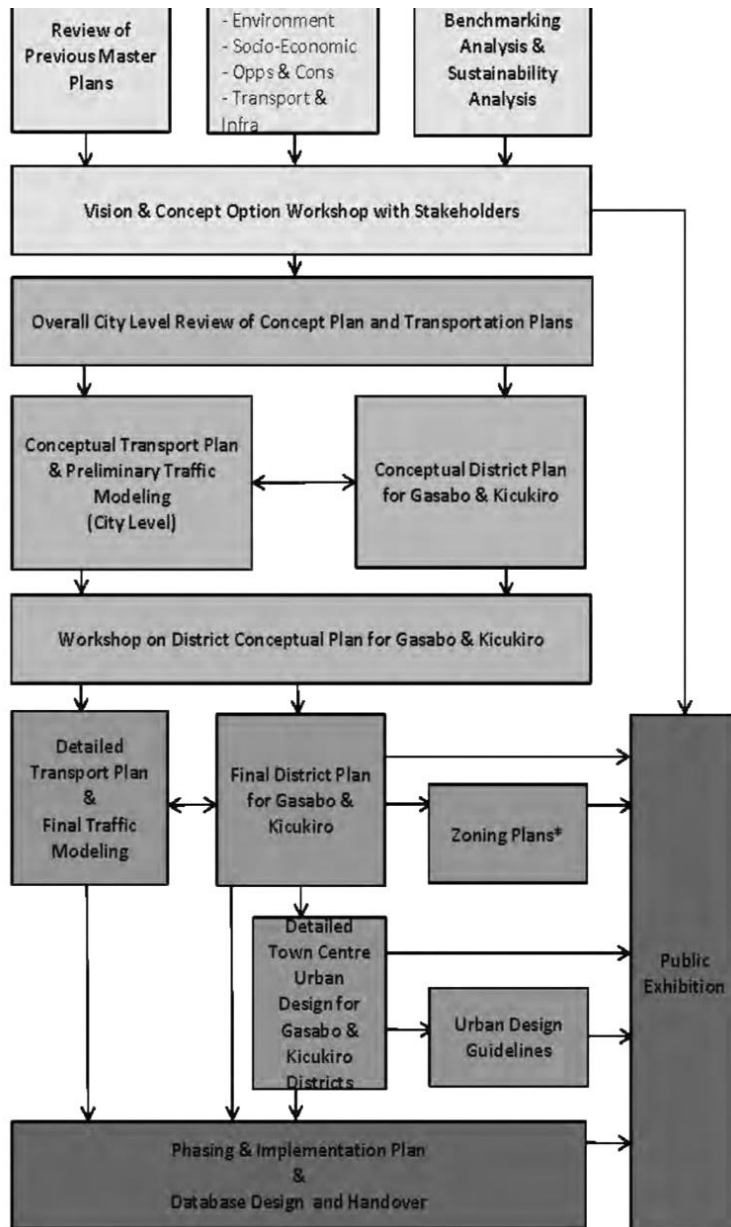
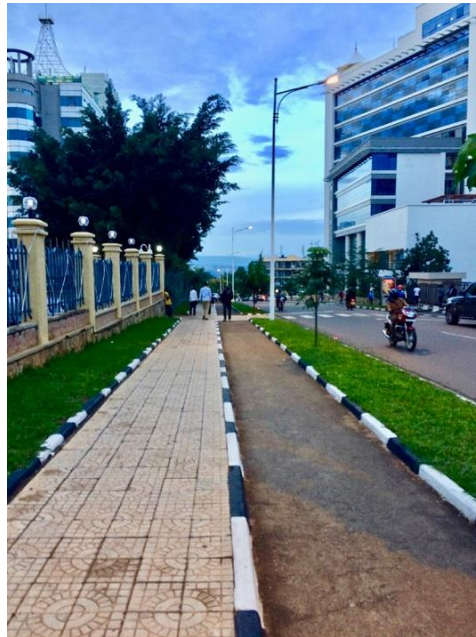


Figure 18: Kigali City Transportation Master Planning process diagram<sup>22</sup>

<sup>22</sup> CoK, 2013



*Figure 19: Separated pedestrian, cycling and general traffic facilities in Kigali*

However, traffic management improvements at main intersections in the Kigali city road network are insufficient or absent. Intersection control for vehicular traffic is managed by traffic police in peak periods. The absence of traffic police outside peak periods results in self-regulated intersection management which impacts negatively on the frequency of crashes and pedestrian injuries. The impact on NMT users is exacerbated by a shortage of formal and managed pedestrian crossings, which is particularly pronounced at intersections.



*Figure 20: Insufficient supply of public transport services in relation to passengers' demand in Kigali*

There is a well-located network of major public transport interchanges (termini) in the city that are heavily utilized, but at many of these facilities there are shortcomings in terms of infrastructure design and provision to facilitate vehicular and passenger flows and to provide shelter to waiting passengers.

- **There is a growing reliance on moto taxis, but this sector needs stronger central management and safety regulation**

The improvement of the management of moto taxis as part of the urban transport system is not being addressed or regulated at the same tempo as the rapid growth of and reliance on this mode of travel.

As such this is a missed opportunity, since moto taxis can have a clear place in a multimodal system as a last-mile-home service provider.

Riders and their passengers consistently wear safety helmets, but as a group moto taxis impact negatively on the safety of non-motorized users, particularly at intersections, and, in the high concentrations observed particularly in peak periods can also impact negatively on over vehicular traffic flow and management.



Figure 21: Moto taxis pose safety risks to NMT users

<p><b>Strengths</b></p> <p>Comprehensive Master Plan in place in Kigali;                      Evidence of progress with implementation of Master Plan initiatives;                      Existence of institutional planning capacity;                      Significant investment in NMT as well as improvement in motorized infrastructure.</p>	<p><b>Weaknesses</b></p> <p>Intersection management for NMT and motorized transport inefficient or absent;                      Lack of prioritization for Public Transport vehicles (i.e. dedicated lanes and prioritized signaling).</p>
<p><b>Opportunities</b></p> <p>Continue with an interactive process of planning and implementation review;                      Dramatically improve the safety and efficiency of Public Transport systems;                      Plan location and expansion of major economic activities (SEZ) in a manner that does not increase competition between freight and passenger movements.</p>	<p><b>Threats</b></p> <p>Increase congestion and competition for road space;                      Urban sprawl.</p>

Table 18: SWOT matrix of issues and options linked to multi-modal and operations in urban transport

## 2.5 Public transport performance

- Major efforts at public transport reform and improvement are evident in Rwanda and particularly evident in Kigali

Paratransit operations in Rwanda have been formalized into formally contracted bus operations over the period 2006-2013. Public transport supply in Kigali and other main urban areas is therefore formalized by means of contracting arrangements between the national regulator (RURA) and bus operators, though outside Kigali local public transport services are largely unscheduled.

Public transport supply between cities is formalized and regulated by an agreement between the national regulator (RURA) and the intercity bus operator (RITCO). The regulator (RURA), using its contracting powers, has initiated a process of obliging bus operators to systematically increase the number of high occupancy vehicles in their fleet.

In 2012 MININFRA published a report on the Planning and Design of a Public Transport System for Kigali City. In terms of the Action Plan for Public Transport Development (Volume 3 of the aforementioned report), a clear path was set out to operationalize a new report linking to a national effort to formalize public transport (see Section 2.5 below). The planning process is summarized in Table 7: Kigali’s Action Plan for Public Transport Development.

THE PLAN FROM CONCEPT TO OPERATION			
Time Period	Services	Infrastructure	Other
2 YEARS – SHORT TERM	Formalize Minibuses Operations Integration of Modes (Bus, Minibuses & Moto-Taxi) i.t.o.: <ul style="list-style-type: none"> <li>Schedules</li> <li>Transfers</li> <li>Information</li> <li>Fares</li> </ul>	Upgrade/Improve: <ul style="list-style-type: none"> <li>Sidewalks / Walkways</li> <li>Bus Stops, - Shelters, -Lay-bys</li> <li>Identified Gravel Roads</li> <li>Road Markings (Roundabouts)</li> <li>Unsafe Pedestrian Crossings</li> </ul> (“Quick Wins” or “Low-Cost, High-Impact Possibilities”)	<ul style="list-style-type: none"> <li>Alignment of Structure Plans with Public Transport Plan (Transport &amp; Land-Use Planning)</li> <li>Development of Institutional Structure(s)</li> <li>Law Enforcement</li> </ul>
5 YEARS – MEDIUM TERM	<ul style="list-style-type: none"> <li>Bus – High Vol. Routes, Long Dist.</li> <li>Minibuses – Low Vol. Routes, Long Dist. (Better Frequency)</li> <li>Moto-Taxi – Only Feeder/Distributor in Peak, but Elsewhere during Off-Peak</li> </ul>	Construction of: <ul style="list-style-type: none"> <li>HOV Lanes (Painted)</li> </ul> Continue with: <ul style="list-style-type: none"> <li>Road Maintenance &amp; Rehabilitation</li> <li>Intersection Improvements</li> </ul>	<ul style="list-style-type: none"> <li>Build Management Capacity</li> <li>Training &amp; Development</li> <li>Vehicle Recapitalization</li> </ul>
20 YEARS – LONG TERM	<ul style="list-style-type: none"> <li>Strengthen Bus</li> <li>Add New Routes</li> <li>Extension of Routes to accommodate additional demand, driven by Growth &amp; Development of City</li> </ul>	Development of: <ul style="list-style-type: none"> <li>DBLs</li> </ul>	<ul style="list-style-type: none"> <li>Formal TIAs for New Development to Address both Private &amp; Public Transport</li> <li>Monitoring of Services</li> </ul>

Table 19: Kigali’s Action Plan for Public Transport Development

To date the City of Kigali has made notable progress in terms of the Action Plan. The city is currently serviced by four bus contracts that have phased out and integrated paratransit operations into formal bus contracts. From 2006, some paratransit operators started with the introduction of high occupancy

vehicles. This resulted in government formalizing all operators into three companies in 2013 and incentivizing the further introduction of HOV s and the reduction of minibuses.

The duration of Kigali’s bus contracts is currently too short (5 years) to enable bus operators to invest in fleet recapitalization and improvement. In other countries where bus contracts have been introduced (e.g. in newer generation bus contracts in South Africa) the duration of negotiated bus contracts are in the region of 10-12 years to allow for operator investment in fleet renewal.

The current conditions of the Kigali road network may also be a contributing factor. Particularly in peak period, congestion on the road network negatively impacts the efficiency of the public transport system. The electronic fare management system already generates data on passenger numbers and movements. This data should be utilized to better optimize supply and demand. In addition, the four bus contracts in Kigali City are underpinned by a standard cashless (card) payment system, introduced –after a first trial by KBS - in partnership between the government of Rwanda and the AC Group.

The capacity of the public transport network has greatly increased since the signing of the contracts in 2013. However, bus supply and passenger demand during the peak operating hours appear not to be optimally balanced, in some routes resulting in long queues, while on other routes there are long bus dwell times due to the absence of passengers. The fare payment system is already collecting data on passenger movements, but this data is not being used to optimize supply and demand matching.

Strengths	Weaknesses
Progression from paratransit supply mode to a formalized contracted supply mode;	Flat fare system in Kigali;
Encouragement of introduction of Higher Occupancy Vehicles (HOV);	Current state of key Public Transport Interchanges (PTIs) / termini (in Kigali);
Successful introduction of automated fare collection system;	Limited duration of bus operating contracts (disincentive for recapitalization).
Regulation of all Public Transport modes including moto taxi.	
Opportunities	Threats
Build on the AFC system and expand investment in ICT to planning, regulation and monitoring;	Pressure for growth in moto taxi numbers;
Turnkey PTIs in major urban settings into safe, well-organized transport and economic hubs.	Delays in implementing prioritization of HOVs in the Public Transport system (dedicated lanes / traffic signaling).

Table 20: SWOT matrix of issues and options linked to public transport performance

## 2.6 National government support for urban transport management in secondary cities

- **There is a clear relationship between secondary cities and the national government in terms of urban transport management (and other local government matters)**

There are 6 secondary cities in Rwanda. These cities fit into the system of 30 districts and four provinces, which are in turn represented at the national level. Intercity transport and connectivity between secondary cities and their rural hinterlands is the main focus of the mobility improvement agenda at provincial and district level. The inter-governmental planning and budgeting process indeed ensures that secondary city mobility priorities are consistently attended to.



With national support secondary cities like Musanze have made significant progress with investment in road infrastructure as well as the regulation of bicycle and moto taxi operations. Progressive upgrading of public transport interchange facilities is also in evidence and linked to multi-modal planning with the co-location of international, national and local bus and minibus services as well as moto taxi ranking facilities.

In addition to the above findings, the Forum indicated that there is a need to:

- Participants highlighted the need to strengthen district capacity (staff and resources) to be able to lead the districts’ integrated land use and transport approach;
- Increase the budget allocated (coming from the Road Maintenance Fund) to the district for existing maintenance.

<p><b>Strengths</b></p> <p>Annual consultative and prioritizing process;</p> <p>Participation in planning in priority setting process from community level;</p> <p>Strong decentralized managerial / implementation capacity;</p> <p>RTDA District organization model;</p> <p>Current speed limit and strong enforcement.</p>	<p><b>Weaknesses</b></p> <p>Inadequate funding to implement agreed to priorities.</p>
<p><b>Opportunities</b></p> <p>Relatively small population sizes of “secondary” cities – ability to plan for growth;</p> <p>Establish demand appropriate mobility network (focus on NMT as opposed to fossil fuel modes);</p> <p>Experiment with alternative modes mix options (electric vs. fossil fuel).</p>	<p><b>Threats</b></p> <p>Unchecked growth of inappropriate modes resulting in known negative externalities.</p>

*Table 21: SWOT matrix of issues and options linked to national government support for urban transport management in secondary cities*

## 2.7 Information and Communication Technology (ICT) and Transport

- **There is widespread awareness of, and growing implementation of, ICT in the transport sector**

The three bus operating contracts in Kigali are underpinned by the same card based cashless fare management system allowing public transport users to seamlessly transfer between the services offered by the three bus operators in Kigali.

Furthermore, some moto taxis operating in Kigali utilize a mobile phone -based application to provide their users with an “on demand” e-hailing system. Moto taxis however use cash as a means of payment. More recently (2018) there is evidence that cashless payments systems are making their way into this mode of transport. With the national drive towards a cashless society, there is significant opportunity to rely more heavily on these technologies for data collection on and the integrated planning, implementation and management of urban transport systems. RURA is looking at a generalization of such system for moto taxis and it is also assessing the potential for standard taxis.



*Figure 22: E-Payment awareness campaign poster in Kigali*

### 3. Recommendations

#### 3.1 Presentation of the EASI Framework

The six priority areas presented in the previous section are broadly articulated with the different areas of intervention of the EASI conceptual framework according to the table presented below (figure 23):

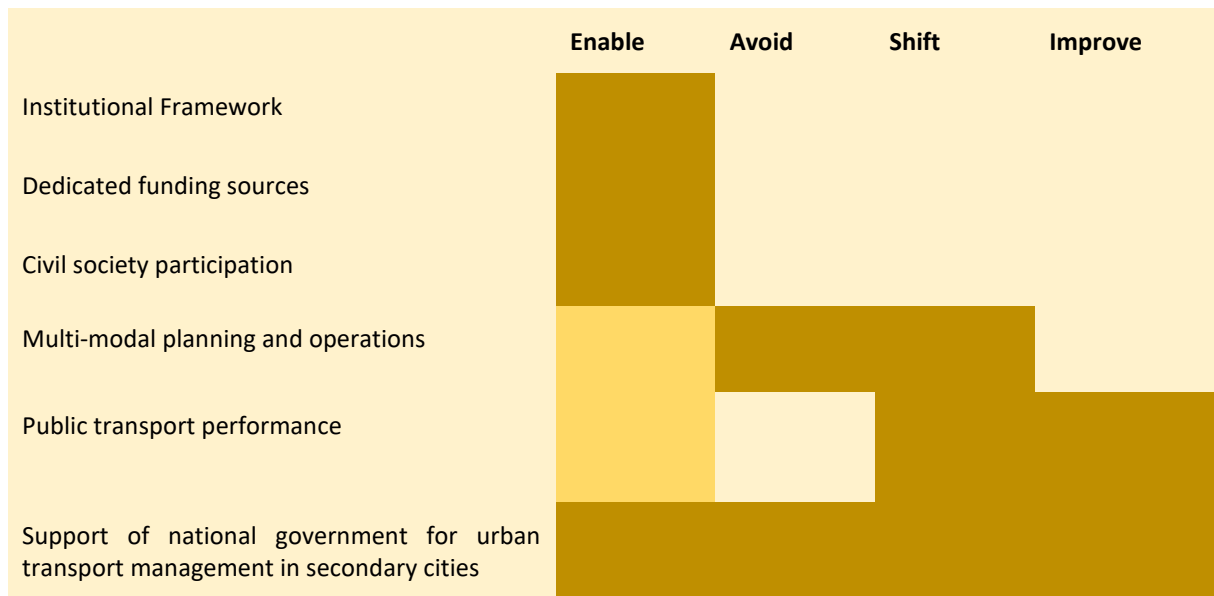


Figure 23: The six thematic areas of the study and the EASI conceptual framework

In order to best support decision-makers in improving the conditions of mobility and accessibility in Rwandan cities, this report proposes a series of recommendations aimed at accelerating the implementation of a sustainable urban mobility policy. These recommendations, which have been widely discussed and globally validated during the National Urban Mobility Forum, aim to respond at national and local level to the main challenges of the sector in Rwanda. The improvement of urban accessibility and mobility is a complex task, and these recommendations aim at mobilizing all stakeholders around these 12 recommendations.

#### 3.2 Recommendations in respect of Governance efficiency (ENABLE)

##### 3.2.1 Institutional level

###### E1: Enact Passenger Transport Legislation

The Ministry of Infrastructure (MININFRA) is currently driving a process for the promulgation of legislation governing passenger transport matters. In the absence of national legislation governing passenger transport matters, plans, policies and strategies tend to take the place of legal provisions. Plans, policies and strategies are difficult to enforce and tend to change from time to time. It is therefore recommended that the current process of preparing passenger transport legislation be expedited so that this legislation can set out:

- The powers, duties and functions of the various national, provincial, city and district level authorities involved in urban mobility matters;

- Outline the financial and fiscal arrangements dedicated to urban mobility matters, as well as the rules in accordance with which urban mobility funding is allocated and applied for;
- Provide a clear inter-governmental relations framework for the governance and management of urban mobility matters;
- Set out how urban mobility planning processes should align with land use planning and urban development processes.

***MININFRA assumes the primary responsibility for preparing the required draft papers and the Bill to be enacted. In order to have a participatory process, it is further proposed that MININFRA engages RTDA, RURA, MINECOFIN, RNP, CoK and the Districts on the contents of the legislation as these government sector actors will all play an important part in giving effect to a national land transport law. It is also important that public transport users, public transport service providers, vehicle and equipment suppliers and financiers be engaged in this process.***

***As a first step, it is proposed that MININFRA assesses land transport laws from comparative countries and prepare a “green paper” for consultation. Once the consultation process is completed a policy paper (or “white paper”) outlining the matters that will be addressed in the Bill should be published for comments. Once the period for comment has closed the Draft Bill should be prepared and submitted in terms of the Parliamentary processes. The preparatory process could ideally be completed by December 2018 and the Draft Bill could be tabled with the legislature at the start of the 2019 sittings of the legislature.***

### **Box 3 - Hierarchy of transport plans in South Africa**

There are three spheres of government in South Africa: national, provincial and municipal. The country has nine provinces and a total of 257 municipalities. These municipalities fall into three categories. The eight largest cities are classified as metropolitan municipalities (Category A). Outside of these metropolitan municipalities there are 44 district municipalities (Category B), each of which is further divided into local municipalities (Category C). In total, there are 205 of these Category C municipalities, most of which have a smaller city or a large town as their core. Local-level municipalities are unitary, which means metropolitan (Category A) and local (Category C) municipal boundaries include the complete functional area of the main urban settlement, as well as nearby and functionally linked smaller urban, semi-rural and rural areas. (Stats SA and Municipal Demarcation Board 2017).

The Constitution of the Republic of South Africa prescribes the roles of all three spheres of government, including the transport responsibilities of each sphere and how these responsibilities may overlap. The National Land Transport Act (NLTA, Act 5 of 2009) details the land transport responsibilities of each sphere of government, including such matters as policy, legislation, planning, regulation and funding arrangements. Each sphere is generally empowered to attend to responsibilities at its geographical scale, though there are variations across provinces and municipalities for historical, political and other reasons. The national Minister of Transport may assign responsibilities to different spheres and municipalities as required. In addition, provinces and municipalities may request of the national Minister for land transport responsibilities to be devolved to them. Local municipalities may also create dedicated authorities to encompass all land transport responsibilities within their municipal boundaries. Existing transport authorities are the City of Cape Town’s Transport and Urban Development Authority (TDA) and the eThekweni (Durban) Transport Authority (ETA).

Across all spheres of government, the transport planning cycle spans five years. National and Provincial Land Transport Strategic Frameworks (NLTSF, PLTSFs) provide strategic direction for transport planning in the national and provincial spheres at their respective geographic scale. In the municipal sphere of government transport planning requirements depend on the respective municipality’s category (A, B or C), but in all cases takes the form of a prescribed Integrated

Transport Plan (ITP). Minimum requirements for ITPs are determined by the national minister, with additional oversight from provincial ministers (officially called Members of the Executive Committee, or MECs, for each province).

Within the municipal sphere the transport planning authority would be the local transport authority or municipal department responsible for transport. Category A (metropolitan) municipalities are tasked with preparing Comprehensive ITPs (CITPs) so as to consider the complexity of a large city’s transport system. CITPs must capture a longer-term vision for transport, quantify the existing transport system, and provide strategies for dealing with matters such as infrastructure, good movement and non-motorized transport. These plans must also include a detailed Public Transport Plan (PTP). Category B (district) and C (local) municipalities must prepare District and Local ITPs (DITPs and LITPs), respectively. DITPs are similar to CITPs, though DITPs do not have to be as detailed as the transport systems in districts or smaller cities and towns are unlikely to have the same complexity and features as that of a metropolitan area. LITPs in turn form part of DITPs, and are again a step less detailed as they would pertain only to a town or rural area’s transport system. (National Land Transport Act: Integrated Transport Planning Regulations 2017)

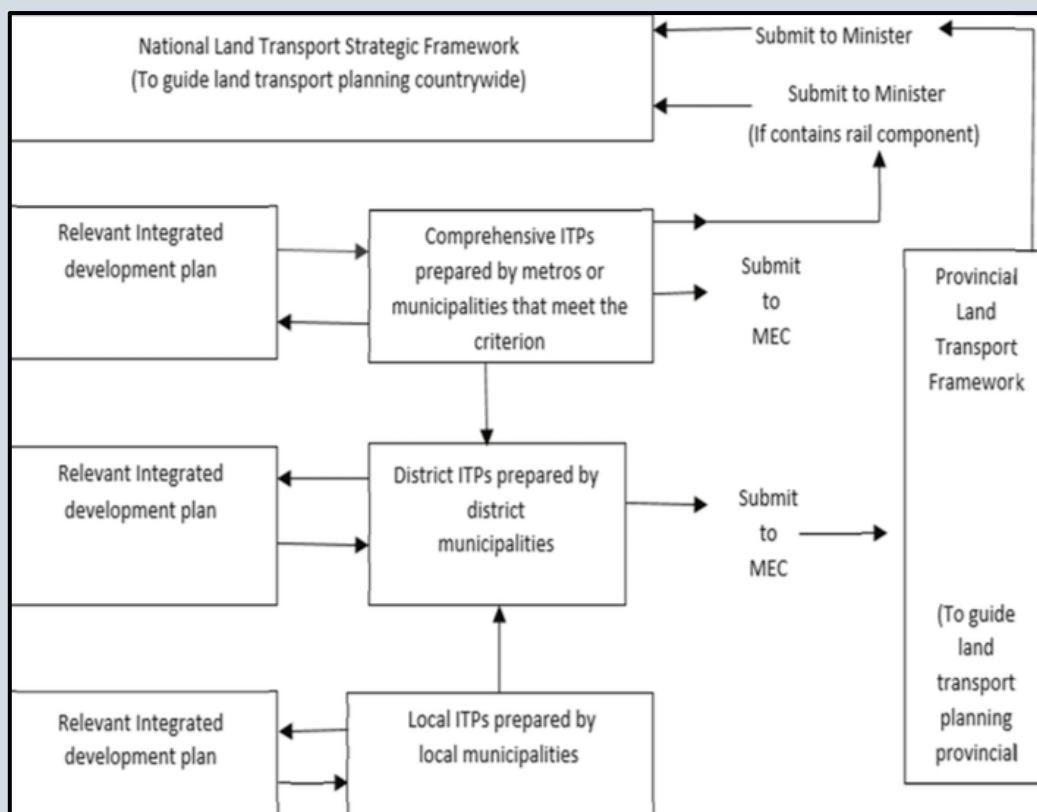


Figure 1: Interrelationship between transport planning requirements across the spheres of government<sup>23</sup>

It should be noted that for historical, geographical and other reasons there are variations in the organizational structure and resourcing of the many provincial and municipal departments responsible for transport. For similar reasons, there are also variations in the institutional capacity of each to perform all their responsibilities. As a result, most municipalities across categories have continuously been struggling to complete transport plans timeously and to the desired quality, and thus the National Department of Transport in partnership with the National Treasury is in the

<sup>23</sup> National Land Transport Act: Integrated Transport Planning Regulations 2017

process of reviewing the overall planning process to make it less onerous and more challenge-oriented.

## **E2: Avoid inappropriate consolidation of powers and functions with specific reference to regulation and contracting**

There is a need for role clarity between the Authority responsible for the Regulation of urban transport (RURA) and the performance of the Contracting Function as it pertains to the contracting of public transport services. It is not ideal (in terms of the principle of the separation of powers and functions) for a Regulator to be responsible for the contracting of the services it regulates.

It is recommended that, as a first step in the process of creating a division of regulatory and contracting functions, the Regulatory Authority (RURA) be relieved of its contract management responsibilities in order to not be seen to be both player and referee, and to avoid the Regulator from contracting the services that it regulates.

It is further recommended that the Contracting Authority function be assigned to RTDA as a first step in the process of separating the Contracting function from the Regulatory function. It is recommended that consideration be given to the eventual establishment of a Metropolitan Area Transport Authority for the jurisdiction of the City of Kigali.

***This recommendation has been agreed to as a priority action by the Minister of State in charge of Transport. The responsibility for the implementation of this recommendation must be located with MININFRA. The authority currently responsible for the Contracting Function (i.e. RURA) must be engaged in this process and the institutional capacity of RTDA, must be prepared in order to enable it to assume responsibility for the Contracting Function. The CoK as planning and infrastructure implementation authority should also be consulted in this process.***

***As a first step, it is proposed that the powers and functions of RURA, as it pertains to the institutional capacity required to perform the Contracting Function, be assessed and that the function then be assigned to RTDA on the basis of staff and finance following the assignment of the function. It is proposed that this process be initiated with immediate effect and that the assignment of the Contracting Function to RTDA be completed by December 2018.***

Should public transport gradually benefit from funding other than through fares only, then the contracting authority needs to have the powers to arbitrate between the level of service it requires of operators, the financial support it grants them (coming from new sources of funding), and the fare levels. This means that the role of the Regulator should then gradually shift away from these strategic decisions and focus on minimum standards, safety, etc. It could as an intermediary step (until a Metropolitan Area Transport Authority is established) keep regulating the granting of licenses and fares for non-contracted services.

## **E3: Enhance coordination between environmental and transport sectoral agencies to reduce fossil fuel reliance**

Urban transport, including public transport, in Rwanda is heavily reliant on fossil fuels, which results significant negative air quality and health impacts. Growing cities and increasing motorization compounds the challenge if such motorization continues to depend on fossil fuel.

REMA, as a non-sectoral institution under the Ministry of Environment (MINIRENA), is well-positioned to drive action around exploring alternatives to fossil fuels and to work with MININFRA and RTDA particularly on the transport aspects of such a shift. National policy in Rwanda is favorable to a shift away from fossil fuel reliance. The National Development Vision 2020 has led the way in this regard by setting a sustainable development agenda for the country, in line with international agreements to mitigate climate change. Another enabling factor is the existence of the Fund for the Environment and

Climate Change (FONERWA) that overtly aims to establish a green economy in the country and supports both public and private projects. Finally, the Center of Excellence for Urban Mobility (see next recommendation) currently under development will be well-positioned as a research partner.

Since Rwanda imports its transport fuel the country has limited scope to improve fuel quality. The opportunity thus presents itself to leapfrog directly to developing and expanding electrification in transport, rather than investing in improving fuel quality. Also, in light of the increasing interest of vehicle manufacturers to have a footprint in Rwanda the government can leverage its support for such investment to tap into the international technology supply chains of these corporations (this links to recommendation S4 below around local manufacture of public transport vehicles).

***It is thus recommended that REMA (with support from MINIRENA), RTDA (with support from MININFRA) and the Center of Excellence for Urban Mobility partner with FONERWA and international development partners to build momentum and a national dialogue around a shift towards electric vehicle mobility.***

***As a first step, it is proposed that such a partnership build a shared understanding of the impacts and process of implementing a shift from the current reliance on fossil fuels to electrification of the national vehicle fleet. A supplementary step would be to set up a pilot project to test an electric fleet in local conditions. Such a project could be suited as capstone research project for the Center of Excellence and should be considered to be incorporated in its scope of activities.***

In view of the importance of supporting and developing public transport (as recommended in this report) such a pilot could take the form of electric buses in Kigali, and electric minibuses in secondary cities. An important contextual aspect that such an exploratory process needs to be conscious of and test is the broader financial implications of a shift away from fossil fuels. An example is that the current fuel levy is dedicated to the Road Maintenance Fund; alternative sources of funding, e.g. in partnership with international development partners' green funding mechanisms or through electricity levies, need to be identified and in time implemented so as not to undermine current financial flows that directly support mobility improvements.

#### **E4: Build the requisite spatial planning and urban mobility capacity at City and District level**

The urban mobility Forum spent some time unpacking the concept of capacity and it was concluded that capacity needs to be understood as more than just staff numbers and that it needs to include:

- Clarity of purpose;
- Clarity of structure;
- Well-developed systems (including ICT);
- Appropriate human capital (knowledge skills and experience);
- Productive ways of work.

With such a definition, building the requisite spatial planning and urban mobility capacity at City and District level should be achieved by:

- Appropriate roles and responsibility allocation;
- Skills assessments;
- Skills development;
- Filling gaps on the various staff establishments;
- Providing the right tools for the job;
- Enhancing capacity through partnership (center of excellence);
- Review district Master Plans and incorporation urban mobility Master Plans.

***In order to give effect to this recommendation (which appeared during the National Urban Mobility Forum), it is proposed that MININFRA assumes responsibility for preparing the required skills development program and the eventual establishment of a Center of Excellence for Urban Mobility. MININFRA can assign the implementation responsibility to RTDA.***

***The City of Kigali and the Districts must participate in the design and implementation of the program as they will be the main beneficiaries of the program.***

***As a first step, it is proposed that a practical spatial planning and urban mobility training program be developed by drawing on programs that have already been designed by leading academic institutions and or countries of the developing world with comparable challenges. It may be necessary to contract specialized service providers in this regard.***

***It is proposed that the development of the requisite skills development program be initiated with immediate effect and that the first program be targeted for implementation during the first semester of 2019.***

**Box 4 - "Conseillers en mobilité" – Belgium's initiative to build institutional capacity in urban mobility planning and management**

At the end of the 1990s, following a significant rise in motorization, most Belgian cities were facing increasing congestion, deterioration in the supply of public transport, and a degradation of the urban environment. Regional and municipal authorities found it difficult to deal with these problems due to a lack of the necessary skills at all levels of the administration.

The Walloon Region, one of the three entities comprising the Kingdom of Belgium, was the first to set up, as early as 1998, a training program for 'Conseillers en Mobilité' (Mobility Advisors) aimed at public administrations. The basic training covers the main technical areas related to mobility planning and management. Within the public administration, the role of the advisor is to act as a relay between the different stakeholders (politicians, technical departments, interest groups, users, operators, etc.). The program forms part of the "Charter for Mobility", which commits all stakeholders to develop a municipal or inter- municipal mobility master plan for public and non-motorized transport targeting quality of life and environmental improvements. Prerequisites to obtain funding from the Region for municipal mobility projects (e.g. investments on road or public transport networks) include not only the adoption of a mobility plan, but also training and putting in place at least one advisor within the local administration.

Since 1998, more than 1,000 mobility advisors have been trained and placed in Wallonia, in addition to which there are 300 advisors in the Brussels-Capital region. This network constitutes a community of practice and exchange, and is supported by regular publications, advanced training, workshops, an annual symposium and regular technical visits.

### 3.2.2 Financing

#### **E5: Develop a clear finance and fiscal framework for funding of urban mobility**

There is a need for certainty at all levels of government regarding the sources for and allocation of funding for urban mobility improvements.

It is recommended that an inter-governmental finance and fiscal framework for urban mobility be developed, in order to:

- Set out the way in which urban mobility funding is to be allocated at the national (inter-departmental) level, (i.e. the urban mobility shares of the national fiscus);
- Set out criteria in accordance with which allocations to Provinces, Cities and Districts are made and these levels of government can apply for urban mobility funding;



- Regulate how existing sources of funding for transport and urban mobility improvements such as the fuel levy (currently dedicated to the Road Maintenance Fund), national level import duties on vehicles as well as local / district level sources such as parking fees and traffic fines be managed and allocated;
- Provide a framework in accordance with which additional sources of funding for transport and urban mobility improvements, such as funding related to emissions reduction in urban transport systems, are identified and pursued.
- Develop a dedicated public transport grant funding model for both public transport infrastructure and public transport operational improvements. Such a grant model could be split into two streams i.e. public transport infrastructure and public transport operations support or could be consolidated into one grant structure. The Public Transport Operations support grant (or portion of a consolidated grant) could be used to pay to contract services i.e. services currently not being provided by public transport service providers in urban areas, or to contract part of the service currently being provided by public transport service providers, i.e. to supplement fare income.

Dedicated funding for transport and urban mobility improvements are limited to the fuel levy at national level. Alternative / additional funding sources for transport and urban mobility improvements should ideally be linked to the reduction in negative externalities caused by the urban mobility system and should be explored in terms of the national finance and fiscal framework for urban mobility.

***As this recommendation was agreed to by MININFRA as part of development of National Land Transport Act, its actioning has to be done in consultation with MINECOFIN.***

***The objective is to develop an inter-governmental finance and fiscal framework as part of development of the National Land Transport Act with a similar timeframe.***

***The implementation of this recommendation should follow the same time frame as that for the development of the National Land Transport Bill and should be dealt with as an integral part of the process of settling a National Land Transport legislative and Finance and Fiscal Framework for and transport.***

#### **Box 5 - An example of a financial incentive program targeted at local governments in Morocco**

The Fund for the Support of urban and interurban road Transport Reforms (FSTR) (*Fonds d'Accompagnement des Réformes du Transport routier urbain et interurbain*) is a financial incentive mechanism created in Morocco in 2007 to encourage the development of mass transit infrastructure in Moroccan cities. The fund supports mass transit projects in cities by funding infrastructure investment. It can also finance initial operating deficit during the three first years of operations of the project, expecting that the mass transit line will then have no operational deficit.

Based on the estimated infrastructure needs of the 10 main cities of the Kingdom, FSTR targets the implementation of a total investment program of about 30 billion MAD (approximately 3.27 billion USD) until the year 2027. The fund's resources come from the State budget and a special purpose account for the Value Added Tax (VAT) managed by the Ministry of Interior.

Projects eligible for the FSTR's financial support include:

- Construction of tramway and BRT lines (including contributions to cover operating deficits up to the third year after the date of operations);
- Creation of dedicated bus lanes and/or facilities designed to improve their commercial speed (such as tricolor traffic signal systems capable of giving priority to buses and trams).
- Projects are considered eligible to funding based on allocation criteria regarding notably:

- Strategic, technical, financial and socio-economic pertinence of the project;
- Coordination, planning and implementation modes and processes for the project;
- Emergency of mobility needs in the cities considered.

#### **Box 6 - Urban transport authority and dedicated funding mechanism in Addis Ababa**

In Addis Ababa, since 2014 (Ethiopian Law No 43 November 13/2014) the municipality has placed all the powers expected of an urban mobility authority in the Addis Ababa Road and Transport Bureau (AARTB). The AARTB is a separate municipal department placed under the authority of the Mayor of Addis Ababa and managed by one Director with a current annual budget of around 8 billion ETB (approximately 290 million USD). The AARTB is organized in four distinct departments:

- The Addis Ababa City Roads Authority (AACRA), in charge of maintaining and extending the road network (currently managing 6,5 billion ETB per year, the largest budget of the AARTB, but also of the municipality itself);
- The Addis Ababa Transport Authority (TA), which organizes the public transport sector in Addis Ababa, regulates all public transport routes and fares, and provides facilities for freight vehicles;
- The Traffic Management Agency (TMA), in charge of reducing congestion and emission levels as well as improving road safety in Addis Ababa;
- The Driving Vehicle and Licensing Authority (DVLA), which regulates and registers all drivers' licenses in Addis Ababa including freight and public transport drivers.

On the 6<sup>th</sup> of December 2017, the AARTB enacted the creation of the Transport Fund Office (TFO) to which all transport fines and penalties, road users' fees, as well as advertisement revenue from bus shelters will flow, representing an annual budget of ETB 1.2 to 1.6 billion (approximately between 43.5 and 58 million USD). TFO moneys are earmarked for use in the urban mobility sector.

### 3.3 Recommendations in respect of Land use efficiency (AVOID)

#### **A1: Coordinate the planning process of neighboring towns**

As Rwanda is a very dense country, the population growth of villages and the development of secondary cities could contribute to the creation of a large conurbations. For example, even if the distance between Gisenyi and Musanze is about 60 km, uncontrolled urbanization could result in the emergence of a millionaire city in which mobility would be very difficult to manage due to the specific urban form.

In order to prevent local governments from side effects of urban sprawl, it is recommended to set up a coordination process for urban planning (including mobility planning) when their respective outskirts are bonding. This coordination process could result in the development of a common master plan for the neighboring cities.

***To give effect to this recommendation, it is proposed that the Ministry of Local Government set up coordination process involving planning authorities in some specific regions wherever the need arises. One of the first action could be to conduct a household survey in order to quantify daily trips between the two urban areas, and then define a territorial strategy reducing long distance daily trips.***

## 3.4 Recommendations in respect of Multimodal Transport System efficiency (SHIFT)

### S1: Extend the duration of bus operating contracts in order to encourage fleet renewal

The current duration of bus operating contracts does not facilitate fleet improvement including the introduction of higher occupancy vehicles by operators. A case can be made to increase the duration of bus operating contracts with the view to encourage fleet improvement.

It is therefore recommended that the duration of bus operating contracts be extended to 7 years or more in order to provide operators with greater certainty and to facilitate investment in fleet recapitalization and the replacement of low occupancy vehicles (LOV) with higher occupancy vehicles (HOV) on routes that encompass long trip distances.

The current bus contracts in Kigali have a 60-months life span. The ability of operators to make investment decisions based on a 60-months predictable income stream is limited.

Longer term contracts of at least 7 years or longer, (e.g. 12 years in the case of the South African BRT contracts), should provide the preconditions for the Contracting Authority to impose stricter contractual conditions regarding fleet renewal and should at the same time incentivize operators to comply with such conditions and invest in the improvement of the conditions of service and development of the human capital involved in providing public transport services.

***To give effect to this recommendation considered as a priority action item by MININFRA, it is proposed that RTDA (acting in consultation with MININFRA) be assigned the responsibility to drive this process. RTDA's work, in this regard, should be done in consultation with the current bus operators, RURA, MINECOFIN & CoK.***

***The most important steps are to undertake the required route viability studies, restructure future contracts to better respond to demand, review the fare system (i.e. consider the progression from a flat fare to distance-based system), assess the need for public funding for new investment (for example in traffic management, dedicated bus lanes or bus depots) and/or to "top up" fare revenue (i.e. assess the need for an operating subsidy), and to implement such new contracts for period of at least 7 years, with performance criteria that will enable extension by means of negotiation after the proposed 7 year contract period.***

***New bus operating contracts should be concluded by April 2019, as the contracts have been extended for one year.***

### S2: Establish a central home for public transport data and leverage the existing investment in urban mobility data and ICT to further improve planning and management processes

Public transport service contracts in Kigali are supported by an Automated Fare Collection system. The AFC generates valuable passenger demand and supply data that can be used in planning and contracting processes, but this is not being tapped to the extent possible at present.

Kigali is well served by an extensive closed-circuit camera system, which could lend itself to additional uses such as public transport operations monitoring. Rwanda has a national drive towards a cashless society.

It is therefore recommended that the current investment in Information and Communication Technology (ICT) be leveraged with a view to improving public transport planning, operations and monitoring.

Tapping into the big data sets that the current urban mobility systems already provide can facilitate improvement in the matching of supply and demand in the urban transport system, which in turn can lead to improvement in the overall performance of the public transport system.

ICT in the public transport sector can also enhance inter-operability between different services in the public transport system and increase the responsiveness of the public transport system. A Tech start-up hub can be created to focus purely on the enhancement of urban mobility existing data bases.

Improved transport system legibility also provides for a better transport user experience.

***The Minister indicated that RTDA, (acting in consultation with MININFRA), will act as implementation authority. To give effect to this recommendation, other parties that must be engaged in consultations including the current AFC service provider, other technology service providers, Public Transport users, RURA and CoK.***

***The steps in actioning this recommendation should include (1) mining existing fare system data, (2) reviewing the current flat fare system and (3) planning the advancement to a distance-based fare, (4) investing in passenger information systems and (5) harnessing local ICT capacity to support Public Transport improvements. This process should commence with these steps during the second half of 2018.***

At a national scale, besides AFC's link to the national cashless payment services drive, AFC also supplements the already extensive number of public services that can be accessed on basic cellphones and paid with mobile money. The opportunity exists to expand cashless fare payment beyond Kigali, whether through card-based AFC systems or directly via mobile payments, as well as in the current system in Kigali to allow for AFC cards to be topped up with mobile money.

### **S3: Establish the appropriate role of the moto taxi in the multi-modal system and regulate accordingly**

The moto taxi (two-wheeler motorized taxi) in Rwanda is a regulated mode in the urban mobility system. This constitutes a big achievement and provides a unique opportunity to define the role of moto taxis in the urban mobility system.

It is recommended that the regulatory system be utilized to define and direct the role of the moto taxi mode in the urban mobility system so that the moto taxi provides complimentary services such as feeder-distributor services, last mile connectivity services, and inter-peak on-demand services in support of high occupancy modes such as contracted bus operations.

Determining the appropriate role of the moto taxi in a multimodal urban mobility system and regulating this mode accordingly within a multimodal framework provides a potential win-win outcome for public transport users, public transport operators and public transport authorities alike. Rwanda has the potential of providing a model for other African countries in this regard.

***The Minister indicated that RTDA (acting in consultation with MININFRA, RURA and local authorities) should act as implementation authority. To give effect to this recommendation, other parties that must be engaged should include the moto taxi ownership structures, moto taxi drivers, the CoK and RNP.***

***The steps in actioning this recommendation should include (1) undertaking a demand and supply survey of moto taxis in Kigali as well as the major urban centers, (2) developing a regulatory model that speaks to the unique value offer of the moto taxi in a multi-modal urban transport system, and (3) engaging moto taxi ownership structures as well as drivers on the proposed regulatory model for this mode. It is proposed that the implementation of changes to the role of the moto taxi mode be undertaken in a phased fashion and that the commercial viability of this mode be enhanced rather than diminished through this process. In this context, it is proposed that the role of the moto taxi mode in providing feeder and distribution services, last-mile connectivity services, on-demand services and services outside of peak-period be explored.***

***The appropriate regulatory system should be design and agreed by December 2018 where after implementation can commence in a phased manner.***

#### **S4: Introduce a public transport vehicle (PTV) local assembly, maintenance and repair program**

Current public transport vehicle supply agreements do not include an obligation on the original equipment manufacturer (OEM) to establish local assembly and or maintenance capacity. This means that local capacity to maintain and repair public transport vehicles is limited and local job opportunities relating to the public transport system is not fully explored.

Considering the strong commitment to develop and renew the bus fleet in Kigali and the fact that no plant exists in East Africa yet, it is recommended that future agreements for supply of all types of public transport vehicles include requirements for the establishment of local assembly and/or manufacturing facilities, and that local maintenance and repair capacity be developed in partnership with OEMs.

The development of local public transport vehicle assembly and maintenance capacity (as part of future vehicle supply agreements) creates skilled labor job opportunities.

Local capacity reduces the cost of fleet maintenance and potentially increases the standard of maintenance and therefore enhances the longevity of the public transport fleet. Future OEMs agreements should also include standards pertaining to emissions (e.g. EURO 4/5).

***It is proposed that MININFRA assumes overarching responsibility for the actioning of this recommendation as high level inter-departmental consultations will be required. It is further proposed that once the required policy framework has been agreed, MININFRA delegates the implementation responsibility to RTDA.***

***As a first step in actioning this recommendation, it is proposed that MININFRA and RTDA undertake an assessment of relevant fleet modernization processes, (e.g. in leading African cities), that an OEM procurement policy framework be agreed with MINECOFIN and that relevant aspects of this framework be captured in the National Land Transport Bill.***

***In is finally proposed that the timeframe for the development of the O&M procurement framework coincides with the commencement and completion of the review of the current bus contracts.***

### **3.5 Recommendations in respect of Road space use and vehicle efficiency (IMPROVE)**

#### **I1: Optimize urban road use in Kigali through improved traffic management and dedicated bus lanes in order to facilitate the development of Mass Rapid Transit**

It is noted that a significant program of road infrastructure improvement and widening is currently underway in Kigali. Those investments won't address the problem of congestion; the management of the traffic using this infrastructure is equally important. A particular traffic management issue in Kigali that should be addressed is traffic control at the main road intersections in the city.

In addition, in order to enhance modal shift from private to public transport vehicles, it is recommended that dedicated bus lanes be created. The introduction of dedicated bus lanes and traffic management measures at intersections that give priority to buses often represents the first step on the road towards a Mass Rapid Transit system. Dedicated bus lanes reduce travel time for public transport users and could serve as a catalyst in the process of facilitating modal shift from the private car to public transport.

***According to the Minister, this recommendation is an action already in progress to be expedited in order to support the improvement of the Public Transport system. RTDA, working under the policy***

*direction of MININFRA, must continue with its responsibility for implementation of this recommendation. It is further proposed that the CoK, MINECOFIN, Public Transport users and existing Public Transport vehicle operators, (including the moto taxi operators), be consulted throughout the design and implementation of this recommendation.*

*The steps involved in actioning this recommendation should amongst other include the update of traffic counts at key intersections in the CoK road network, the completion of the road widening scheme, the undertaking of comparative case studies into the introduction of dedicated lanes as well as the prioritization of signaling systems at intersections and the appointment of design specialists and project management capacity.*

*It is proposed that the first phase of the introduction of dedicated lanes be planned for implementation by June 2019 in order to coincide with the introduction of new bus operating contracts.*

#### **Box 7 - Lessons learnt from the implementation of BRT systems around the world**

BRT systems have spread around the world in the past 25 years. Some lessons learnt from the implementation of BRT systems around the world: the **Transmilenio in Bogota** (Colombia), **MyCiTi in Cape Town** (South Africa) and the **Transantiago in Santiago de Chile** (Chili):

**The creation of a BRT system is always a complex and lengthy process.** The Transmilenio was created over a period of more than 10 years. The development in phases of MyCiTi also showed a slow progression. In Santiago de Chile, the relatively rapid creation of the BRT system led to a major crisis (competition with individual operators, funding issues, insufficient infrastructure and equipment at the beginning of operations causing slow commercial speed, etc.);

**Don't overlook negotiations with existing individual transport operators.** In the three cities, paratransit operators competed with the project (by illegally continuing their operations) and/or strongly opposed it through demonstrations, blocking of traffic, etc. The situation was solved only when their interests were finally considered, and a compromise was found to integrate them to the BRT system;

**BRT operators will often try to avoid supporting the commercial risk of a new BRT system** (unpredictability of the demand, important consequences on the financial equilibrium of the system). In Bogota, Cape Town and Santiago de Chile, authorities have not managed to allocate a significant part of the commercial risk on the BRT operator;

**A solid and capable transport authority should lead the project.** In the three cities, it was necessary to concentrate all responsibilities within the hands of a single entity. The entity – whether a full-fledged Transport Authority, a Government Agency, or a Ministry – should be able to supervise mobility and traffic studies, manage procurement procedures, mobilize funding for the project, have a strong political weight, etc.;

**There is no best practice in terms of tariffs calculation methods; they must be defined according with transport policy objectives fixed by authorities.** Many options are possible: by trip, by distance, with additional payment for some modes or by transfer, subsidized or not for some categories of users, etc.;

**Complex/heavy ticketing systems can generate issues.** Contactless payment ticketing systems have caused problems in Bogota and Santiago de Chile (complex implementation, compatibility issues between technologies, etc.) Lighter ticketing systems may provide better value for money in many situations;

**Physical integration of operators at stations, as soon as the BRT is put into service, is important for the success of the operation.** Infrastructure should be planned to allow physical integration of

operators at BRT stations since the beginning of operations, and to adapt to the future evolutions of the system (which should tend towards further integration, including tariff integration).

It is always difficult to assess ex-ante the BRT system's financial equilibrium conditions; authorities must be flexible and ready to react in case of error. It is therefore necessary for authorities to foresee institutional arrangements for financing a possible deficit (without being in a weak position vis-à-vis operators).

### **Box 8 - Dedicated Open / Closed Corridor and impact on public transport performance**

Public transport services in BRT systems are organized in several manners. In some cases, BRT corridors are "closed": they are only accessible to limited services or vehicle types and/or to selected operators. Other operators are simply not allowed to enter the exclusive corridor. In proximity of the exclusive corridor, these operators might then propose feeder services (organized or not). In the logic of a "closed" system, high-capacity vehicles serve exclusive corridors where infrastructure exclusivity guarantees high operating speeds for trunk routes.

Some service types, often referred to as "express" services, have few stops along their routes thus achieving higher performance values. Other services stop on all stations. The two types combine to produce a system where all forms of trips are catered for. Some stations are planned as interchange stations, such is the case of terminal stations where feeder services link with trunk services. This type of arrangement was implemented in BRT systems of Bogota, Quito and Curitiba. In Africa, Cape Town's first BRT phase and Johannesburg's model follow the same arrangement.

"Closing" a corridor might be justified by a desire to exclude former services operators along that axis, most notably paratransit modes. In order to do so, a combination of vehicle and infrastructure choices enforce the decision: high-floor buses and high platform stations effectively exclude vehicles foreign to the trunk BRT system.

In other cities, authorities opt for "open" high-capacity public transport corridors. Justifications of this decision often point to the need for system flexibility and/or urban insertion. "Open" corridors allow different vehicle types on the exclusive infrastructure. In such cases, several operators are allowed in the trunk corridor, thus creating a system where different routes converge and diverge from the main corridor. There are no clear distinctions between trunk services and feeder services, even if a certain hierarchy can be put forward depending on needs and demand levels. "Opening" a corridor can be translated into aiming at introducing a high level of flexibility in terms of what services are allowed into the corridor. For users, this type of arrangement results in a reduction of transfer needs.

The choice between "opening" or "closing" corridors is both a technical and a political decision, with an economic aspect that should not be overlooked. The choice should result from a careful analysis of service flexibility needs and of authorities' capacity to organize the public transport supply. Nonetheless, it should be noted that "closing" a system could result in a technological lock-in situation for future phases. Indeed, once a system is "closed", it is difficult and expensive to "re-open" it. For instance, when a BRT system has opted to use high-floor buses and high platform stations, substantial investments are needed either to purchase new vehicles or to imagine solutions that combine high-floor and low-floor solutions.



Image 1 - "Open" system – "closed" system<sup>24</sup>

### Box 9 - Monitor and manage traffic in Ouagadougou

As part of the Ouagadougou Mobility Support Project (PAMO), the Ouagadougou City Council launched an initiative in 2006 aimed at improving traffic conditions and improving access to the city center. The first step in this process was the development of a simplified circulation scheme, capable of pre-empting the city's future traffic plans, and allowing for the most urgent improvements to be implemented in the short term. The first phase of the traffic improvement scheme was designed in several stages:

- The first stage involved a rapid diagnosis of current traffic conditions and access to the city center, including road traffic surveys (cordon and intersection counts).
- The second stage focused on of strategic and technical guidelines to optimize access conditions to the city center, concurrently considering objectives such as traffic flow, the safety of all road users, the quality of public spaces, etc.
- The last stage was to identify key short-term steps (with 2015 as the horizon year) to improve city center access and to plan the development and implementation of a comprehensive traffic schema.

The improvements proposed at the end of these work stages were mainly centered on optimized operations of the existing road infrastructure (excluding some of the more demanding solutions).

In 2014, as part of the same program, the city council undertook a second traffic counting campaign, based on the same protocol, but this time organized directly by the municipal services and the staff trained in 2011. The objective of this second phase was to:

- Feed into the Urban Travel Observatory that is currently being set up, in order to gain better insight into travel patterns and ensure regular monitoring. This observatory is intended to eventually inform decision-making on road infrastructure management and investment planning;
- Evaluate the impact of the measures taken so far on road traffic, and refine the optimization tracks, particularly in terms of regulation of strategic traffic intersections.

The whole approach allowed for the development of a robust data baseline and for building municipal service capacity. In addition, it allowed the local authority to have a technically grounded rationale for avoiding unnecessary road investments in the city center recommended by some partners. The two counting campaigns show that as traffic increased on the city's radial roads, it was increasingly diverting onto the circumferential boulevards rather than going to the city center.

The priority actions still to be undertaken have been identified as being the optimization of specific infrastructure (regulation of signalized intersections, traffic signal timing optimization, etc.) and

<sup>24</sup>Modified images using base image from BRT Planning Guide (2007)



preparing for the implementation of the comprehensive traffic management strategy being developed in 2018.

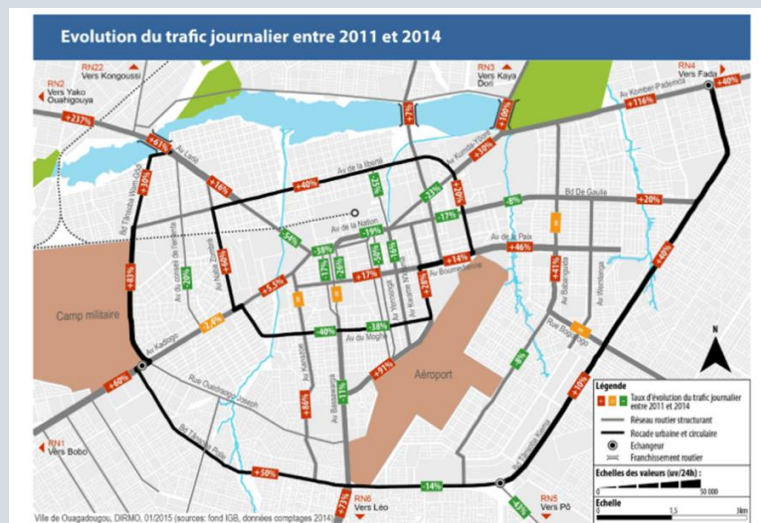


Figure 1 – Growth in daily traffic in central Ouagadougou between 2011 and 2014

## 12: Prioritize Public Transport Interchange and bus termini improvements in Kigali

Public transport interchanges / bus termini in Kigali are not all at an acceptable standard, which impacts on passenger safety and vehicular flows.

It is recommended that those public transport interchanges (PTIs) / and or public transport termini in Kigali that have not yet been upgraded or improved be prioritized for investment with the view to improve vehicular flow and passenger safety at intersections leading to these facilities as well as the attractiveness and functionality of these interchanges.

Kigali is a public transport hub of regional and national importance as it plays host to transnational bus services as well as inter-city and inner-city bus operations

Bus termini and public transport interchanges in Kigali are at different levels of infrastructure development. In view of continuing population and footfall growth some of these facilities struggle to accommodate the initially planned vehicular and passenger flows.

There is a clear need for and benefit to improving the quality and efficiency of the main public transport facilities in Kigali.

***The implementation of this recommendation should also be expedited in order to support the improvement of the Public Transport system. RTDA, working under the policy direction of MININFRA, must continue with its responsibility for implementation of this recommendation. It is further proposed that the CoK, MINECOFIN, Public Transport users and existing Public Transport vehicle operators, (including the transnational and inter-city bus operators), be consulted throughout the design and implementation of this recommendation.***

***The steps involved in actioning this recommendation should amongst other include (1) the update of traffic counts at the key Public Transport Interchanges (PTI), (2) the undertaking of comparative case studies into the implementation of multi-modal and mixed-use PTIs as well as (3) the prioritization of traffic signaling systems and the appointment of NMT and passenger movements design specialists and project management capacity.***

***It is proposed that the implementation of the redesign of PTIs be continued with in term of the current capital project implementation framework and timeframes.***

### **I3: Improve the Public Transport System by expanding the capacity of the public transport system and integrating public transport modes**

Significant progress has been made towards the formalization of the para-transit system over the 2013 to 2018. The establishment of three main contract areas in the City of Kigali and the institution of first-generation contracts supported by an automated fare collection system greatly enhanced the value add of the public transport system to the functioning of the overarching urban mobility system.

The limitations of the first-generation public transport operator contracts coupled with the need to resolve critical infrastructure and traffic engineering challenges in Kigali has however resulted in the need for the further improvement of the public transport system. This need is best illustrated by long waiting times during peak hours, limited seating capacity on the main modes of public transport and concerns about operator viability. Continued pressure for the expansion of two wheelers (moto taxis) for example points to latent demand on the public transport system and a lack of appropriate modal role allocation and integration (i.e. feeder / distributor - trunk route integration).

It is therefore recommended that the capacity of the overall public transport system be improved by amongst others the introduction of a second generation contracting model that incentivizes the increase of the number of higher occupancy vehicles in the public transport system, measures be taken to increase of the commercial speed of the public transport system, as well as the improvement of integration between public transport modes (e.g. bus and moto taxi, feeder and last mile connectivity services), and that the passenger information system supporting such improved public transport system also be improved.

The current bus contracts in Kigali have a 60-months life span. The ability of operators to make investment decisions based on a 60-months predictable income stream is limited.

***To give effect to this recommendation it is proposed that MININFRA be assigned the responsibility to drive this process and that the first-generation public transport contracts be replaced by 2nd generation contracts that enhances the attractiveness of the public transport service offer and better integrates the functioning of the various public transport modes.***

***The most important steps are to undertake the required route viability studies, restructure future contracts to better respond to demand, review the fare system (i.e. consider the progression from a flat fare to distance-based system), assess the need for public funding for new investment (for example in traffic management, dedicated bus lanes or bus depots) and/or to “top up” fare revenue (i.e. assess the need for an operating subsidy), and to implement such new contracts for period of at least 7 years, with performance criteria that will enable extension by means of negotiation after the proposed 7 year contract period.***

### **I4: Develop a specific NMT infrastructure network in Kigali and secondary cities**

A significant portion (+/-45%) of urban mobility trips are made by people walking. It is essential that priority be given to the development of a network of NMT infrastructure with specific reference to pedestrian walkways as part of the establishment of a truly multi-modal urban mobility network.

In pursuit of urban mobility Master Plans in both Kigali and secondary cities such as Musanze, it is noticeable that impetus has been given to the creation of NMT infrastructure along road investments. In hilly cities, in order to facilitate access to public transport from informal settlements (stairs, walkways, etc.) it seems useful to focus on specific pedestrian infrastructures.

***It is proposed that RTDA, acting in consultation with the CoK and the Districts assume responsibility for the implementation of this recommendation.***

***The steps involved in actioning this recommendation should amongst other include (1) a proper assessment of the current NMT infrastructure, (2) the improvement of the Public Transport system to attract NMT users (i.e. distance-based fares) and (3) the design of an integrated system of NMT***

**infrastructure aimed at enhancing access and mobility (include stairwells and footbridges where applicable).**

**It is proposed that the system redesign must be completed by June 2019 and that the implementation of an integrated NMT system be proceeded with in a prioritized manner.**

#### **Box 10 - Bogota's (Colombia) less publicized but highly effective public space projects**

Undoubtedly, Bogota is known in transport circles for its Transmilenio BRT system. At the same time, the city also started an aggressive campaign to reclaim public space from private users and to build a network of bicycle lanes in the city. These initiatives were based on previous efforts that resulted in strengthened institutions, sustainable financial practices, and a stronger civic culture<sup>25</sup>.

During the 1980's, Bogota's public spaces, sidewalks and road space experienced rapid deterioration. Sidewalks became riddled with illegally parked private vehicles, street vendors, and commercial stock<sup>26</sup>. Starting in the late 1990's, former mayors Enrique Peñalosa and, later, Antanas Mockus, made the reclamation of public spaces a priority. Though their campaigns were at first not welcomed by low-income and high-income residents alike, they were gradually accepted as inhabitants started to acknowledge the benefits of these policies. Apart from increased safety and better conditions for pedestrians, they also improved safety and travel speeds for private vehicle users.

Improving public space for pedestrians and cyclists was part of a larger plan to restructure the city's-built environment and it was closely linked to the spatial framework implemented in 2000 (Salazar, 2008). The initiative was also presented as a first step to achieving an intermodal transport system that included high capacity buses, conventional buses, private cars, cycling and walking. In this sense, it paved the way for the construction of infrastructure-heavy public transport projects and also for the implementation of pedestrian-only roads in iconic zones in the city.

#### **15: Assess the impact of various initiatives undertaken to date**

As many changes has been conducted in the recent years (road investment, public transport development, master plan implementation, road safety policies, etc.), it seems useful to develop an evaluation process, based on data collection, in order to improve those policies in the future.

MININFRA must take responsibility for it with the support of RTDA, RURA, MINECOFIN, CoK, Districts, Public Transport users, Public Transport operators, Public Transport professionals and Researchers & Academia. The objective is to use evaluation to improve the measures undertaken by the government and to benefit from such studies to develop a common knowledge. An urban mobility impact assessment initiative could be launched by 2019.

***MININFRA as the authority responsible for policy and review should assume responsibility for actioning this recommendation. A committee could be created, involving the main institutions (RTDA, RURA, MINECOFIN, CoK, Districts, etc.) but also private sector representative, Academia and civil society (Public Transport users association, Public Transport operators' association, Public Transport professionals and Researchers & Academia). Studies using standards impact assessments methods and tools could be undertaken on some specific topics and reviewed by the committee.***

***Even if this recommendation was not considered as a priority by the National Urban Mobility Forum, this process should ideally be undertaken and completed by June 2019 in order to provide an update on progress made and inform policy and implementation decisions to follow over the medium-term***

<sup>25</sup> Salazar J. (2008).

<sup>26</sup> Martin G. & Ceballos M. (2004).

**planning and implementation framework that will commence at the beginning of the 2019-2020 financial year.**

### 3.6 Synthesis of recommendation on suggestion of implementation

N°	Recommendations	Scale	Who? <i>Which institution to manage the implementation?</i>	With who? <i>Which institution involved / consulted?</i>	How? <i>How to implement? What are the next steps?</i>	When? <i>What timeframe for implementation? What temporal opportunities and constraints?</i>
E1	Enact Passenger Transport Legislation	National	MININFRA.	RTDA, RURA, RNP, CoK & Districts.	<p><b>Step 1:</b> Assess land transport laws from comparative countries;</p> <p><b>Step 2:</b> Prepare “green” paper for consultation follow with “white” paper and draft Bill.</p>	<p>Preparatory process to be completed by December 2018;</p> <p>Draft Bill to be tabled with legislature first half 2019.</p>
E2	Avoid inappropriate consolidation of powers and functions with specific reference to regulation and contracting	National	MININFRA	RURA & CoK must be consulted and the institutional capacity of RTDA must be prepared to take on functions.	<p><b>Step 1:</b> Review powers &amp; functions of RURA</p> <p><b>Step 2:</b> Assess institutional capacity requirements of Contracting functions</p> <p><b>Step 3:</b> Assign CA function to RTDA</p> <p><b>Step 4:</b> Capacitate RTDA to perform functions</p>	Process to be completed by December 2018.
E3	Enhance coordination between environmental and transport sectoral agencies to reduce fossil fuel reliance	National	RTDA (with support of MININFRA) and REMA (with support of MINIRENA)	FONERWA, international development partners, Center of Excellence (when fully operational)	<p><b>Step 1:</b> Build understanding of scale, process and impacts of electric mobility and shift away from fossil fuels</p> <p><b>Step 2:</b> Test electric vehicles in local environment</p>	Center of Excellence is a key partner to lead research, so relies on it to be fully established and operational
E4	Build the requisite spatial planning and urban mobility	National	MININFRA (preparing the skills development	Cok & Districts.	<p><b>Step 1:</b> Develop practical spatial planning and</p>	Run first programs by June 2019.

	capacity at City and District level		program and the establishment of a Center of Excellence RTDA (implementation)		urban mobility training programs; <b>Step 2:</b> Contract training capacity; <b>Step 3:</b> Use this training program to establish a Government Center of Excellence.	
E5	Develop a clear finance and fiscal framework for funding of urban mobility		MININFRA (as part of development of National Land Transport Act.).	MINECOFIN.	Develop an inter-governmental finance and fiscal framework as part of development of National Land Transport Act.	Same as for development of National Land Transport Act.
A1	Coordinate the planning process of neighboring towns	National	MINALOC	Concerned Local planning authorities	Launch a common household surveys for two urban areas	Depending on local context
S1	Extend the duration of bus operations contracts in order to encourage fleet renewal	Kigali	RTDA, in consultation with MININFRA, should be the driver of this process.	Current bus operators, RURA, MINECOFIN & CoK.	<b>Step 1:</b> Undertake route viability studies; <b>Step 2:</b> Structure future contracts to better respond to demand and supply; <b>Step 3:</b> Review fare system (flat fare to distance-based system); <b>Step 4:</b> Assess need for public funding to top up fare revenue (subsidy); <b>Step 5:</b> Implement new contracts for period of at least 7 years.	Process to be completed by October 2019.
S2	Leverage the current investment in urban mobility ICT to further improve planning and management processes	National	RTDA, in consultation with MININFRA.	AFC and other technology service providers, Public Transport users and CoK.	<b>Step 1:</b> Start mining fare system data actively; <b>Step 2:</b> Review current flat fare system and advance to distance-based fare; <b>Step 3:</b> Invest in passenger information systems.	Commence with these steps second half of 2018.

					<b>Step 4:</b> Harness local ICT capacity in support of Public Transport improvements.	
S3	Establish the appropriate role of the moto taxi	National	RTDA, in consultation with MININFRA and RURA.	Moto taxi ownership structures and drivers, CoK and RNP.	<p><b>Step 1:</b> Undertake a demand and supply survey of moto taxis in Kigali and the major urban centers;</p> <p><b>Step 2:</b> Develop a regulatory model that speaks to the value offer of the moto taxi;</p> <p><b>Step 3:</b> Engage moto taxi ownership and driver structures on new regulatory model and implement in phased fashion.</p>	Role appropriate regulatory system agreed by December 2018.
S4	Introduce a public transport vehicle (PTV) local assembly, maintenance and repair program	National	MININFRA with RTDA as implementer.	MINECOFIN, transport operators and OEM.	Draw on relevant fleet modernization comparisons.	Co-insights with commencement of new bus contracts.
I1	Improve urban road infrastructure in Kigali with the view to create dedicated high occupancy vehicle lanes and facilitate the development of Mass Rapid Transit	Kigali	RTDA (in consultation with MININFRA).	CoK and MINECOFIN.	<p><b>Step 1:</b> Update traffic counts at key intersections, of the CoK road network;</p> <p><b>Step 2:</b> Complete road widening scheme;</p> <p><b>Step 3:</b> Undertake study into the introduction of dedicated lanes and priority signaling systems;</p> <p><b>Steps 4:</b> Appoint design specialist and implement.</p>	Implement first phase by June 2019.

12	Prioritize Public Transport Interchange and bus termini improvements in Kigali	Kigali	RTDA (in consultation with MININFRA).	CoK and MINECOFIN.	<p><b>Step 1:</b> Update traffic counts at key intersections, of the CoK road network;</p> <p><b>Step 2:</b> Complete road widening scheme;</p> <p><b>Step 3:</b> Undertake study into the introduction of bus termini and priority signaling systems;</p> <p><b>Steps 4:</b> Appoint design specialist and implement.</p>	Implement first phase by December 2019.
13	Improve the Public Transport System by expanding the capacity of the public transport system and integrating public transport modes	Kigali	MININFRA.		<p><b>Step 1:</b> Undertake the required route viability studies</p> <p><b>Step 2:</b> Restructure future contracts to better respond to demand</p> <p><b>Step 3:</b> Review fare system</p> <p><b>Step 4:</b> Assess the need for public funding for new investment</p> <p><b>Step 5:</b> Top up fare revenue</p> <p><b>Step 6:</b> Implement such new contracts for a period of at least 7 years</p>	ASAP
14	Develop a specific NMT infrastructure network in Kigali and secondary cities	Kigali + secondary cities	RTDA.	CoK and Districts.	<p><b>Step 1:</b> Survey current NMT use;</p> <p><b>Step 2:</b> Improve Public Transport system to attract NMT users (i.e. distance-based fares);</p> <p><b>Step 3:</b> Design a system of NMT infrastructure aimed at enhancing access and mobility (include stairwells and footbridges).</p>	System redesign – June 2019; NMT system improvements – ongoing.
15	Assess the impact of various initiatives	National	MININFRA.	RTDA, RURA, MINECOFIN, CoK, Districts, Public Transport users, Public Transport operators, Public	<p><b>Step 1:</b> Launch Studies on specific topics</p> <p><b>Step 2:</b> Review the studies with the evaluation committee.</p>	2019.

undertaken to date			Transport professionals and Researchers & Academia.		
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### 3.7 Outcomes of prioritization exercise undertaken in conclusion of the Urban Mobility Forum

In conclusion of the Urban Mobility Forum proceedings, all recommendations validated and proposed during breakaway session were tabulated and distributed to participants to undertake a rank-based prioritization process (see Appendix 1 for details).

In terms of this prioritization process, participants had to rank all recommendations in rank order (i.e. 1 to 12 with 1 representing the highest ranked priority).

The outcomes of this prioritization exercise are reported below:

Priority N°1 (by an overwhelming margin) is to improve urban road infrastructure in Kigali with the view to create dedicated high occupancy vehicle lanes and facilitate the development of Mass Rapid Transit in order to enhance modal shift from private to public transport vehicles.

Priorities N°2 & N°3 achieved equal rating and these priorities are to prioritize Public Transport interchange and bus termini improvement in Kigali in order to improve vehicular flow and passenger safety as well as attractiveness and functionality of these interchanges, and;

To build the requisite spatial planning and urban mobility capacity at City and District level by:

- Appropriate roles and responsibility allocation;
- Skills assessments;
- Skills development;
- Filling critical gaps on the various staff establishments;
- Providing the right tool for the job;
- Enhancing capacity through partnership (center of excellence).

The Priority that received the fourth highest ranking is to develop a customized NMT infrastructure network in Kigali and “secondary” cities in order to facilitate access to public transport from informal settlements and better connect the various parts of the cities.



## 4. References

### Reports and articles<sup>25</sup>

African Development Bank Group (2013), *Rwanda Transport Sector Review and Action Plan*

City of Kigali, 2013, *City Development Plan 2013-2018*

City of Kigali (2017), *Kigali Car Free Days*

City of Kigali (2013), *Kigali Transport Master Plan*

International Institute for Sustainable Development (2013), *Republic of Rwanda: Greenhouse Gas Emissions Baseline Projection*

Ministry of Finance and Economic Planning (2013), *Economic Development and Poverty Reduction Strategy*

Ministry of Infrastructure, 2014, *Development of appropriator strategy for reduction of traffic congestion and air pollution in City of Kigali*

Ministry of Infrastructure, (2015), *Draft National Informal Settlement Upgrading Strategy*

Ministry of Infrastructure, (2012), *Planning and Design of a Public Transport System for Kigali City: Assessment of Public Transport*

Ministry of Infrastructure, (2012), *Urbanization and Rural Settlement Sector Strategic Plan*

National Institute of Statistics (2017), *Rwanda Statistical Yearbook 2017*

New Times (30 March 2018), *Public transport fares to go up starting April*

Niyonsenga (2012), *Assessing Public Transport Supply for Kigali*

Rwanda Transport Development Agency, 2012, *Strategic Transport Master Plan for Rwanda*

Rwanda Environment Management Authority (2015), *Intended Nationally Determined Contributions (INDC)*

Stucki M. (2015), *Politiques de mobilité et d'accessibilité durables dans les villes africaines*, SSATP Working Paper No106,

USAID (2015), *Greenhouse Gas Emissions in East Africa*

World Bank (2017), *Reshaping Urbanization in Rwanda, Economic and Spatial Trends and Proposal*

World Bank (2016), *Rwanda*

World Bank (2012), *Total greenhouse gas emissions (kt of CO2 equivalent)*

World Health Organization (2017), *Road Traffic Accident Deaths in Rwanda*

### Policies and legislation

Government of Rwanda (2014), *Fleet Policy of Government of Rwanda*

Government of Rwanda (2013), *Kigali Conceptual Master Plan*

Government of Rwanda (2000), *National Decentralization Policy*

Ministry of Finance and Economic Planning (2000), *Rwanda's Vision 2020*

Ministry of Finance and Economic Planning (2002), *The National Investment Strategy*

Ministry of Infrastructure (2011), *Law No 55/2011 Governing Roads in Rwanda*

Ministry of Infrastructure (2017), *National Feeder Road Policy and Strategy*

Ministry of Infrastructure (2008), *National Transport Policy*

Ministry of Infrastructure (2015), *Presidential decree No 25/1 of 25/02/2015*

Ministry of Infrastructure (2012), *Public Transport Policy and Strategy for Rwanda*

Ministry of Local Governments (2012), *Communication with CLGF 2015 and 2012 Census*

Rwanda Environment Management Authority (2011), *Rwanda Green Growth and Climate Resilience Strategy*

Rwanda Utilities Regulatory Authority (2015), *Passenger Roads Transport Regulations n°007/TRANS/RT/RURA/2015<sup>1</sup>*

# Appendices

## Appendix 1 – Sources of statistical data for the eight pilot countries and the cities studied in Rwanda

■ Sources for table 1:

	SOURCES	Available at
<b>DEMOGRAPHY</b>		
Country population (million, 2016)	Worldbank (2016)	<a href="https://data.worldbank.org/indicator/SP.PCP.TOTL">https://data.worldbank.org/indicator/SP.PCP.TOTL</a>
Country population projection (million, 2030)	UN Habitat (2030)	<a href="http://urbandata.unhabitat.org/explore-data?countries=Q,ET,GH,GN,KE,NG,RW,SN&amp;indicators=population">http://urbandata.unhabitat.org/explore-data?countries=Q,ET,GH,GN,KE,NG,RW,SN&amp;indicators=population</a>
Country density (pop. / sq. km)	Worldbank (2016)	<a href="https://data.worldbank.org/indicator/EN.PCP.DNST">https://data.worldbank.org/indicator/EN.PCP.DNST</a>
<b>URBANIZATION</b>		
Urbanization Rate (% , 2016)	Worldbank (2016)	<a href="https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS">https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS</a>
Urban Growth Rate (% , 2010-2015)	Worldbank (2010-2015)	<a href="https://data.worldbank.org/indicator/SP.URB.GROW?locations=Q">https://data.worldbank.org/indicator/SP.URB.GROW?locations=Q</a>
Urban areas with more than 300 000 inhabitants (2015)	UN Habitat (2015)	UN Habitat ( <a href="https://esa.un.org/unpd/wup/CD-ROM">https://esa.un.org/unpd/wup/CD-ROM</a> , File 12)
<b>ECONOMY</b>		
GDP per capita (\$PPP, 2016)	Worldbank (2016)	<a href="https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD">https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD</a>
Average economic growth rate (% / year, 2010-2015)	Worldbank (2010-2015)	<a href="https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=Q">https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=Q</a>
Poverty headcount ratio w/r to the international poverty line (2011 PPP, % of pop.)	Worldbank (2005 to 2015 depending on countries)	<a href="https://data.worldbank.org/indicator/SI.POV.DDAY?locations=KE-ET-RW-GH-NG-GN-SN-Q">https://data.worldbank.org/indicator/SI.POV.DDAY?locations=KE-ET-RW-GH-NG-GN-SN-Q</a>
Human Development Index (0-1 scale, 2015) 0 - low , 1 - high human development	UNDP, Human Development Reports (2015)	<a href="http://hdr.undp.org/en/composite/HDI">http://hdr.undp.org/en/composite/HDI</a>
<b>BUSINESS AND GOVERNANCE</b>		
Doing Business (Distance to Frontier, 2017) 0 - lowest, 100 - highest performance over time or "frontier"	Doing Business, Distance to Frontier (2017)	<a href="http://www.doingbusiness.org/data/distance-to-frontier">http://www.doingbusiness.org/data/distance-to-frontier</a>
Corruption Perceptions Index (1-100, 2016) 1 - low transparency or high corruption, 100 - high transparency or low corruption	Transparency International (2016)	<a href="https://www.transparency.org/news/feature/corruption_perceptions_index_2016">https://www.transparency.org/news/feature/corruption_perceptions_index_2016</a>
<b>MOTORIZATION</b>		
Gazoline Price / Diesel Price (US\$ / L, 2016)	Worldbank (2016)	<a href="https://data.worldbank.org/indicator/EP.PMP.SGAS.CD">https://data.worldbank.org/indicator/EP.PMP.SGAS.CD</a> / <a href="https://data.worldbank.org/indicator/EP.PMP.DESL.CD">https://data.worldbank.org/indicator/EP.PMP.DESL.CD</a>
Private vehicles in use (2015)	OICA (2015)	<a href="http://www.oica.net/category/vehicles-in-use/">http://www.oica.net/category/vehicles-in-use/</a>
Motorization Rate (private vehicles / 1 000 inhabitants, 2015)		
Road Safety Casualties (nb of casualties / 100 000 people, 2015)	Worldbank (2015)	<a href="https://data.worldbank.org/indicator/SH.STA.TRAF.P5?locations=Q&amp;view=chart">https://data.worldbank.org/indicator/SH.STA.TRAF.P5?locations=Q&amp;view=chart</a>

■ Sources for table 3 :

	Sources	Available at
<b>DEMOGRAPHY</b>		
Metropolitan population (million, 2015)	UN Habitat (2015)	<a href="https://esa.un.org/unpd/wup/CD-ROM">https://esa.un.org/unpd/wup/CD-ROM</a> , File 12
Percentage of the national population residing in the urban agglomeration (% , 2015)	UN Habitat (2015)	<a href="https://esa.un.org/unpd/wup/CD-ROM">https://esa.un.org/unpd/wup/CD-ROM</a> , File 16
Urban population growth rate (% / year, 2015-2020)	UN Habitat (2015-2020)	<a href="https://esa.un.org/unpd/wup/CD-ROM">https://esa.un.org/unpd/wup/CD-ROM</a> , File 14
<b>QUALITY OF LIFE</b>		
Quality of life in African cities (EPFL-AMB ranking, 2017)	EPFL-AMB (2017)	<a href="https://www.yabiladi.com/articles/details/51277/classement-epfl-amb-marrakech-meilleure-ville.html">https://www.yabiladi.com/articles/details/51277/classement-epfl-amb-marrakech-meilleure-ville.html</a>
Urban mobility Index 2.0 - UITP (grade 0-100, 2014)	UITP (2014)	<a href="http://www.uitp.org/sites/default/files/members/140124%20Arthur%20D.%20Little%20%26%20UITP_Future%20of%20Urban%20Mobility%20%20_Full%20study.pdf">http://www.uitp.org/sites/default/files/members/140124%20Arthur%20D.%20Little%20%26%20UITP_Future%20of%20Urban%20Mobility%20%20_Full%20study.pdf</a>
<b>MOBILITY DEMAND</b>		
Motorization rate (vehicules / 1'000 inhabitants)	Kigali Masterplan (2013)	<a href="http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf">http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf</a>
Number of trips per day (million)		
Number of motorized trips per day (million)		
Number of motorized trips per day per inhabitants (million)		
Average trip distance (km)		
Modal split - Personal Vehicles (%)	Kigali Masterplan (2013)	<a href="http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf">http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf</a>
Modal split - Public Transport, including paratransit (%)	Kigali Masterplan (2013)	<a href="http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf">http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf</a>
Modal split - Non Motorised Transport (%)	Kigali Masterplan (2013)	<a href="http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf">http://www.masterplan2013.kigalicity.gov.rw/downloads/Docs/RWF1101_04_Kigali%20Transportation%20Master%20Plan_04062013-s.pdf</a>
<b>TRANSPORT SUPPLY</b>		
Number of public buses		
Number of paratransit vehicles (taxis excluded)		
Length of existing urban rail road and/or reserved bus lanes (km)		
Length of planned urban rail road and/or reserved bus lanes (km)		

Appendix 2 – Interpretation grid for the governance matrix

Sector	Urban Planning	Transport public					Public spaces					
		Institutional collective transport (train, metro, bus, boats, etc)	Bus stations (or bus terminals)	Paratransit		Taxis (shared taxis, mototaxis and three-wheeled)	Road infrastructure and road network	Traffic management	Parking	Non-motorized modes		
				Professionalized (minibus, shared taxis)	Non professionalized (minibus, shared taxis)					Walking	Cycling	
Strategical level What strategies? With which resources?	Policy and planning	Definition of a general Urban Development Master Plan	Corridor-based or network-based project definition	Bus station (or bus terminals) planning	Network and bus stops definition			Road network infrastructure Master Plan (or similar) definition	Traffic management strategy definition (traffic plan, traffic calming, traffic lights regulation strategy, etc.)	Parking strategy definition	Non-motorized modes policy and related infrastructure plan	
	Funding	Urban project financing	Capital investment and eventual operational deficit financing	Infrastructure financing	Recapitalization or renewal program			Infrastructure and facilities financing				
Tactical level What services ought to be developed? How to go about it?	Regulation	Urban planning regulatory framework	Public transport services supervision and regulation					Builders' standards definition	Highway (or road) code regulatory framework definition and enforcement by responsible entity			
	Licensing, permits and contracting	Drivers' permit	Authority - operator contracting		Operational licensing			Parking operators contracting				
	Fare system		Fare policy for users	Fare policy for operators	Fare policy for users			Tolls	On-the-road or off-road parking fare setting mechanisms			
Operational level How to produce services efficiently?	Infrastructure, Equipment	Urban networks' infrastructures besides transport infrastructures	Infrastructure project management and vehicle and facility ownership	Project management and infrastructure ownership	Infrastructure project management (bus stops, tanks, etc.)			Road infrastructure general management	Project management for traffic lights facilities and infrastructures	Project management for parking infrastructure and/or for parking meters	Project management for sidewalks	Project management for bicycle paths
	Operations / Maintenance		Vehicle and infrastructure operations and maintenance	Bus stations (or bus terminals) management, if by a private company or a union	Vehicle operations and maintenance			Maintenance	Traffic lights and road signage maintenance	Operations and maintenance of on-the-road or off-road parking	Cleaning and maintenance of non-motorized modes infrastructures	

### *Appendix 3 – Context of the Urban Mobility Forum*

#### **Purpose of the forum**

The Urban Mobility Forum was held on 19 and 20 April 2018 and took place in the Umubano Hotel in Kigali, Rwanda. The purpose of the Forum was to outline the diagnosis (findings and recommendations) established during the first field mission held in November / December 2017 in Kigali and Musanze in order to:

- Share ideas on the current state of urban mobility;
- Gather inputs from the different stakeholders represented to stimulate a national debate on urban mobility issues;
- Understand the roles of the various government actors and stakeholders in urban mobility matters, and to
- Develop and confirm a common vision for urban mobility in the cities of Rwanda.

#### **Attendance**

The Urban Mobility Forum was attended by more than 60 representatives from the following institutions:

- The Ministry of Infrastructure;
- Rwanda Utilities Regulatory (RURA);
- Rwanda Transport Development Agency (RTDA);
- Rwanda Environment Management Authority (REMA);
- Transport Operators;
- The City of Kigali (CoK);
- 30 District representatives;
- Representatives from the National Police;
- African Development Bank;
- World Bank.

The introduction of attendees was made by M. Innocent KABAGAMBE from the Ministry of Infrastructure.

#### **Opening address**

M. Zemedkun Girma TESSEMA introduced the SSATP program and its objectives followed by a welcome address by the Minister of State for Transport, the Hon Jean de Dieu UWIHANGANYA.

M. Julien ALLAIRE of the consultants Transitec then presented the different facilitators of the Forum as well as a short introduction to the EASI framework.

As the Country Manager, M. Nico MCLACHLAN presented the findings and recommendations emanating from the diagnoses done during the first field mission and outlined the main aspects addressed in the first draft Interim Report.

A panel discussion constituted of representatives from MININFRA, the City of Kigali, REMA, RURA and RTDA, provided an initial round of responses to the presentation of findings and recommendations, with the view to stimulate discussions to follow during break away sessions.

*Appendix 4 – Assessment: Rating the priority of recommendations*

<b>RECOMMENDATIONS</b>	<b>RATING</b>
<p>Enact passenger transport legislation to:</p> <p>Set out the powers and functions of the various national, provincial, city and districts level authorities;</p> <p>Outline the financial and fiscal arrangements as well as the rules in which funding is allocated and applied;</p> <p>Set out how urban mobility planning processes should align with land use planning and urban planning &amp; development processes.</p>	
<p>Avoid inappropriate consolidation of powers and functions with specific reference to regulation and contracting:</p> <p>RURA should be relieved of its contract management responsibilities to not be seen to be both player and referee and to avoid the Regulator from contracting the services it regulates;</p> <p>As a first step in the process of decentralization, the Contracting Authority Function could be assigned to the City of Kigali and Districts with relevant capacity.</p>	
<p>Build the requisite spatial planning and urban mobility capacity at City and District level by:</p> <p>Appropriate roles and responsibility allocation;</p> <p>Skills assessments;</p> <p>Skills development;</p> <p>Filling gaps on the various staff establishments;</p> <p>Providing the right tool for the job;</p> <p>Enhancing capacity through partnership (center of excellence).</p>	
<p>Extend the duration of bus operating contracts in order to encourage fleet renewal (fleet recapitalization and the replacement of low occupancy vehicles with high occupancy vehicles).</p>	

<p>Review fare system in Kigali (from Flat Fare to Distance – based fares).</p>	
<p>Leverage the current investment in urban mobility ICT in order to improve the overall performance of the public transport system; (inform planning, contracting &amp; regulation of supply and demand).</p>	
<p>Establish the appropriate role of the moto taxi in the multi – modal system and regulate accordingly.</p>	
<p>Introduce a Public Transport Vehicle (PTV) local assembly, maintenance and repair program which will:</p> <ul style="list-style-type: none"> <li>Create skilled labor job opportunities;</li> <li>Reduce the cost of fleet maintenance;</li> <li>Increase the standard of maintenance;</li> <li>Enhance the longevity of the public transport fleet.</li> </ul>	
<p>Improve urban road infrastructure in Kigali with the view to create dedicated high occupancy vehicle lanes and facilitate the development of Mass Rapid Transit in order to enhance modal shift from private to public transport vehicles.</p>	
<p>Prioritize Public Transport interchange and bus termini improvement in Kigali in order to improve vehicular flow and passenger safety as well as attractiveness and functionality of these interchanges.</p>	
<p>Develop a specific NMT infrastructure network in Kigali and secondary cities in order to facilitate access to public transport from informal settlements and better connect the various parts of the cities.</p>	
<p>Assess the impact of various initiatives undertaken to date in order to improve policies already in place. (data management, public transport contracts, fare system)</p>	

