

**REPUBLIC OF RWANDA**



**MINISTRY OF INFRASTRUCTURE**

**PUBLIC TRANSPORT POLICY AND STRATEGY  
FOR RWANDA**

**Kigali: October, 2012**

# EXECUTIVE SUMMARY

Rwanda has made significant achievements in developing transport infrastructure in recent years. However, the issue of providing adequate transport services has largely been ignored. It is not possible ensure door-to-door mobility and accessibility of people and goods, which is key to economic growth, without development of an integrated public transport service. The Government of Rwanda has therefore decided to constitute a technical committee to assess the existing public transport problems and submit a report outlining the potential policy remedial measures on short, medium and long term basis to the Ministry of Infrastructure. This document outlines the current status, strategies, priorities and action plan for intercity, rural, international and urban public transport system for Rwanda.

## **Key Principles for Public Transport Services in Rwanda**

The fundamental principles of public transport services are to:

- Ensure universal public transport services for all citizen;
- Ensure accessibility (easy to use);
- Ensure mobility (door to door);
- Ensure availability for use (responsive to demand);
- Ensure reliability to use (providing services as per standard time schedule or available on demand);
- Promote Safety and security;
- Ensure Monitoring & Evaluation of Level of service and performance; and
- Satisfy from the user's point of view (targeted user groups).

In the line of the principles as cited above, effort were made to develop strategies, priorities and action plans for the development of an integrated public transport system for Rwanda. A brief description of the status, strategies, priorities and programme for the public transport services in Rwanda is outlined in the following sections.

## **Land Public Transport Services**

At the present moment there is no railway network in Rwanda. The land public transport services are solely oriented in road based public transport services.

Although at present there are 41 companies and cooperatives, which operate different types of public transport vehicles, the major market share of vehicles come from individual operators. In terms of total available seat capacity, the individual operators provide 70% of the supply.

Out of 72,292 seat capacity, large buses, medium buses and minibuses cater for 84% of the total supply, whereas taxi cabs and motorcycle taxis provide 3% and 13% of the passenger capacity respectively. Minibuses, having 18 seat capacities are the principle mode of transport, which cater for 54% of the total supply. It is, therefore, evident that public transport services organized by the private operators in Rwanda is dominated by individual or small operators having smaller vehicles, such as minibuses and motorbikes.

## **Intercity Public Transport System of Rwanda**

### ***Status of Intercity Road Passenger Services***

The condition of National Paved Roads is very good having 98% in Good condition in 2011. However, there are lacks of network continuity and capacity and low Level of Service (LOS) for National and District Road Category 1. The Rwanda National Road Network is operating at undesirable levels with 11.1% and 88.9% of the total length of road network being analysed operating at a LOS E and F respectively. It is therefore clearly evident that the LOS of the road network of Rwanda is not satisfactory. The LOS of the bus route network has significant impact on ensuring quality services for intercity bus travellers.

The current condition of intercity public transport in Rwanda is not very satisfactory. The general condition of the current public transport services is characterised by the followings:

- The current road public transport services are generally acknowledged to be inefficient and costly;
- Passenger transport services are uncoordinated;
- Most services emphasise access (multi-stops) at the cost of mobility;
- Intercity public transport services are mainly provided by minibuses having 18 seat capacity;
- There is no mechanism in place to ensure quality service and customer care; and
- The whole intercity public transport industry is profit driven without any regard to quality of services

### ***Strategies for the Development of Intercity Road Transport Network***

In order to improve mobility, accessibility and connectivity, the network will be improved in terms of addition of new links and upgrading of existing unpaved roads to paved roads. In total 13 major road links are to be upgraded to surfaced roads which can accommodate speeds of up to 60 km/hr.

## ***Strategies for the Development of Intercity Road Passenger Services***

The key strategies for the development of Intercity road passenger services are as follows:

- A Quality Bus Service will be introduced as a dedicated service on 11 major corridors linking important cities and nodes within Rwanda providing a faster and more convenient service that would successfully compete with the private car; and
- A scheduled bus service will be employed to provide feeder services in low demand areas;

In order to implement the strategies in three phases, i.e. short term (0 to 2 years), medium term (3<sup>rd</sup> to 5 years) and long term (6<sup>th</sup> to 20 years) in total about USD 835 million for road improvement and USD 9.0 for public transport initiatives will be required.

In addition, Operators will have to procure about 185 buses and 350 coasters to meet the demand in the base year. Assuming unit price of large bus (of at least 60 passenger capacity) and medium buses (between 30 and 60 passenger capacity) as USD 114,000 and 71,500 respectively (as obtained from ONATRACOM source), the total initial investment of the operators to procure these buses will be USD 46.12 million.

## **Rural Public Transport System of Rwanda**

### ***Status of Rural Road Passenger Services***

Rural public transport in Rwanda is generally characterized by the following:

- Poor quality of the mostly unpaved road network;
- Inaccessibility of unpaved roads during rainy seasons; and
- Initial investment for providing bus services in rural areas are relatively higher because of poor quality of roads;
- Passenger demands are relatively lower;
- The current rural road public transport services are generally acknowledged to be inefficient;
- Passenger transport services are uncoordinated;
- Most services emphasise access (multi-stops) at the cost of mobility;
- Rural public transport services are mainly provided by large buses having 60 seat capacity as it is difficult to operate mini buses services in unpaved roads particularly in rainy seasons;
- There is no mechanism in place to ensure quality service and customer care; and

Since most of the roads in rural areas are unpaved and inaccessible during rainy season, initial investments and operating costs for providing bus services are relatively high. The private operators are therefore generally not interested to provide bus services in remote rural area. The most of services in

rural areas are therefore being provided by ONATRACOM, the sole bus service provider under public management.

### ***Strategies for the Development of Rural Road Transport Infrastructure***

In order to ensure adequate, all weather and competitive bus services in rural areas by involving private sectors, it is imperative to improve the riding quality and Level of Services of the rural roads in Rwanda. To improve rural road infrastructure by upgrading existing National and District unpaved roads into paved roads in total USD 1,592 million will be required in 20 years.

### ***Strategies for the Development of Rural Road Passenger Services***

Since the private sectors are reluctant to provide bus service in remote rural areas, a properly regulated bus service under a route franchising approach, in which the Government of Rwanda will partner with private investors under a PPP venture, will be introduced. For this, a Public Limited company will be set up to take over the responsibility of bus service operations of ONATRACOM under a PPP initiative.

In order to implement restructuring plan for the rural public transport in the phase I, about 162 high occupancy standard buses are required out of which ONATRACOM may provide 62 from the rehabilitation of old buses. To cater for the investment costs of new buses, operators will have to spend about USD 16 million in the initial stage under a PPP venture.

## **Urban Public Transport System for Kigali City**

### ***Status of Urban Public Transport Services in Kigali City***

The population of the Kigali City has been increasing at a phenomenal rate and it has seen almost a two fold increase in the last ten years. The population of Kigali was 608,141 as per last population census carried out in August 2002. The estimated present population of Kigali in 2011 are approximately 1,052,540. Again, the private car ownership has been increasing rapidly, which would likely to induce more and more congestion and pollution. This is because private car is the most inefficient road user as far as space occupancy, pollution control and congestion management are concerned. Due to the rapid increase of population and car ownerships, consequently increase in traffic volumes in recent years, traffic congestion and the deterioration of overall transport system have increased remarkably in Kigali City.

The existing general transport problems related to transport infrastructure are as follows:

- Intersection traffic signals not working in accordance with traffic demand;
- Insufficient infrastructure to meet public transport demand;
- Traffic signals do not have any priority signs in case of malfunctioning
- Deteriorated road surfaces (especially unpaved)
- Lack of proper drainage system (practically on unpaved roads)
- Lack of protection for cyclists and pedestrians (appropriate sidewalk and cycle ways)
- Uncoordinated parking facilities
- Lack of coordination between different policy making, regulatory and implementing agencies.

The existing general transport problems related to planning and management and land use pattern are as follows:

- Lack of traffic and transport engineering;
- Lack of Basic Data;
- Absence of appropriate road hierarchy and classification
- Absence of appropriate road infrastructure development and maintenance management system;
- Lack of proper transport planning and design;
- Increase of pollution level.

The main problems for public transport operation are as follows:

- (i) Congestion in existing Bus Terminals
- (ii) No time table operation.
- (iii) No appropriated layout of routes
- (iv) Insufficient bus bays (bus stops) and parking spaces in centre
- (v) Inefficient and unconventional mini buses
- (vi) Insufficient bus routes;
- (vii) Absence of integrated ticketing and revenue sharing mechanisms for public transport service under a multi-route and multi-operator environment of the Kigali City;
- (viii) Lack of standard and coordinated taxi services;
- (ix) Rapid population growth and traffic increase but inadequate bus service
- (x) Lack of coordination between authorities which sees no consultation when roads are re-constructed and new roads developed without any consideration for Bus pull-ins, shelters etc.
- (xi) With the unrestricted allocation of new licenses for minibuses the city is now congested with buses parking everywhere and anywhere creating great problems

- (xii) Lack of central planning or standardization used in the road and supplementary infrastructure which has detrimental impact on transport vehicles and the efficient operating of traffic within the city.
- (xiii) Lack of well-designed pedestrian crossing facilities giving pedestrians and public transport more priority;
- (xiv) Lack of bus priority of dedicated bus lanes to give public transport priority.

### ***Strategies for the Development of Urban Public Transport System for Kigali City***

The basic philosophy for the solution of transport problems would be the application of an integrated traffic demand and supply management approach. Under an integrated traffic demand and supply management approach an integrated multimodal transport development strategy will be adopted in three phases as shown in Appendix-C. The summary of the estimated costs of the implementation of the strategy is shown in the tables below.

**Table 1 Summary of the Estimated Total Costs for Implementation of Recommended Public Transport System for Kigali City in three Phases**

Phase	Total Costs for PT initiatives US\$
Phase I	409000
Phase II	143,3968, 000
Phase III	141,151,725
Total	<b>285528725</b>

With the implementation of the recommended strategies to reduce traffic congestion, energy use and pollution, and thus to increase mobility and accessibility of people and goods within urban transportation system of Kigali City, it is expected that it would be possible to develop an integrated public transport system for Kigali City. This in turn would contribute more efficiently to the growth of the national economy, to the economic development and to the poverty reduction with a view to achieving the goals of EDPRS and Vision 2020 of Rwanda.

A business model to run the public transport has also been developed using Net Cost Route approach. In the model efforts were made to provide a comprehensive bus services under a strict schedule in all 19 (15 radial and 4 circular) designed routes. The main aim of the bus service was to insure optimum service from 04:00 am to 11:00 pm everyday including weekends. It appears that it is possible to generate a net profit of about RWF 2.4 billion per

year (25% net profit) from the bus service operations in Kigali City alone.

## **Restructuring Institutional and Operational Set up for Public Transport Services in Rwanda**

In restructuring public transport institutions along the functional line, a hierarchical model having five distinct functional layers will be adopted as follows:

- Political layer - Ministry of Infrastructure will be responsible for formulating integrated transport, land use and public transport policies and corresponding strategies;
- Authority layer
  - a. Rwanda Transport Development Agency (RTDA) to perform all tactical functions for land and water public transport excluding regulation;
  - b. Rwanda Utility and Regulatory Authority (RURA) will be responsible for regulation of land and water public transport system.

Part or entire functions of these government institutions (RTDA or RURA) as land and water transport is concerned may be delegated or transferred to any government institutions such as Municipalities or Districts when judged necessary.

- c. Rwanda Civil Aviation Authority (RCAA) will undertake all tactical functions (including regulation) concerning air transport system.
- Infrastructure Development layer - Rwanda Transport Development Agency (RTDA), Rwanda Civil Aviation Authority (RCAA), City of Kigali, Municipalities and Districts for development and management of transport infrastructure as per laws establishing these institutions or other laws.
- Enforcement layer - Rwanda National Police for safety and security.

The key tactical functions of RTDA for land and water public transport system in Rwanda are demonstrated in Table 3. As mentioned earlier that RURA will continue to perform its regulatory functions for land and water transport services in Rwanda.

Apart from restructuring the public transport institutions, another area of concern in the public transport sector is the encouragement of the operation of private standard bus operators. However, it would be legally difficult to terminate individual small bus services operated by individuals as they are operating under valid permits. There may be a disruption in public transport services if these operators were not to join the net cost route scheme immediately. Therefore, a transition period is required and should immediately start by the approval of this policy by the Government of



Rwanda. These services would be for the operators to form large co-operatives and such co-operatives could then be given operating contracts. Finally, these permits could be allowed to lapse and not be renewed. This would allow for a gradual withdrawal of the private individual unconventional bus services. Hence, it is recommended that the existing permits may not be cancelled but should be brought under the ambit of Net Cost Route Contracts.

**Table 3: Key Functions of a Land Public Transport Authority at tactical level**

Area	Primary Functional Area	Definition
1	Organisational	Organise the RTDA such that it has the structural, personnel and financial capabilities to carry out the assigned tasks, and does so within prevailing laws and accounting principles of Rwanda
2	Financial	Secure, allocate and disburse the finances required for all authorised activities of the RTDA
3	Policy	Adapt and express the transport policy for the area of coverage under the guidance of MININFRA
4	Planning	Develop the mobility requirements for the area of coverage, and express this as a transport offer in terms of a network, routes, detailed timetables and/or service parameters for all modes covered by the entity
5	Fares	Establish the framework for the fare system and tariffing levels for the public transport offer in consultation with RURA
6	Procurement	Develop and manage procedures to procure the planned or alternative transport services in accordance with pre-determined objectives
7	Intervention	Plan and implement intervention measures to align the transport offer with the entity's objectives
8	Promotional	Promote the public transport modes in political, image, operational and informational terms
9	Political	Establish and manage interfaces and outreach activities with societal stakeholders

The total cost of implementation of public transport strategies will be USD 418million over 20 years among which 297 million USD will be the

Government contribution under various public transport initiatives and 121 to be spent by operators to purchase buses. The development of other transport infrastructures will be undertaken by other relevant transport development initiatives. The cost estimates for the implementation of the public transport strategies for the intercity, rural and urban public transport systems in 20 years are given in the tables 4 and 5 below.

**Table 4: Total Cost Estimates for the Implementation of Public Transport Strategies in Three Phases over 20 years (Government initiatives)**

Type of Public Transport/Phase	Phase I (0 to 2 yr.) in million USD	Phase II (3 to 5 yr.) in million USDD	Phase III (6 to 20 yr.) in million USD	Total in million USD
Intercity	4	2	3	9
Rural	2	0	0	2
Urban	0.41	144.35	141.15	285.91
<b>Total</b>	6.41	146.35	144.15	296.91

**Table 5: Cost Estimates for the Implementation of Public Transport Strategies for Procurement of Buses in initial Stage by Operators**

Type of Public Transport/Phase	Phase I (0 to 2 yr.)		
	Number of 60 to 80 Seater Bus	Number 30 to 60 Seater Coaster	Costs in million USD
Intercity	185	800	78.3
Rural	162	0	16.0
Urban	292	0	26.3
<b>Total</b>	<b>639</b>	<b>350</b>	<b>120.6</b>

There has been a wide consultation across a range of stakeholders including MINECOFIN, MINICOM and MININTER. MINALOC and IDP members have been consulted and given their contribution to the improvement of the presented draft. We also took note of RDB comments and the draft has been submitted to RRA and all Ministers for comments. We met public transporters in Kigali and Rubavu to present the draft of this policy (Rwanda Transport Federation Cooperative (RTFC), Association des Transport des Personnes au Rwanda (ATPR), and Taxi and Motorcyclists Associations.

The consultation has also been done using media (interactive discussions on radios and television, press conferences). The assignment also consulted views of the general public through interactive shows on radios, and media by a Press Conference, prior to finalising the recommendations of the assignment.

IMCC meeting held on the 18<sup>th</sup> September 2012, under the chairmanship of the Right Honorable Prime Minister has analysed and supported this policy and strategy for public transport for Rwanda after recommending some adjustments. These adjustments have been included in this final document.

# ABBREVIATIONS

BRT	Bus Rapid Transit
CBD	Central Business District
EAC	East African Community
EDPRS	Economic Development Poverty Reduction Strategies
GHG	Green House Gas
HGV	Heavy Goods Vehicle
ITSO	International Transport Smart Cards Organization
MININFRA	Ministry of Infrastructure
MINIJUST	Ministry of Justice
NMT	Non-motorised Transport
OD	Origin and Destination
ONATRACOM	Office National des Transports en Commun
PPP	Public Private Partnership
PT	Public Transport
QBC	Quality Bus Corridor
RCAA	Rwanda Civil Aviation Authority
RFTC	Rwanda Federation of Transporter Companies
RMF	Road Maintenance Funds
RMMS	Road Maintenance Management System
RTDA	Rwanda Transport Development Agency
RURA	Rwanda Utility and Regulatory Authority
TOD	Transit Oriented Development
VAT	Value Added Tax
WHO	World Health Organization

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# 1 BACKGROUND

The Government of the Republic of Rwanda through the Ministry of Infrastructure intend to identify the existing overall transport problems, covering rural, intercity, international and urban public transport services and thus to ascertain potential remedial measures in a short, medium and long term basis. The Ministry of Infrastructure has therefore decided to constitute a technical committee to assess the existing transport problems and submit a report outlining the potential policy remedial measures on short, medium and long term basis to the Honourable Minister of State for Transport.

# 2 CONTEXT

Under the Vision 2020 a special importance is granted to the transportation sector that plays a strategic role for the flourishing of the socio-economic sectors by stimulating economic growth by facilitating access to domestic and international markets on one hand, while increasing internal growths of production and services by improving accessibility and mobility of people and goods on the other.

When it comes to public transport for rural, intercity and urban public transport, it is distinctively essential to the economic growth of Rwanda that an efficient system is in place considering the current reliance on road based transport for the movement of its citizens. Rwanda is one of the least urbanised countries in the world, and for the rest of the major centres in the country to grow there needs to be appropriate public transport connections between the capital city of Kigali and these cities. This will increase competitiveness of these areas by reducing the travel time to the urban markets. With the increased connectivity comes a reduction in the isolation of remote areas. Again, it is essential to ensure accessibility and mobility of people in remote rural areas regardless of level of demand by providing the basic public transport service.

The population of Kigali in 2012 is approximately 1,168,570<sup>1</sup> which is 11% of the total population of Rwanda, i.e. 10,422,000<sup>2</sup>. The Kigali City represents the financial and commercial hub of Rwanda. However, the condition of overall transport system in Kigali city has been deteriorating day by day due to massive increase in population and car ownerships.

The available public bus services are mainly composed of wagon-type minibuses with an average 18 seat capacity operated by private sector. The capacities of available buses for public transportation in Kigali City can only

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<sup>1</sup> World Gazetteer([www.world-gazetteer.com](http://www.world-gazetteer.com))

<sup>2</sup> International Monetary Fund, World Economic Outlook Database, April 2012

serve 16,800 passengers at a particular time whereas the total demand for public transport is 46,822 passengers. This is not only completely inadequate to provide required services on the face of growing demand but also not very efficient. It is therefore high time that Government of Rwanda undertook developing a comprehensive urban public transport system in our cities, starting with Kigali City, without further delay in the line with the policy directives of Vision 2020.

### **3 OBJECTIVES**

One of the targets of the transport sector based on the Economic Development Poverty Reduction Strategies (EDPRS) of Rwanda is to reduce the constraints in order to promote sustainable economic growth and contribute to the poverty reduction. The main aim of this policy is therefore to reduce traffic congestion, energy use and pollution, and thus to increase mobility and accessibility of people and goods by developing an appropriate public transport system for Rwanda, which in turn would contribute more efficiently to the growth of the national economy, to the economic development and to the poverty reduction.

#### **3.1 SPECIFIC OBJECTIVES**

The specific objectives are as follows;

- i. To review the current bus service operating environment in terms of its current operations and route network;
- ii. To assess the current traffic situation and status of transport system, Land public transport in particular, for Rwanda;
- iii. To identify and assess the most urgent transport problems;
- iv. To suggest a number of alternative integrated public transport development strategies to alleviate the most urgent problems related to operational management;
- v. To suggest an appropriate operation and management system for public transport;
- vi. To recommend a comprehensive legal, regulatory and financing framework for the recommended public transport system;
- vii. To implement the Land use Plan for a Transit Oriented Development;
- viii. To develop a standard mass transit system for Kigali City;
- ix. To adopt integrated traffic demand and private transport restraining strategies for our urban public transport in general, and for Kigali City in particular.

- x. To recommend suitable methods for private sector participation including experiences from other countries; and
- xi. To devise appropriate public transport infrastructure development and operational management programs for urgent, medium-and long term basis.

## **4 PUBLIC TRANSPORT POLICY AND APPROACH TO THE PUBLIC TRANSPORT PLANNING**

To develop a sustainable public transport system, the key public transport policies and approach to public transport planning are outlined in the following sections.

### **4.1 PRINCIPLES OF THE TRANSPORT POLICY**

The policy must express itself on a number of fundamental principles on which the policy should be founded. The basic principles may include statements on the following issues:

- (a) Transport policy to be fully integrated – the policy should be fully integrated at all levels of government, involving all modes of transport and with due consideration of cross cutting issues and other governance disciplines impacting on transport;
- (b) Establishing legal ‘ownership’ – by assigning primary responsibility for management of a specific transport-related function to a particular entity or agency;
- (c) No specific modal choice and preference – no mode of transport is to be prioritised above another and the mix of modes should be determined by the nature (purpose, type, volume and distance) of transport demand and the comparative advantages of each individual mode;
- (d) Focus on the user of transport services – policy should be orientated towards the transport customer or user as opposed to the service provider or the owner of transport infrastructure;
- (e) Separation of functions – with the potential for conflict of interest, policy formulation, provision of transport, and oversight and enforcement of the policy objectives should be separated from each other;
- (f) Market-based solutions – the selected motive force for the policy should be an increasing application of liberal market rules, but in case failure, there shall be interventions by Government to support the market so that public transport service is granted;
- (g) Least total cost – one of the overriding aims of the transport policy is to deliver a national transport system at the lowest sustainable long-term cost.

## 4.2 TRANSPORT SERVICE SECTOR CONDUCT

The policy principles for transport sector conduct may include:

**(a) Commercialisation** – where transport providers are public monopolies or private operators, they should be operated on commercial principles. It should be done by applying a private sector management approach in their businesses and manage the business at arm’s length from government and preferably institutionally separated from government, operating under a defined performance management regime;

**(b) Consultation** – transport service providers should plan their business, including new projects in consultation with relevant stakeholders;

**(c) Information** – transport service providers should have the obligation to maintain and supply statistical and other transport related information to prescribed recipients;

**(d) Outsourcing** – management entities should focus on their core functions and outsource nonstrategic functions or functions that can be provided more economically by external service providers;

**(e) Competitive bidding** (in case of private operators)- transport services and development works should be procured competitively, openly and transparently, in accordance with a national set of procurement rules;

**(f) Inter-operability** – all transport infrastructure and services (at national and district level) should be designed, maintained and operated in an integrated manner with other infrastructures and services;

**(g) Transport safety**- transport authorities should be responsible for the development and implementation of transport safety programs on a nationally standardised basis involving all modes of transport;

## 4.3 INSTITUTIONAL ARRANGEMENTS SUPPORTING POLICY FOR TRANSPORT SECTOR

The key policies of an institutional framework include:

- separate functions or disciplines and allocate clear roles and responsibilities;
- promote the principle of good corporate and public governance, including transparency and accountability;
- eliminate bureaucracy and promote efficiency and cost effectiveness in the transport sector;
- promote an investor-friendly environment by creating a level playing field for all transport providers;
- restructure the national incumbent transport infrastructure and service providers and introduce competition;

- promote integration of the transport sector, as follows:
  - ▶ Multi-modal: Covering all modes of transport; air, land, and water and both passenger and freight.
  - ▶ Multi-sector: Encompassing the problems and viewpoints of government, private industry, and public.
  - ▶ Multi-problem: Ranging across a spectrum of issues that includes national and international policy, planning of regional system, the location and design of specific facilities, carrier management issues, regulatory, institutional and financial policies.
  - ▶ Multi-objective: National and regional economic development, urban development, environment quality, and social quality, as well as service to users and financial and economic feasibility.
  - ▶ Multi-disciplinary: Drawing on the theories and methods of engineering, economics, operation research, political science, psychology, other natural and social sciences, management and law.

#### **4.4 HUMAN RESOURCE DEVELOPMENT POLICY**

The key principles of Human Resource Development Policy are as follows:

- Guide, facilitate and coordinate the implementation of capacity building interventions in the public sector, private sector and civil society organizations;
- Reduce knowledge and skill gaps in the transport sector;
- Ensure adequate on-job in service and other professional trainings for transport sector professionals in both public and private sectors;
- Encourage professional development through professional accreditation organizations;
- Explore higher education facilities for transport sector professionals in both local and overseas higher learning institutions; and
- Promote and institutionalize knowledge and skill development programmes in transport sector of Rwanda;
- Establishing an appropriate institutional framework for transportation which clarifies the roles and responsibilities of all stakeholders;
- Establishing effective and/or support execution structures to the sector in order to ensure the efficient implementation of the transport policy;
- Strengthening the institutional and human resource capacities of the sector; and
- Developing and promoting the use of ICT in the field of transportation.

## 4.5 TRANSPORT REGULATION POLICY

The policy principles may include:

### (a) Guiding principles for regulation

Transport regulation should be founded on the following principles:

- regulation to be carried out separately from policy-making and service provision to avoid conflict of interest;
- regulators should be independent and autonomous (including financially independent);
- regulation should be rule-driven and predictable and their role formally legalized;
- regulators should have the powers to enforce their decisions.

### (b) Types of regulators

The following types of transport regulators can be distinguished:

- market structure: access regulators;
- market conduct: safety and security regulators;
- market performance: service standards, price and usability.

### (c) Market access

Regulation in respect of:

- licensing of road transport, air transport and inland waterway transport

### (d) Market conduct

Regulation in respect of:

- transport safety and security for road and road traffic transport, inland waterway transport and for air transport and operations;

### (e) Market performance

Regulation in respect of:

- monopoly infrastructure management entities;
- transport infrastructure and services whose prices are not cost reflective, operate in accordance with poor services standards, or where the usability requirements are questionable.

## **4.6 LAND PUBLIC TRANSPORT POLICY**

### **4.6.1 Basic Principle of Public Transport**

The fundamental principles of public transport services are to:

- Ensure universal public transport services for all citizen;
- Ensure accessibility (easy to use);
- Ensure mobility (door to door);
- Ensure availability for use (responsive to demand);
- Ensure reliability to use (providing services as per standard time schedule or available on demand);
- Promote Safety and security;
- Ensure Monitoring & Evaluation of Level of service and performance; and
- Satisfy from the user's point of view (targeted user groups).

### **4.6.2 Policy on Public Transport Sector Reforms**

The key policies on reforms comprise:

- Ensure the competition “for the market” while preventing completion “in the market”.
- Encourage entry of several new, professionally managed private operators of fleets of large buses in accordance with demand projections
- Encourage collective (corporate in the form of limited companies or cooperative) rather than individual route license applications
- Encourage Introduction of new and standard buses progressively ensuring quality service and safety in our cities.
- Allocate new route permits only for standard public transport vehicles.
- Encourage the existing operators to merge into (or form) limited companies with larger fleet of standard buses
- Encourage with bus route franchising involving a few large fleet operators of standard buses;
- Encourage a development of a standard and Integrated taxi service;
- Inform all of the above policy initiatives in advance to stakeholders

### **4.6.3 Policies on Integrated Urban Public Transport and Land-use Planning**

*“The basic philosophy for planning an integrated public transport system will be to maximize the door to door mobility and accessibility for people and goods not vehicles”.*

The public transport planning approach will adopt Transit Oriented Development (TOD) within the Smart Growth principles as follows:

- Create a Range of Housing Opportunities and Choices;
- Create Walkable Neighbourhoods and give pedestrians the highest priority;
- Provide facilities for NMT;
- Encourage Community and Stakeholder Collaboration;
- Foster Distinctive, Attractive Places with a Strong Sense of Place;
- Make Development Decisions Predictable, Fair and Cost-Effective;
- Mix Land Uses;
- Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas;
- Provide a Variety of Transportation Choices;
- Strengthen and Direct Development Towards Existing Communities;
- Take Advantage of Compact Building Design; and
- Adopt an integrated demand and supply management approach for transport system development.

### **4.6.4 Policy for Road Public Transport Services in Low Demand Areas**

A public transport system should ensure universal coverage of services in Rwanda including low demand areas by providing both scheduled and flexible services as appropriate:

#### **4.6.4.1 *Scheduled Service:***

To provide access to people in remote rural areas, a minimum level of scheduled bus services must be maintained for rural areas, where roads are generally not in good condition and travel demands are low;



#### **4.6.4.2 Flexible Service:**

Due to budget constraint it is not possible to have everyone access to conventional scheduled public transport service. Flexible transport services should be encouraged to meet transport need and can be used for 100% of a trip door-to-door or part of a trip

The use of flexible transport services by minibus and car taxi include:

- filling gaps within urban or rural areas where bus routes are straightened and resources concentrated into strategic bus corridors;
- providing service on fringe of outer metropolitan areas where low density and dispersed development means conventional services are very low frequency;
- providing “start-up” services in new growth or developing areas where the current population may not be sufficient to justify conventional bus services, but where it is essential to establish public transport;
- providing services in rural and regional areas where conventional bus services are low frequency or non-existent;
- encouraging able community transport clients to use public transport; and
- meeting transport needs of people not eligible community transport.

#### **4.6.5 Fare Policy**

A fares policy should set comprehensive policy directives addressing, among others, the following key factors:

- Maximization of income while maintaining a low fare for users
- Allowing universal access to public transport
- Allowing the system to cover its own costs without external funding
- Facilitating understanding of the system by the citizens.
- Issues which will require detailed attention, many of which are interrelated, include:
  - ✓ Whether fares will be distance based, zonal, or flat (regardless of distance)
  - ✓ Fare collection technology
  - ✓ Method of fare verification
  - ✓ How fare payment media will be sold
  - ✓ Avoiding excessive queuing at fare payment or verification points

- ✓ How collected cash will enter a bank account, and the role of a fare collection company
- ✓ How information will be distributed to the public (users)
- ✓ How the resulting data about system usage will be collected and managed
- ✓ How fare integration with feeder services will be established.

#### **4.6.6 Rail Transport Policy**

The key principles of the rail transport policy are as follows:

- Promote rail connectivity for both the Central and the Northern Corridors including regional rail connectivity with DRC;
- Ensure harmonization of all future infrastructure, gauge and service provision, legal and regulatory framework for rail transport system within EAC countries;
- Ensure separation of infrastructure from operations in terms of accounting, with separate balance sheets as well as profit and loss accounts, and separate accounts for passenger and freight;
- Adopt charging for network access based on marginal cost with allowances for non-discriminatory mark-ups and mark-downs in specified circumstances; and
- Ensure separation of powers in the form of an independent regulator, and the separation of path allocation and infrastructure charging from any organization.

At the present moment, Rwanda has no railway network. The main objective of rail transport policy is to provide guidance for financing an appropriate railway network for Rwanda.

A PPP financing option may be considered for the development of railway with following key features:

- Integrated concession regulated by an independent regulator;
- Separation of management and rail operations in a non-discriminatory and fair open access system;
- Integrated concession with open access regulated by an independent Regulator responsible to national or multinational line

### **4.7 AIR TRANSPORT POLICY**

Air Transport Sub-Sector Vision

Access to safe, affordable, efficient and environment friendly air transport systems for accelerated socio-economic development

Air Transport Sub-Sector Mission

- (a) Ensuring provision and development of safe, reliable, efficient, cost-effective and environment friendly air transport services in support of strategies for socio-economic development of the country.
- (b) Ensuring development and operation of domestic air services, and facilitate and improve international air services to promote air travel and trade in keeping with international standards, giving particular emphasis on safety and security aspects.

#### Objectives of the Air Transport Sub-sector

The overall policy objective of the air transport sector is to develop domestic air services through the establishment of domestic airports and to establish new or improved external air links with full Instrument Landing System facility driven by a knowledgeable & skilful force.

#### **Specific objectives related to air public transport are to:**

- (a) Enhance safety and security of air services;
- (b) Capacity building;
- (c) Strengthen legal and institutional framework, and improve service delivery system;
- (d) Promote and implement the **Yamoussoukro Decision**.
- (e) To make Rwanda an Aviation Hub of the Region by offering up-to-date, attractive air transport infrastructure and a more competitive national carrier.

#### Principles of Air Transport Policy

The key principles of Air Transport policy are as follows:

- Ensure effective implementation of the Yamoussoukro Decision (YD) on the Liberalization of Air Transport Markets under the African Civil Aviation Commission (AFCAC) as the Executing Agency of the Decision;
- Ensure effective implementation of the Comprehensive Regional Implementation Plan for Aviation Safety in Africa in linkage with Global Aviation Safety Plan (GASP);
- Promote improved access to reliable and safe air transportation for socio-economic development of the country, enhance quality of life and facilitate expansion of trade and tourism; and
- Promote private sector participation for the improvement in the level of air transport services;

## **4.8 INLAND WATER TRANSPORT POLICY**

An integrated Rwandese inland waterways policy will focus on developing, operating and maintaining an efficient, cost-effective, reliable, safe and secure system, taking into account the following:

- Promoting competitiveness of the Rwandese economy and making use of opportunities for job creation, while linking the IWT policy with other sectors of society;
- Keeping the Rwandese waterways and its surroundings among the most clean and safe areas of the country and beyond;
- Sharing in the responsibility for global ecological developments and actively supporting efforts to combat negative environmental influences.
- Achieving national and regional developments in a socially, economically and environmentally sustainable manner.

## **4.9 SUPPORTING POLICIES FOR THE DEVELOPMENT OF AN INTEGRATED PUBLIC TRANSPORT SYSTEM**

### **4.9.1 Principles of Non-motorised Transport (NMT) Policy**

The fundamental principles of Non-motorised Transport policy include, inter alia:

- Integrate NMT into the transport system including transport and spatial planning;
- Endorse and facilitate the use of NMT modes;
- Develop infrastructure and maintenance standards that recognise NMT as an essential mode of transport;
- Enhance and enact traffic legislation that recognises NMT as an alternative transport mode;
- Facilitate NMT as a feeder system to other modes of transport;
- Empower the marginalised group promotion of Small and Medium Enterprise (SME) through NMT;
- Allocate adequate and sustainable funding for promotion and development of NMT;
- Promote NMT as reliable, healthy, affordable, accessible and safe transport mode;
- Reduce both the number and severity of traffic accidents for vulnerable non-motorised road users; and
- Facilitate research and new initiatives to improve NMT performance.

## 4.9.2 Principles of Walking Policy

The key principles of walking policy are as follows hereunder:

- Encourage more people to walk;
- Collaborate to promote and improve provision for walking;
- Create pedestrian friendly built environments, streets and public spaces;
- Increase the safety of walking around schools and retail precincts;
- Integrate walking with public transport;
- Encourage mixed land use and walkable urban developments; and
- Adopt Pedestrian First Policy in the cities by setting transportation priorities based upon prioritizing the needs of people as follows:
  - Design transportation systems that protect and serve the pedestrian first;
  - Next, consider the needs of those who use public transportation and non-motorized transportation modes, such as bicycles; and
  - Then consider the needs of automobile users after the two groups above, i.e. private car will be assigned the least priority.

## 4.9.3 Policy for Car Parking Management

The key principles of car parking management policy include, inter alia:

- Promote Parking Management as a demand management tool – to decrease use of private vehicles and thus reduce overall demand of parking, and shift travel to public transport, para-transport & non-motorized modes;
- Eliminate minimum parking requirements by establishing the maximum number of car parking spaces allowed, rather than the minimum required and encourage developers to “unbundle parking”;
- Coordinate on-and off-street parking management and charging;
- Ensure that parking is a consumer commodity, not a legal right. No subsidized parking is to be provided in public spaces;
- Charge a price for parking reflecting full economic opportunity cost for the land, capital cost, operation & maintenance cost and temporal demand;
- Create parking benefit districts where the revenue is returned to the community;
- Use parking technologies that offer customers and policy makers the maximum flexibility;
- Reclaim street spaces from car parking for other needed public uses such as bike sharing, cycling lanes, widened sidewalks or share spaces;

- Design parking facilities that are well integrated with surrounding buildings and walking environments;
- Incorporate parking policies into the urban/Kigali City transport plans;
- Include innovative parking management in urban sustainability initiatives, congestion management, air pollution control strategies, climate change action plans and innovative financing programmes;
- Promote “Park & Ride” programmes that encourage transit oriented development;
- Promote parking and commuter programmes that expand travel choices for employees and customers;
- Ensure highest efficiency and financial viability for spaces already designated for parking;
- Ensure accessibility to maximum number of people by prioritizing and subsidizing parking for NMT, para-transport/feeder modes; and
- Prioritize short term parkers over long-term parkers in areas designated for private parking in order to maximize turnover and enable economic vibrancy.

#### **4.9.4 Transport Safety Policy**

The basic principles of transport safety policy are:

- Ensure improvement of transport safety for all modes;
- Ensure reduction of both number and severity of *accidents*;
- Ensure improved safety management;
- Encourage safer transport and mobility;
- Ensure safer vehicles;
- Encourage safer road and other transport users; and
- Ensure adequate Post-Crash Response or Emergency Services.
- Ensure regulatory measures to enhance transport safety and law enforcement;
- Formulate and promote road safety education and sensitization campaigns accessible to all;
- Adopt strategies for developing infrastructure that encourages better participation amongst its users;
- Harmonise the technical standards related to the transport sector with those of neighbouring countries within the context of regional integration; and

- Allocate transport safety responsibility among the role players appropriately.

#### **4.9.5 Policy on Environmental Sustainability**

The principles on ensuring environmental sustainability of transport in Rwanda are as follows hereunder:

- Promote the use of intermediate means of transport and the most efficient vehicles in terms of environmental standards;
- Establish regulations and tariffs against pollution emissions from vehicles;
- Establish measures focusing on the reduction of the environmental impact of transport development projects; and
- Keep the population informed and ensuring their participation in environmental management in the transport sector;
- Complying with all relevant environmental legislation and approved codes of practice;
- Seeking to keep wastage to a minimum and maximise the efficient use of materials and resources in the construction and maintenance of transport infrastructures;
- Developing transport sub-sector management processes to ensure that environmental factors are considered during planning and implementation; and
- Regularly communicating our environmental performance to transport sector managers, professionals, public and private sector employees and other significant stakeholders.

#### **4.9.6 Policy on Climate Change and Low Carbon Development for Rwanda**

In order to develop an efficient inclusive integrated transport system, which is fully energy secure and resilient to both climate change and increasing demand; key Transport Policies on Climate Change and Low Carbon development for Rwanda are as follows:

- Promote a fully sustainable multi-modal transport system that is based on efficient technology and operational systems;
- Ensure a low cost to entry as possible;
- Secure a fully domestic energy supply;
- Ensure socially inclusive transport system encompassing the majority of the Rwandan nation;
- Ensure a robust transport system in terms of adaptation to climate change and future demand;

- Ensure regionally competitive domestic transportation industry supporting the national economy; and
- Ensure sufficient access to capacity, in terms of finance, knowledge and governance

#### **4.9.7 Integrated Land-use and Transport Planning for Kigali City**

In order to be effective, it is essential to orient the transport policy in consistent with the land-use policy. According to the proposed Climate Change Strategy,<sup>3</sup> the growing population and increasing urbanisation will result in an increase in urban area in Rwanda. If this is not achieved in a high density manner, Rwanda will face unprecedented levels of urban sprawl, partly due to hilly terrain. This will force people to travel greater distances than necessary, with motorised transport resulting in Green House Gas (GHG) emissions and air pollution. Designing high density cities with corridors for pedestrians and cyclists and green public spaces, would reduce the need for energy intensive transport, improve quality of life and reduce the risk of flooding. Not only will this reduce GHG emissions and oil dependency, but also reduce the burden of transport costs to citizens. It also has adaptation benefits, as reduced urban sprawl limits the development of housing on steep slopes which are vulnerable to flooding and landslides. The National Strategy for Climate Change and Low Carbon therefore recommends adopting high density walkable and mixed use integrated urban and transport planning. This is also consistent with the Conceptual Master Plan and Sub Area Plans for the Kigali City, which also advocate for the development of a high density and mixed-use integrated land-use and transport planning.

## **5 CURRENT STATUS OF LAND PUBLIC TRANSPORT SERVICES**

At the present moment there is no railway network in Rwanda. The land public transport services are solely oriented in road based public transport services. The report is therefore mainly devoted for road based public transport services.

### **5.1 ROAD BASED PUBLIC TRANSPORT SERVICES**

The road based public transport services are mainly provided by Minibuses, buses and motorcycle taxis. The total number of registered vehicles in Rwanda is 118,656 as shown in Table 5-1. Minibuses and buses, which

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<sup>3</sup> National Strategy for Climate Change and Low Carbon Development, Kigali, October 2011



represent about 5% of the all vehicles, play the key role in providing road-based public transport services. Another important mode of public transport is motorcycle, which is the dominant vehicle mode in Rwanda representing about 49% of all vehicles. However, only 17% of the motorcycles have legal licenses to operate as a public transport mode on commercial basis. According the Preliminary Draft Final Report of Planning & Design of Public Transport Report, the modal share of motorbikes in Kigali City is 14%, which is quite significant. It is, therefore, apparent that a significant number of motorcycle taxis are currently operating as public transport taxis without a valid license.

**Table 5-1: Total Number of Different Types of Registered Vehicles from till August, 2012 in Rwanda (Source: Rwanda Revenue Authority 2012)**

Vehicle Type	Number of Vehicles	Percentage
Car	21,422	18.1%
Pick up	13,834	11.7%
Jeep	15,254	12.9%
Minibus	5,451	4.6%
Bus	511	0.4%
Trucks	3,849	3.2%
Motorcycle	57,650	48.6%
Others	685	0.6%
<b>Total</b>	<b>118,656</b>	<b>100.0%</b>

## **5.2 PASSENGER DISTRIBUTION OF ROAD-BASED PUBLIC TRANSPORT MODES**

In aggregate, individual operators and 41 companies including ONATRACOM provides 72,264 passenger capacities for public transport services in Rwanda. Out of the total supply capacity, individual operators are the dominant providing 70% of the total seat capacity as demonstrated in Table 5-2.

The number and distribution of different types of public transport vehicles and their relative passenger carrying capacities are demonstrated in Table 5-3 and Figure 5-1. It is evident that minibus represents the most dominant mode of public transport vehicle with a total of 2,163 numbers of vehicles having 38,934 passenger carrying capacity, which represents a share of 54% of all public transport passengers.

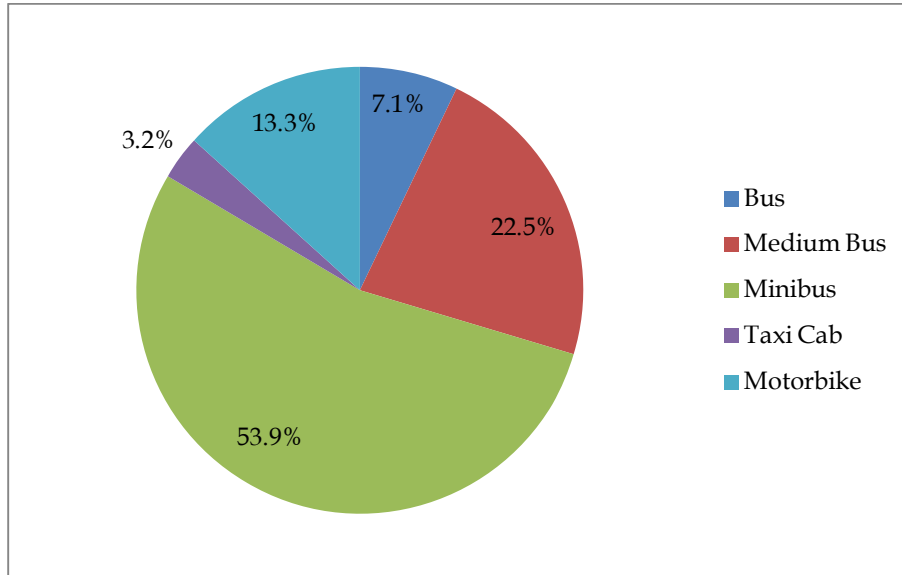
**Table 5-2: Distribution of Passenger Carrying Capacity for all types of Public Transport Operators and Vehicle Categories in Rwanda**

Type of Vehicle/Operator	Company	Individual	Total	Percentage
Bus and Medium Bus for ONATACOM	2,580	0	2,580	
Bus, Medium Bus and Minibus for Private Operators	18,197	39,590	57,787	
Total for Bus, Medium Bus and Minibus for all Operators	20,777	39,590	60,367	83.5%
Taxi Cab	844	1,444	2,288	3.2%
Motorbike	0	9,609	9,609	13.3%
Total for all vehicles	21,621	50,643	72,264	100.0%
Percentage	29.9%	70.1%	100.0%	

**Table 5-3: Number of different types of Public Transport Vehicles and Their Passenger Carrying Capacity**

Type of Vehicle/Operator	Number of Vehicle	Percentage of Vehicle	Passenger Capacity/Vehicle	Total Passenger Carrying Capacity	Percentage of Passenger Carrying Capacity
Bus	110	0.8%	51 to 80	5,162	7.1%
Medium Bus	588	4.5%	25 to 33	16,271	22.5%
Minibus	2,163	16.6%	18	38,934	53.9%
Taxi Cab	579	4.4%	4	2,316	3.2%
Motorbike	9,609	73.6%	1	9,609	13.3%
Total for all vehicles	13,049	100.0%		72,292	100.0%

The Medium Buses are the next prominent mode having 588 numbers of vehicles and with a passenger capacity of 16,271, i.e. 22.5% of the total supply capacity. The motorcycle also represents a significant mode having a total of 9,609 numbers of vehicles with a passenger capacity of 9,609, i.e. 13.3% of all available passenger capacity. However, since only 17% of the all registered motorcycles have valid license to operate on commercial basis as public transport mode, the actual share of passenger carrying capacity of motorcycle taxis is likely to be significantly higher.



**Figure 5-1: Distribution of the Passenger Carrying Capacity of Different Types of Public Transport Vehicles in Rwanda**

### **5.3 RAIL BASED PUBLIC TRANSPORT SERVICES**

#### **5.3.1 Current Status of Rail Based Public Transport Services**

Rwanda does not have a railway system, therefore no rail-based passenger transport services are currently provided. Nonetheless, there are rail systems in neighbouring countries, Tanzania, Uganda and Kenya, which are used as transit routes to carry goods originating or destined for Rwanda through a multi-modal railway/road combination.

#### **5.3.2 Priorities and Programmes for the Development of Rail Based Public Transport System**

In the region, there are two plans investigating possible future expansion of the rail system as follows:

- i. The EAC Rail Master Plan (EARMP) proposed new links, i.e.:
  - Isaka (TRL) to Kigali with a branch line into Burundi, and
  - Kigali via Kabale to Bihanga/Kasese (URC/RVR).
- ii. The Great Lakes Railway Pre-feasibility Study investigated links, such as:
  - Bukavu to Kigali,
  - Bujumbura to Kigali and
  - Gisenyi to Kigali.

The topography of the terrain along the Bujumbura-Kigali and Bukavu-Kigali sections is not conducive to a rail solution. Kigali-Kasese is feasible from a construction perspective.

Therefore two potential railway routes connecting both Central and Northern corridors are under investigation now. The Gisenyi-Kigali line could be extended connecting Goma in DRC. Moreover, additional routes connecting DRC worth investigating. The feasibility study of the Dar es Salaam-Isaka-Kigali-Keza-Musongati railway line was completed. The estimated cost of the project would be about USD 4.5 billion. The detailed design of the project is going on under the assistance from AfDB.

## **5.4 STATUS OF INTERCITY PUBLIC TRANSPORT**

The current general transport problems and those related to intercity public transport in particular are described in brief in the following sections.

### **5.4.1 Identification of General Transport Problems for Intercity Public Transport**

The condition of National Paved Roads is very good having 98% in Good condition in 2011. However, there are lacks of network continuity, capacity and Level of Service (LOS) for National and District Road Category 1. The 2010 Base Year Scenario (40 & 60 km/h) shows that the Rwanda National Road Network is operating at undesirable levels with 11.1% and 88.9% of the total length of road network being analysed operating at a LOS E and F respectively. It is therefore clearly evident that the LOS of the road network of Rwanda is not satisfactory. The LOS of the bus route network has significant impact on ensuring quality services for intercity bus travellers.

### **5.4.2 Identification of Problems for Intercity Public Transport**

The current problems of road public transport services can be characterised as follows:

- The current road public transport services are generally acknowledged to be inefficient and costly;
- Passenger transport services are uncoordinated;
- Most services emphasise access (multi-stops) at the cost of mobility;
- There is no mechanism in place to ensure quality service and customer care;
- The whole intercity public transport industry is profit driven without any regard to quality of services.

## **5.5 STATUS OF RURAL PUBLIC TRANSPORT**

The current problems of rural public transport are outlined in the following sections in brief.

### **5.5.1 Identification of General Transport Problems for Rural Public Transport Services**

The general transport problems for rural public transport services mainly comprise:

- poor quality of the mostly unpaved road network;
- accessibility of unpaved roads during rainy seasons; and
- low passenger demands.

The general transport problems in rural bus services are outlined in brief in the following sections.

#### ***5.5.1.1 Quality of Road Network in Rural Bus Routes***

The rural bus routes mainly pass through National and District unpaved road under Category 1. The qualities of the roads are as follows:

- Poor riding quality of unpaved roads of National and District Road Category 1 only 30% of the National unpaved roads and 15% of the District unpaved road network were in Good condition during 2011;
- Lack of accessibility and poor riding quality of District Road Category 2 and Feeder roads.

#### ***5.5.1.2 The Effects of Changes in Weather on Operations of Rural Bus Services***

It is a demanding task to provide bus services in unpaved road network in rural areas during the rainy seasons. The performance of the service is affected by the weather pattern during the year as illustrated in the graph below. There is normally a significant fall in the passengers (hence the revenues) during the rainy seasons as most people are engaged in farming especially for the ordinary routes. During the rainy seasons, most of the ordinary routes, which are generally unpaved, have proved impassable resulting to suspension of some routes or reduced operations. Similarly costs increase as a result of more frequent breakdowns compared to the dry seasons.

#### ***5.5.1.3 Low Passenger Demand for Rural Bus Services***

As mentioned earlier that the average numbers of one-way passengers per route per day vary from 131 to 260 in rural bus routes indicating that these are very low demand routes. Because of the low passenger demand coupled with poor quality of road network, private operators are generally reluctant to provide bus services in remote rural areas of Rwanda.

## **5.5.2 Identification of Problems for Rural Public Transport Services**

The main problems of rural public transport services are as follows:

- Initial investment for providing bus services in rural areas are relatively higher because of poor quality of roads;
- Passenger demands are relatively lower;
- Private operators are reluctant to provide services because high investment costs, poor quality of roads and low passenger demands;
- The current rural road public transport services are generally acknowledged to be inefficient and costly;
- Passenger transport services are uncoordinated;
- Most services emphasise access (multi-stops) at the cost of mobility;
- There is no mechanism in place to ensure quality service and customer care; and

The whole rural public transport industry is generally profit driven without any regard to quality of services.

## **5.6 STATUS OF INTERNATIONAL PUBLIC TRANSPORT**

The current international public transport services are provided 7 registered private companies and ONATRACOM, which is the only public sector operator as shown in Table A-1 of Appendix-A. Out of the 8 companies only 3 are from Rwanda and the rest are from different neighbouring countries. All companies together transport on average 788 passengers per day. All companies provide services 7 days in a week and frequency of trip per day varies from 1 to 6. One way trip length varies from 165 km to 1,500 km. In total the 8 companies transport about 286,832 passengers per year. The international bus services provide scheduled service per day as per planned time schedules. The companies employ 7 buses having 50 to 60 seat capacity and 11 Medium Buss with a passenger carrying capacity of 25 to 30 passengers as operational vehicle fleet. Considering the size of the international public transport services, there are potentials for the operators from Rwanda to play a greater role by providing improved bus service and better customer care.

## **5.7 STATUS OF URBAN PUBLIC TRANSPORT IN THE KIGALI CITY**

### **5.7.1 Identification of Existing General Transport Problems in Kigali City**

The existing general transport problems are as follows:-

### **5.7.1.1 Problems for transport infrastructure**

The existing general transport problems related to transport infrastructure are as follows:

- Intersection traffic signals not working in accordance with traffic demand
- Intersections operating over capacity
- Lack of road signs
- Inappropriate road signs
- Insufficient street lighting
- Deteriorated road surfaces (especially unpaved)
- Lack of proper drainage system (especially unpaved).
- Lack of protection for cyclists and pedestrians (appropriate sidewalk and cycle ways)
- Narrow existing road space
- Uncoordinated parking facilities
- Lack of coordination between different policy making, regulatory and implementing agencies.
- Lack of pedestrian facilities
- Absence of coordinated maintenance and rehabilitation of roads in appropriate time
- Lack of enough separations and medians between opposite lanes.

### **5.7.2 Identification of Problems for Urban Public Transport in the Kigali City**

It appears that there are substantial operational improvements that can be made to the existing taxi parks and the Nyabugogo terminal, which for a number of reasons, presently appears to be operating close to capacity and with very little comfort, safety or information and general welfare for passengers. In the city center the taxi parks are mainly for city minibus services only and all operators are members of Rwanda Federation of Transporter Companies (RFTC) and International Company, an operator for intercity bus service, paying daily for the use of the terminal. The surveys of 2011 show that at peak times up to 182 buses and mini buses are entering and leaving city center taxi parks every 15 minutes. Problems are the lack of paved surfaces, lack of separation between passengers and vehicles and lack of information on which services are operating to which destinations. Lack of pedestrian and NMT access to the terminals/stops also hinder the prospect of appropriate integration of PT and NMT

The main problems for public transport operation are as follows:

- (i) Congestion in existing Bus Terminals
- (ii) No time table operation.
- (iii) No appropriated layout of routes
- (iv) Insufficient bus bays (bus stops) and parking spaces in centre
- (v) Inefficient and unconventional mini buses

- (vi) Insufficient bus routes;
- (vii) Absence of integrated ticketing and revenue sharing mechanisms for public transport service under a multi-route and multi-operator environment of the Kigali City;
- (viii) Lack of standard and coordinated taxi services;
- (ix) Rapid population growth and traffic increase but inadequate bus service
- (x) Lack of coordination between authorities which sees no consultation when roads are re-constructed and new roads developed without any consideration for Bus pull-ins, shelters etc.
- (xi) With the unrestricted allocation of new licenses for minibuses the city is now congested with buses parking everywhere and anywhere creating great problems
- (xii) The presence of “private” unlicensed buses operating without any structure and no policy on bus routes from the authorities
- (xiii) Lack of central planning or standardization used in the road and supplementary infrastructure which has detrimental impact on transport vehicles and the efficient operating of traffic within the city.
- (xiv) Lack of well-designed pedestrian crossing facilities giving pedestrians and public transport more priority;
- (xv) Lack of bus priority of dedicated bus lanes to give public transport priority.

## **6 STRATEGIES AND PRIORITIES FOR PUBLIC TRANSPORT**

### **6.1 STRATEGIES AND PRIORITIES FOR INTERCITY PUBLIC TRANSPORT**

#### **6.1.1 Recommended Solutions for General Transport Problems for Intercity Public Transport**

In order to improve mobility, accessibility and connectivity, the network will be improved in terms of addition of new links and upgrading of existing unpaved roads to paved roads. The following links are to be upgraded to surfaced roads which can accommodate speeds of up to 60 km/hr:

- (i) RN 17 from RN 6 to RN 7
- (ii) RN 7 from RN 17 to RN 16
- (iii) RN 16 from RN 7 to RN 4
- (iv) RN 42 from NYARUGURU to RN 24
- (v) RN 24 from RN 42 to RN 1



- (vi) RN 19 from RN 1 to RN 41
- (vii) RN 41 from RN 19 to GISAGARA
- (viii) RN 29 from RN 1 to RN 15
- (ix) RN 27 from RN 13 to RN 18
- (x) RN 18 from RN 27 to RN 20
- (xi) RN 20 from RN 18 to new link
- (xii) Local link with new link to connect the RN 20 to the RN 25
- (xiii) RN 25 from new link to local link

## **6.1.2 Recommended Solutions for Intercity Public Transport Services**

### ***6.1.2.1 Development of Alternative Scenarios for Intercity Public Transport***

In order to develop an appropriate Intercity Public Transport system, RSTMP adopted the Green Scenario of the National Land use and Development Master Plan<sup>4</sup>. The transportation strategy to support the Green Scenario support this spatial development pattern is “public transport oriented”. Features of this ‘green scenario’ transport Strategy include:

- An Inter-city bus service will run along Quality Bus Corridors (QBC). This involves the introduction of a series of measures designed to improve bus reliability and enhance passenger facilities along inter-city links by measures such as new vehicles, increased frequencies, strict time schedule, reduced bus journey times, more reliable bus services, improved passenger facilities at terminals and other bus stops, better passenger information, and a safer environment.
- Rural Bus service would complement the Quality Bus service by focusing on settlements that are remote from the Quality bus (and in the future rail) service. It is important that these two modes are structured as complementary services to the buses, not competitive ones.
- Railway for passenger traffic.

The following network scenarios were modelled and evaluated in RSTMP:

**Scenario 1:** Current network;

**Scenario 2:** Current network with Rail included for passengers;

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<sup>4</sup> Rwanda Natural Resources Authority (2011) “National Land use and Development Master Plan”, Kigali, Rwanda

**Scenario 3:** Current network with new and improved road links; and

**Scenario 4:** Current network with improved road links AND quality bus services on Quality Bus Corridors

After conducting a detailed transport and economic analysis, the Scenario 4 has been found to be the most optimum option for the development of the Intercity Public Transport system. The Scenario 4 is therefore adopted for the Intercity Public Transport Services.

### ***6.1.2.2 Adopted Scenario for the Development of Intercity Public Transport System***

As mentioned earlier that the Scenario 4, which consists of Current network with improved road links and quality bus services on Quality Bus Corridors has been adopted as the preferred option for the development of an appropriate Intercity public transport system for Rwanda.

### ***6.1.2.3 Quality Bus Services on Quality Bus Corridors***

The Quality Bus Service would be a dedicated service on major roads linking important cities and nodes within Rwanda providing a faster and more convenient service that would successfully compete with the private car. It is anticipated at this point that the Quality Bus Corridors (QBC) will require no designated bus lane. However, designated bus lanes can be provided in designated locations within built-up areas.

In total 10 origin-destination pairs with the highest passenger demand for 2020 were identified as the Quality Bus Corridors. In addition to these routes a link along the shore of Lake Kivu, Rubavu-Karongi-Buhinga-Rusizi was included specifically for the tourism market. The route details of the Quality Bus Corridors are shown in Table 6-1. In order to cater for the passenger demand of 2030, another 10 additional routes will be included as Quality Bus Corridors as follows:

- i. Kigali-Kirehe;
- ii. Kigali-Nyarungura;
- iii. Kigali-Burera;
- iv. Kigali-Karongi;
- v. Kigali-Ngororero;
- vi. Kigali-Ngoma
- vii. Kigali-Kayonza;
- viii. Kigali-Gakenke;
- ix. Kigali-Rulindo; and
- x. Kigali-Kamonyi

**Table 6-1: Route Details of Quality Bus Corridors (QBC)**

Sl. No.	Origin - Destination	Length of Route (km)	Patronage (pax/day) in 2010	Future Patronage (pax/day) in 2020
1	Kigali - Gatsibo	122	1,200	2,300
2	Kegali - Bugesera	25	1,400	2,100
3	Kigali - Nyagatare	161	1,000	2,100
4	Kigali - Ruhango	71	1,200	1,800
5	Kigali - Huye	132	700	1,700
6	Kigali - Rubavu	156	600	1,700
7	Kigali - Gicumbi	55	900	1,300
8	Kigali - Nyanza	88	700	1,200
9	Kigali - Musanze	92	400	1,200
10	Kigali - Muhanga	65	800	1,000
11	Ribavu-Karongi-Buhinga-Rusizi	185		

Aspects which are vital to the Quality Bus service include the use of:

- new vehicles,
- high frequency services,
- reduced journey times
- reliable bus services,
- improved passenger facilities at terminals,
- better passenger information and a safe environment.
- Improved passenger transport infrastructure;
- Traffic management and environmental improvements;
- Passenger transport service prioritisation and improvement;
- Enhancing integration with other modes of transport (i.e. cycle and pedestrian facilities);
- Improving information to the public on the passenger transport services provided; and

- Improved working environment between passenger transport operators.

The following key objectives need to be captured in a performance monitoring system for QBCs

- Corridor bus journey times;
- Corridor bus speed;
- Comparison of the QBC Service with other services
- Passenger waiting times;
- Quantification of the effect of the QBC on all modes through time series modelling; and,
- Passenger journey assessment.

To meet the demand in the initial stage for Quality Bus Services with large standard buses having at least 60 passenger capacity including feeder services with Medium Bus of at least 30 passenger capacity, in total 985 different type of buses will be required as shown in Table 6-2. Operators will have to procure about 185 bus and 800 Medium Buss to meet the demand during the first two years. Assuming unit price of bus and Medium Bus as USD 114,000 and 71,500 respectively (as obtained from ONATRACOM source), the total minimum initial investment of the operators to procure these buses will be USD 78.29 million.

**Table 6-2: Requirement of Fleet and Passenger Capacity for the base year 2010 Demands for Intercity Public Transport Service in Rwanda**

Type of Vehicle	Seat Capacity per Vehicle	Number of Vehicles	Total minimum passenger Capacity
Medium Bus	Between 30 and 60	800	24,000
Large Bus	Between 60 and 80	185	11,100
<b>Total</b>		<b>985</b>	<b>35,1000</b>

### **Expected Outcomes of the Recommended Strategies**

According to the model analysis of RSTMP (2012), the following are the main results from recommended strategies:

- Bus passengers will increase at a rate of 20% per annum
- Modal split for passengers is projected to change as follows:
- The total number of vehicles is projected to reduce by 2% per annum
- Average travel time is expected to reduce from 2010 to 2020 by 10% due to improved connectivity.

### 6.1.3 Priorities and Programmes for the Development of Intercity Public Transport System in Phases

The work priorities, programmes and provisional cost estimates for the public transport initiatives for development of the preferred option, in three phases are demonstrated in the Table 6-3.

**Table 6-3: Estimates for Public Transport Services for Intercity Public Transport**

Phase/Type of work	Phase I (0 to 2 yr.)	Phase II (3 to 5 yr.)	Phase III (6 to 20 yr.)	Total
	Cost (Million USD)	Cost (Million USD)	Cost (Million USD)	Cost (Million USD)
Quality Bus Corridor Service (Feasibility Study and Concept Design)	2.5	0.0	0.0	2.5
Quality Bus Corridor Service Pilot Project	0.5	0.0	0.0	0.5
Quality Bus Corridor Service in 11 routes in Phase II	1.0	2.0	0.0	3.0
Quality Bus Corridor Service in additional 10 routes in Phase III	0.0	0.0	3.0	3.0
<b>Total</b>	<b>4.0</b>	<b>2.0</b>	<b>3.0</b>	<b>9.0</b>

## 6.2 STRATEGIES AND PRIORITIES FOR RURAL PUBLIC TRANSPORT

### 6.2.1 Recommended Solutions for General Transport Problems for Rural Public Transport

In order to ensure adequate, all weather and competitive bus services in rural areas by involving private sectors, it is imperative to improve the ridding quality and Level of Services of the rural roads in Rwanda by upgrading the unpaved roads into paved roads. In order to achieve these objectives, it is essential to achieve the key EDPRS-2 targets for road network improvements as follows

- 95% of National roads in Good condition by 2017
- 70% of District roads in Good condition by 2017

## 6.2.2 Recommended Solutions for Rural Public Transport Services

Since the private sectors are reluctant to provide bus service in remote rural areas because high investment and operational cost coupled with low passenger demand, a properly regulated bus service should be provided under a route franchising approach. In order to facilitate the process, a Public Limited company will be set up to take over the responsibility of bus service operations of ONATRACOM. It is expected to be a joint venture company between the government and the private sector. However, in due course of time, the Government may decide to pull out of the company gradually when the private sector alone will be capable of providing bus services in all bus routes at affordable fares. In this regard, the GoR should ensure that the social mission of ONATRACOM of providing accessibility to remote rural population will not be compromised under any circumstances. This will be achieved by building a system whereby the public transport is well organised under a route franchising approach. The Net Cost Route Contracts, which allow paying a fixed amount per km of service regardless of ridership and revenue collection by the regulator to the operator, might be appropriate for during initial phase for the route franchising contracts for rural bus service.

The relative share, management structure, subsidy level and other operational details will be finalised after conducting a detailed negotiation with the private sector.

## 6.2.3 Priorities and Programmes for the Development of Rural Public Transport System

The priorities and programmes for the development of rural public transport system will be oriented around the restructuring of current rural bus operations under a PPP initiative and providing bus service using route franchising approach. The number of daily passenger trips for rural bus service in the base year, i.e. 2012 is 21,796 with an expected growth rate of 5%. In order to provide bus services initially a total of 162 large buses will be required by the operators. Assuming 12.5% annual vehicle replacement with an average service life of 8 years and 10% annual rehabilitation of the vehicle fleet, the details of net capital investment costs for the next 5 years are given in **Error! Reference source not found.** It is evident from the table that operators will require about USD 18.4 million to purchase required number of buses at the base year. By selling off all the 78 number of 30 seater buses (44NPR 66 ISUZU and 34 Toyota Medium Buss), ONATRACOM can generate USD 2,533,725. This means a PPP venture will require about USD 16.0 million to ensure optimum bus services to people in remote rural areas. The results of the profitability analysis of the rural bus services are demonstrated in Table A-2 of Appendix-A.

**Table 6-4: Net Capital Investment Cost for Operators for Providing Rural Bus Service for Next 5 years**

Year	Vehicle Purchase			Vehicle Sale			Vehicle Repair & Rehabilitation			Net Capital Costs (USD)
	No of 60/80 seater	Unit Cost (USD/veh)	Total purchase Cost (USD)	No of 60/80 seater	Unit Cost (USD/veh)	Total Revenue from Vehicle Sale (USD)	No of 60/80 seater	Average Cost (USD/veh)	Total Rehabilitation Cost (USD)	
Base year	162	113,821	18,439,024	0	22,764	0	0	26,066	0	18,439,024
1st year	21	113,821	2,390,244	17	22,764	386,992	17	26,066	443,127	2,446,379
2nd year	21	113,821	2,390,244	18	22,764	409,756	17	26,066	443,127	2,423,615
3rd year	22	113,821	2,504,065	19	22,764	432,520	17	26,066	443,127	2,514,672
4th year	22	113,821	2,504,065	17	22,764	386,992	18	26,066	469,193	2,586,267
5th year	24	113,821	2,731,707	13	22,764	295,935	19	26,066	495,260	2,931,032

### **6.3 STRATEGIES AND PRIORITIES FOR INTERNATIONAL PUBLIC TRANSPORT**

#### **6.3.1 Strategies for the Development of International Public Transport System**

The strategies for the development of international public transport system will be more or less similar to that of intercity public transport system.

#### **6.3.2 Priorities and Programmes for the Development of International Public Transport System**

The priorities and programmes for the international public transport system are similar to intercity public transport system.

### **6.4 STRATEGIES AND PRIORITIES FOR URBAN PUBLIC TRANSPORT IN THE KIGALI CITY**

#### **6.4.1 Recommended Solution to General Transport Problems**

The recommended solutions to general transport problems in three phases are as follows:

##### **6.4.1.1 Phase I: (Duration 0 to 2 years) Solutions for General Transport Problems**

In the Phase I efforts will be made to resolve operational and reliability issues of the general transport problems in Kigali City on emergency basis as follows.

## **Regular traffic surveys on key routes and intersections**

Traffic surveys are essential to the identification of transportation problems that exist at city and local level. It is recommended to identify and conduct traffic surveys at all the strategic locations where traffic surveys will need to be carried out. Moreover, it is essential to conduct public transport routes, stops and passenger surveys regularly to update routes and time schedules.

## **Restriction on On-street parking in the Kigali City Centre**

In order to reduce parking demand and hence to reduce traffic congestion, it is recommended to put restriction upon on-street and cheap parking provisions within the Kigali City Centre.

## **Restriction on movements of HGV in the Kigali City**

Strategies to manage heavy vehicles need to be developed. The City imposes daytime restrictions of HGVs within the CBD. This daytime restrictions can be extended to city wide to limit congestion caused by HGVs in the city area provided that they should be granted limited access to important stores in scheduled time periods, preferably in off-peak times.

## **Development of Road Hierarchy and Classification**

To ensure appropriate planning and management of city roads, it is imperative to develop a road hierarchy and classification system for the Kigali City roads on the basis of the functional characteristics and traffic demands

## **Improve Road Sign and Road Markings**

It is essential to improve road and road markings for the Kigali City.

## **Improvement of Traffic Safety**

To reduce traffic accident and to improve traffic safety, a number of actions will be undertaken, such as:

- **Installation of Traffic safety facilities**

Installation of traffic signs and speed humps is necessary for prevention of over speed and lack of attention of drivers in the existing roads.

- **Change the intersection type (from Signalized Intersection to Roundabout or grade separated intersections)**

Traffic signals are not working in accordance with traffic demand, so that it is one of causes of traffic congestion. It is better to introduce demand responsive real time signal control system. In some cases, existing signalized intersections can be changed to the traditional roundabout and vice versa or grade separated intersections. However, it is essential to conduct a detailed traffic analysis prior to converting



any existing signalised junction into either roundabout or grade separated intersection and vice versa. There are currently a number of potential candidates, which might be suitable for consideration, are as follows:

- Signalised junction at RDB intersection;
- Signalised junction at Rwandex intersection;
- Signalised junction at SORPETRAD intersection;
- Signalised junction at Nyabugogo intersection.

- **Improvement of pedestrian facilities**

- Developing a continuous network of sidewalks, preferably on both sides of all roads;
- Covering of exposed drains
- Providing zebra crossings as per pedestrian demands

- **Traffic safety education to the drivers, pedestrians and other road users**

Periodic traffic safety education/campaign to the driver (Vehicle, Motorbike) and pedestrian is also necessary for prevention of traffic accidents.

In this connection the following strategies may be adopted:

Campaigns

- Teaching on general traffic rules in schools and educational institutions
- Driving school monitoring and accreditation
- Refresher courses in driving schools
- Defensive Driving Courses
- Additional training for traffic offenders
- Penalty or banning for repeated offenders under a penalty point scoring system.
- Enforcement for traffic laws

## **Establishment of Database of Road Inventory for Road Maintenance**

It is important to establish and update the database for road inventory due to make the road maintenance programme. Road Inventory must be updated periodically according to change of the existing road and drainage condition during the Phase I. The estimated cost for conducting road inventory, condition and traffic surveys, procurement of necessary equipment and training of the professional staff is about USD 200,000.

## Strengthening Road Maintenance Capacities

In order to strengthening maintenance capacities, a Road Maintenance Management System (RMMS) unit and permanent maintenance unit should be set up in City of Kigali.

## Capacity Building of Planning and Design

City of Kigali should enhance its capacity for planning and design of urban transport system and urban transport institutions, especially relating to the planning, implementation and control of an integrated multimodal transport system.

The estimated cost for the implementation of the solutions for the general transport problems in Phase I will be USD 700,000 as shown in the Table 6-5.

**Table 6-5: Estimated Costs for Improvement of Service Delivery to Solve General Transport Problems in Phase I**

Planned Tasks	Estimated Costs in US\$
Establishment of improved vehicle inspection regime	300,000
Development of RMMS for City of Kigali	200,000
Strengthening road maintenance, planning & design capability of the City of Kigali	200,000
<b>Total</b>	<b>700,000</b>

### 6.4.1.2 Phase II: (Duration 3<sup>rd</sup> to 5 years) Solutions for General Transport Problems

Widening the existing trunk roads in already developed area is difficult due to the limitation of both land and budget, the introduction of large/midi size bus operations and new construction of the middle ring road seem to be essential in order to realize the maximum use of the existing infrastructure and to provide better transport to the people of Kigali. A number of initiatives to develop the transport infrastructure should be undertaken during the Phase II in accordance with Kigali City Sub Area Plans as follows:

- (i) Introduce a New Expressway to act as a city bypass better disperse the traffic from the existing and proposed developments and to segregate the industrial traffic and through traffic from the city traffic as per Sub Area Plan,
- (ii) Improve existing congested/critical bottle-necks by either widening or upgrade where possible in accordance with Kigali Sub Area Plan.
- (iii) Connect new residential area by paving of the existing unpaved radial roads.
- (iv) Expand road networks to new development areas

- (v) Introduce pedestrian walkway where possible on both side of roads and bicycle lanes on heavy traffic trunk roads, district roads and collectors.
- (vi) Construct a network of pedestrian footpath in the green space which link to the network of footpath along the roads in the City and within the townships;
- (vii) Introduce sufficient number of pedestrian priority and signalised (automatic pedestrian demand actuated Puffin crossings and manually actuated Pelican crossings) on-street at grade pedestrian crossings throughout Kigali City;
- (viii) Construct cycling paths within green space and areas where the terrain are not too steep
- (ix) Convert existing traffic signals into automatic vehicle actuated and demand responsive traffic signals;
- (x) In order to reduce the parking demand in the City Centre, three parking yards for private vehicles will be developed in outer edges of the Kigali City.

#### ***6.4.1.3 Phase III: (Duration 6<sup>th</sup> year to 20 years) Solutions for General Transport Problems***

The Phase III will involve the implementation of the Land use Plan for Transit Oriented Development in accordance with the Kigali Sub Area Plan. When public or mass transportation is a guiding element in combination with density, cities take on new forms. Sustainable cities have transit lines snaking through clearly defined corridors that carry people efficiently between two points. Three corridors have been identified for development of Bus Rapid Transit System, which will be integrated with standard large bus services in the feeder routes. All mass transit corridors will have multimodal stations where people can move between various forms of transport in one place. When multi-modal stations also have commercial and/or residential uses mixed into the building or located close by in an integrated site plan, this is called Transit Oriented Development (TOD). TOD's focus their public spaces around transit, making it easy for people to better understand and use the transportation. TOD's provide plentiful and comfortable room for people to wait for their transportation. During the Phase III of the initiative, steps will be taken to implement all TOD oriented development initiatives of the Kigali Sub Area Plan.

#### **6.4.2 Recommended Measures for Urban Public Transport in Kigali City**

The recommended measures to resolve problems related to the development of an integrated public transport system in three phases are summarized in the following sections.

#### **6.4.2.1 Phase I: (Duration 0 to 2 years) Solutions for Problems Related to Public Transport**

During the Phase I of the action plan for the development of public transport system for Kigali City, efforts will be directed mainly for the improvement of operational and management system of the existing bus services as follows.

##### **Development of Standard Bus Routes and Schedules**

In order to develop an appropriate public transport system, it is important to focus on measures that reflect the quality of the service provided to transit passengers. These measures include, among other, the followings:

- *Availability*: how easily passengers can access and use transit service;
- *Service Monitoring*: measures of passengers' day-to-day experiences using transit;
- *Travel Time*: how long it takes to make a trip;
- *Safety and Security*: real and perceived chances of being involved in an accident (safety) or being the victim of a crime (security) while using transit; and
- *Maintenance and Construction*: impacts of maintenance program quality and construction activity on passenger trips.

Standard bus routes and schedules of services will be developed in Phase I.

##### **Introduction of Standards for Public Transport Vehicles and Operators**

- (i) Setting a date for the introduction of minimum technical standards for the Standard Bus (such as, dimension, seat and passenger capacity, driving side, engine capacity, number of doors and floor height, etc.), for every bus routes and the introduction of effective Vehicle Inspection every 6 months should be initiated as a priority basis in the Phase I;
- (ii) In order to improve safety and reduce pollution, the maximum age buses, which will be eligible for operating as urban public transport buses, shall be limited to 10 years.
- (iii) In order to consolidate the existing fragmental bus services comprising numerous operators, large operators having standard buses shall be given priority, preferably granting exclusive route permit on high demand routes;

##### **Metering of all licensed taxis**

Steps should be taken to set up fare meter in all licensed taxis and impound all illegal taxis operating without licences and permits and set up punitive penalties which include storage fees and auctioning to defray storage and other associated expenses in accordance with legislation. It is desirable to enforce lane discipline by motorcycle taxis.

## **Initiate Standard and Large Bus Pilot Demonstration Project**

Initiate Bus Route Franchising Pilot Demonstration Project Involving High Demand Public Transport. The reform in bus route franchising will aim to introduce competition in the bidding process and to confer a measure of route 'ownership' for a number of high demand routes on an operator, who will be required to meet minimum service criteria and fare structure. Initially a demonstration project will be undertaken for franchising three radial routes to single operator having a fleet of at least 100 standard large buses.

The routes are as follows:

- (i) Route 1: CITY CENTRE- REMERA-KIMIRONKO-ZINDIRO
- (ii) Route 3: CITY CENTRE-KICUKIRO CENTRE-NYANZA TAXI PARK
- (iii)Route 12: CITY CENTRE-NYABUGOGO-KIMISAGARA-TAPIS  
ROUGE NYAMIRAMBO

The main responsibility of running the Bus Pilot Demonstration Project will be vested with the selected bus operator (s). The estimated cost planning and managing the project during 6 months is about USS 30,000.

## **Development of Standards and Specifications for Implementation of a Smart Integrated Ticketing System for Kigali Bus Services**

In order to facilitate the development of an interoperable and integrated smart ticketing environment by developing, and then operating and managing an interoperable smart media environment, it is essential to develop standards and specifications for the same. Significant progress has been made in different parts of the world, particularly in the UK towards the development of an integrated smart ticketing system for public transport. Rwanda can take lessons from these initiatives and adopt its own standard accordingly. The standard specifications for International Transport Smart Cards Organization (ITSO) based in the U.K. developed a set of standards for public transport smart card Fare Collection solutions in 2010. It is one of the advanced and well tested systems so far developed in the world. The main aims of the system are to:

- enable the use of smart cards (including mobile telephones) for multiple modes, multiple routes and multiple public transport operators;
- allow transport operators to 'mix and match' smart cards;
- use a range of point of sale and back office systems;
- hold Entitlement, Value and Tickets securely;
- encourage genuine interoperability.

A group of experts, who will be appointed by the Steering Committee, will advise on the standards and specifications for integrating smart ticketing system after conducting a comprehensive survey.

## Implementation of a Hybrid Manual and Automatic Integrated Ticketing Strategy

Since it will be difficult to introduce a smart integrated ticketing system for Kigali City during the Phase I of the initiative, it might be appropriate to commence a hybrid of manual and automated integrated ticketing system for the Pilot Demonstration Bus Route project, as described earlier. Under the strategy, a revenue collection and distribution company (Integrated Public Transport Revenue Management Company) will be set up to manage overall ticketing and revenue sharing tasks on behalf of the operators involved in the demonstration project. The hybrid system will consist of a staff of cashiers at stations and conductors at feeder buses charging fares and controlling access to the demonstration routes. The cashiers at stations will keep records of all ticket sales and interchange in laptop computers, which will be connected by internet with a central computer by means of Internet. At the back end of this process, designated representatives from the Integrated Public Transport Revenue Management Company will take the cash from the stations to the bank, under secure conditions. The cashier will also collect fare and trip data from the operators, who have already employed smart ticketing technology in the Kigali City. A team of analysts from the company will consolidate sales data and prepare a daily report of cash, passenger volume and distribution of revenue for different operators. The regulatory agency will consolidate all information from the Integrated Public Transport Revenue Management Company and will audit the entire process.

**Table 6-6: Estimated Costs in US\$ for the Implementation of an Hybrid Integrated Ticketing System for Kigali City**

Item	Cost per unit (US\$)	Units	Quantity required	Cost in US\$
Purchase of laptop computers	700	US\$ per laptop computer	100	70,000
Salary for ticket cashiers/Data entry personals	200	US\$ per man-month	600	120,000
Computer operators	300	US\$ per man-month	30	9,000
Central control office operation	30,000	US\$ per office-month	6	180,000
<b>Total</b>				<b>379,000</b>

The estimated cost for running a hybrid manual and automatic integrated ticketing system for an interim period of 6 months will be US\$ 379,000 as demonstrated in Table 6-6.

## Development of an optimised bus service for school going children

In order to solve the transportation problems of school going children, which is an acute problem at the present moment in the Kigali City, an optimized route schedule and bus service will be developed

## Initiation of Public Transport Sector Reforms

With a view to consolidating existing public transport system into an operating system, which consists of a small number of large operators of standard bus, effort should be taken for gradual bus fleet renewal and a shift toward larger buses and greater industry consolidation through several related policy initiatives as follows:

- Encouraging entry of several new, professionally managed private operators, in the form of public limited companies, having fleets of standards buses in accordance with demand projections
- Encouraging collective (corporate in the form of public limited companies or cooperative) rather than individual route license applications
- Progressively reducing the age limit of buses operating in Kigali to 10 years
- Allocating new route permits only for standard buses
- Encouraging the existing operators to merge into (or form) limited companies with lager fleet of standard buses

**Table 6-7: Estimated Cost for Implementation of PT Priority Measures in Phase I (0 to 2 years)**

Planned Tasks	Estimated Costs in US\$
Management of Pilot standard bus project	30,000
Hybrid Manual and Automatic Integrated Ticketing Strategy	379,000
<b>Total</b>	<b>409000</b>

- Announcing all of the above policy initiatives in advance, which helps to demonstrate the government's seriousness and thereby reduce political resistance, and which provides time to existing operators to recoup their investments and plan for the future.

The total estimated cost of implementation of PT priority initiatives during Phase I will be US\$ **9,081,400** as shown in **Error! Reference source not found.**

#### ***6.4.2.2 Phase II: (Duration 3<sup>rd</sup> year to 5 years) Solutions for Problems Related to Public Transport***

In the Phase II effort will be made to upgrade existing transport infrastructure conforming to requirements for the development an integrated public transport system for Kigali City. To this end effort will be made to implement a number of strategies as follows:

##### **Upgrading and development of New Public Transport Infrastructures for Kigali City**

In the Phase II, effort will be made to upgrade and develop adequate public transport infrastructure ensuring that new infrastructure and bus sector reforms do not preclude future upgrading into a high capacity Bus Rapid Transit system Ensuring that current bus sector reforms are consistent with future upgrading and development. Bus sector reforms and improvements in Kigali City will be implemented in stages. Even if the government moves to implement a high end Bus Rapid Transit system without intermediate steps – which is the recommended approach but will require a level of political commitment – such a system will become operational in stages. In order to avoid the need for costly future retrofits or reconstruction of existing infrastructure, costly litigation to modify bus route service permits or bus routing arrangements, or costly future changes to the design specifications of buses, it is important that bus sector reforms carried out in the near term are not inconsistent with the possibility of future upgrades to the system. Examples of situations where the government should ensure compatibility with future upgrades to the system include: New route permits allocated on routes which are being considered for a future Bus Rapid Transit system should preferably not be allocated for a period of more than 1 year. The upgrading will involve, but not limited to, a number of initiatives as follows:

##### **Construction/Reconstruction of Bus terminals/stops**

The intercity bus interchange facilities are conveniently placed at the heart of the city. Considering the fact that travel demand pattern of intercity bus services in Rwanda is also radial in nature orienting to Kigali City. It is therefore proposed to develop one standard intercity bus terminal at an appropriate location in Kigali city for the coming 20 years. As the city expands, establishing additional intercity integrated (bus/rail) terminals may be considered. However, it should be noted that intercity bus terminal should only be used for transfer of passengers not as a parking grounds for vehicles. Bus stops for city public transport should be appropriately located around the intercity bus terminal so that the transfer of passengers between urban and intercity public transport is done smoothly. No urban public transport terminal should be provided. Instead, separate parking and serving grounds for city buses will be established in the outskirts of the city Public car parkings should also be provided at the outskirts of the city to reduce number of private cars entering the city.



## **Types of Bus Stops**

A range of bus stop types, sizes and designs for various locations and levels of demand should be considered for application in Kigali City, whether as part of a high capacity Bus Rapid Transit system or an improved regular bus system. Bus stop design is of central importance to bus system capacity.

## **Introduction of High Occupancy Vehicle (HOV) Lane**

Initially High Occupancy Vehicle (HOV) lanes should be provided to be used by all public transport vehicles in major corridors, which will later be replaced with Dedicated Bus Lanes (DBLs) for exclusive use by Dedicated Right-of-Way Buses, which can later be transformed into a Bus Rapid Transit (BRT) system in the extreme case, should the demand justify it.

## **Implementation of an Smart and Integrated Ticketing System for a Number of Designated Routes in the Kigali City**

It becomes apparent from the current situation analysis that public transportation options are available in Kigali City, but it is underutilized. Commuters complain that using public transportation is inconvenient, especially because they have to interact with multiple routes and multiple payment systems associated with different public transports operated by numerous operators, parking garages, buses and the like during their commute, it is therefore essential to develop a smart and integrated ticketing system for Kigali City. During the Phase II of this initiative efforts will be made to implement a pilot project for smart and integrated ticketing system in accordance with standards and specifications, which were supposed to be developed during Phase I. The designated routes are as follows:

- (i) Route 1: CITY CENTRE- REMERA-KIMIRONKO-ZINDIRO
- (ii) Route 3: CITY CENTRE-KICUKIRO CENTRE-NYANZA TAXI PARK
- (iii)Route 12: CITY CENTRE-NYABUGOGO-KIMISAGARA-TAPIS ROUGE NYAMIRAMBO

## **Implementation of a Proven Smart Ticketing System**

In order to implement a smart integrating ticketing system, efforts will be made to implement a proven and well tested system for the Kigali City such as a technical platform called ITSO, which was developed in the UK. Similar technologies exist throughout the world for consideration.

## **Development of a Smart and Integrated taxi service**

Is essential to develop an integrated and smart taxi services with standard motor vehicles in Kigali City. A standard taxi service in Kigali City should satisfy the following key features

- Standard vehicle with distinct colour and style
- Global Positioning Systems (GPS)

- Passenger Information Monitors (PIMs)
- Driver Information Monitors (DIMs)
- Credit/Debit Card Swipes/RFID Readers as a part of integrated PT ticketing system.
- Sufficient interchange facilities with the improved bus service

### **Integration of NMT, Motorcycle and public transport (Taxis, bus and rail)**

In order to develop an integrated public transport system, efforts will be made to ensure proper integration of NMT, motorcycles and public transport system. Transportation priorities should be set based upon prioritizing the needs of people as follows:

Design transportation systems that protect and serve the pedestrian first; next, consider the needs of those who use public transportation and non-motorized transportation modes; then consider the needs of automobile users after the two groups above. The priority policy will help in increasing accessibility and reduction of congestion.

### **Integration with Pedestrians**

In a densely-populated urban area like Kigali City, it is important to design intersections and other crossings by assigning pedestrians absolute priority over vehicles, such as by:

- Ensuring uninterrupted movements of pedestrians;
- Forcing the vehicles to slow down or eliminate free-flowing motor vehicle turnings;
- Facilitating safe and priority pedestrian movements on all legs of the intersection;
- Allowing pedestrians to cross in a direct line across the intersection and clearly identifying the direction of travel for all pedestrians;
- Letting the pedestrian see and be seen.

It is extremely important to provide street-level crossings throughout the city for pedestrians. Grade separation is only feasible in extreme cases where pedestrians must cross a major highway, a rail yard, railroads or a waterway. For Kigali City streets it will be more appropriate to use traffic calming measures or install a pedestrian-activated signal for an at-grade crossing.

### **Bicycle integration**

Bicycle mode share is currently low in Kigali. Bicycles nevertheless are an important part of any modern transport system and offer many advantages. Bicycles should be integrated with the Bus/BRT system, primarily initially by ensuring that safe parking is provided at convenient locations. Tokyo, Beijing and Kunming have successfully integrated bicycles with mass transit systems, showing that bicycles can be an important feeder mode for BRT and improved bus service.

## **Taxi and motorcycle integration**

Taxi and motorcycle integration with the BRT system is another important element to consider, and can be planned on a station by station basis. Providing a taxi/ motorcycle rank within walking distance of a Bus/BRT station can have several advantages. For the city environment and traffic system it is beneficial to have taxis and motorcycle waiting stationary at a particular location rather than circulating looking for passengers. The taxis and motorcycle in turn save on fuel and maintenance costs, and have a reliable source of ridership, by queuing within walking distance of bus/BRT stations. Improved bus/BRT system users also benefit by having easy access to a taxi or motorcycle as a feeder mode, especially for destinations which are not easily reachable by bicycle or walking, and in adverse driving condition. However, motorcycle contributes to higher number of accidents, air and noise pollution. Efforts should therefore be taken to phase out motorcycles as means of public transport gradually and replace them with standard passenger car taxis by the end of phase II of this implementation strategy.

## **Development of Parking Policy and Strategy for Kigali City**

A key component of a parking management program for Kigali City will be to combine parking strategies with an increase in transit service options or in an area with lots of public transport options. Transit improvements and incentives help reduce parking demand and create viable alternative modes in areas trying to implement parking management and pricing programs. Efforts will be made to ensure that the Kigali City centre will achieve high quality transit benefit greatly by using transit as a resource in-lieu of parking spaces. This can result in a reduction in parking demand that combined with transit use and pedestrian improvements, creates a more vibrant, walkable area.

The total estimated costs for implementing an integrated public transport development initiative during Phase II is **\$143,968,000** as shown in Table B1 of Appendix-B.

### ***6.4.2.3 Phase III: (Duration 6<sup>th</sup> year to 20 years) Solutions for Problems Related to Public Transport***

#### **Development of a Medium Level Bus Rapid Transit System for Kigali City for Main Bus Corridors**

In the Phase III a medium level BRT system for the main bus corridors in combination with Dedicated Bus lanes (DBL) in other main corridors and an improved regular bus system for other radial and feeder routes will be developed. Initially it might be appropriate to implement BRT in only two major corridors only, i.e.

Route 1: CITY CENTRE- GISIMENTI-REMERA-KIMIRONKO (10.3 km).

Route 2: GISIMENTI- KANOMBE (6.5 km)

The corridors have in general sufficient road space (4 lanes) to accommodate two dedicated BRT lanes in the median of the corridor.

The proposed BRT system will be a “full” BRT system and it will be integrated with a number of feeder services of standard large bus routes as shown in Figure 6-1.

However, the final routes and detailed design for the BRT system will be finalized after the completion of the on-going study on public transport.



**Figure 6-1: Typical BRT systems with bus ways in the median of the roadways (as proposed for Kigali City)**

Since a significant portions of the public transport strategies, which will also become integral of the proposed BRT, will be implemented during Phase II of the initiative, the additional cost for implementation of 16.8 km BRT corridors will be approximately \$141,151,725 as shown in the Table B2 of Appendix-B.

### **Development of a Dedicated Bus Lane in Main Corridors**

In addition to BRT corridors, comprehensive network of Dedicated Bus Lanes (DBL) will be established along the main corridors of the Kigali City. The location of the Dedicated Bus Lanes will be in the median of the roadway rather than in the curb lanes and these lanes will be well connected with an integrated network of routes and corridors with standard large bus services and feeder bus routes of medium bus services in low demand areas.

### **Implementation of a Smart and Integrated Ticketing System for the Public Transport System in the Kigali City**

After gaining experience from the pilot project, efforts will be made to implement an standard smart and integrated ticketing system for the whole Kigali City. This will include all public transport modes and routes of the city involving all public transport operators.

### **Demand management / traffic restraint**

In a very high density developing city such as Kigali there is simply not enough space to accommodate unrestricted growth in the use of private

motor vehicles. In addition to mass transit measures such as Bus Rapid Transit or improved bus system, and in addition to improving conditions for pedestrians and cyclists, policy measures are required to restrict the demand for private motorised vehicles. Transport demand management measures can include restrictions on vehicle traffic in congested areas and at peak times. Such schemes include high parking price, car-free streets, cordon controls on entering a particular area, and odd/even schemes and variations based on number plates, etc.

### **Summary of Cost Estimates for all Three Phases**

The total estimated cost for implementing the public transport development initiatives in three phases during five years will be US\$ **285,528,725** as shown in Table 6.6.

**Table 6-6: Summary of the Estimated Total Costs for Implementation of Recommended Public Transport System for Kigali City in three Phases**

Phase	Total Costs for PT initiatives US\$
Phase I	409000
Phase II	143,3968, 000
Phase III	141,151,725
Total	<b>285528725</b>

## **6.5 PREPARATION OF ACTION PLAN FOR PUBLIC TRANSPORT DEVELOPMENT FOR KIGALI CITY**

The timescale for the implementation of the integrated transport development initiatives for the Kigali City is demonstrated in the Table C-1 of Appendix-C.

## **7 BUSINESS MODEL FOR PUBLIC TRANSPORT SERVICES**

### **7.1 RESTRUCTURING OF PUBLIC TRANSPORT SERVICES IN RWANDA**

#### **7.1.1 Management of the Public Transport Services in Rwanda**

Operating public transport services in rural, inter urban and urban areas is clearly not a natural monopoly because several private operators are already operating services on these routes. The international review also reveals that with appropriate regulation, private operations of public bus services would be successful. Thus, keeping in view the financial limitation of the Government and the continuing operating problems suffered by the

ONATRACOM, it is recommended to explore the feasibility of bus services being provided in a competitive market with greater involvement of the private sector in operating public transport services in the rural, intercity and urban areas. The government should largely concern itself with policymaking, planning, co-ordination and regulation, rather than with the actual operation of services.

In restructuring public transport institutions along the functional line, a hierarchical model having five distinct functional layers will be adopted as follows:

- Political layer - Ministry of Infrastructure will be responsible for formulating integrated transport, land use and public transport policies and corresponding strategies;
- Authority layer
  - d. Rwanda Transport Development Agency (RTDA) to perform all tactical functions for land and water public transport excluding regulation;
  - e. Rwanda Utility and Regulatory Authority (RURA) will be responsible for regulation of land and water public transport system.

Part or entire functions of these government institutions (RTDA or RURA) as land and water transport is concerned may be delegated or transferred to any government institutions such as Municipalities or Districts when judged necessary.

- f. Rwanda Civil Aviation Authority (RCAA) will undertake all tactical functions (including regulation) concerning air transport system.
- Infrastructure Development layer - Rwanda Transport Development Agency (RTDA), Rwanda Civil Aviation Authority (RCAA), City of Kigali, Municipalities and Districts for development and management of transport infrastructure as per laws establishing these institutions or other laws.
- Enforcement layer - Rwanda National Police for safety and security.

The key tactical functions of RTDA for land and water public transport system in Rwanda are demonstrated in **Table 7-1** . As mentioned earlier that RURA will continue to perform its regulatory functions for land and water transport services in Rwanda.

Apart from restructuring the public transport institutions, another area of concern in the public transport sector is the encouragement of the operation of private standard bus operators. However, it would be legally difficult to terminate individual small bus services operated by individuals as they are operating under valid permits. There may be a disruption in public transport services if these operators were not to join the net cost route scheme

immediately. Therefore, a transition period is required and should immediately start by the approval of this policy by the Government of Rwanda. These services would be for the operators to form large co-operatives and such co-operatives could then be given operating contracts. Finally, these permits could be allowed to lapse and not be renewed. This would allow for a gradual withdrawal of the private individual unconventional bus services. Hence, it is recommended that the existing permits may not be cancelled but should be brought under the ambit of Net Cost Route Contracts.

**Table 7-1: Key Functions of a Public Transport Authority at tactical level**

Area	Primary Functional Area	Definition
1	Organisational	Organise the RTDA such that it has the structural, personnel and financial capabilities to carry out the assigned tasks, and does so within prevailing laws and accounting principles of Rwanda
2	Financial	Secure, allocate and disburse the finances required for all authorised activities of the RTDA
3	Policy	Adapt and express the transport policy for the area of coverage under the guidance of MININFRA
4	Planning	Develop the mobility requirements for the area of coverage, and express this as a transport offer in terms of a network, routes, detailed timetables and/or service parameters for all modes covered by the entity
5	Fares	Establish the framework for the fare system and tariffing levels for the public transport offer in consultation with RURA
6	Procurement	Develop and manage procedures to procure the planned or alternative transport services in accordance with pre-determined objectives
7	Intervention	Plan and implement intervention measures to align the transport offer with the entity's objectives
8	Promotional	Promote the public transport modes in political, image, operational and informational terms
9	Political	Establish and manage interfaces and outreach activities with societal stakeholders

## **7.1.2 Financial Objectives**

Financial pressures are the most common reason for introducing reforms. This is usually because subsidy levels are excessive and forecast to rise further. While initiating reform it is imperative to set a number of clear policy objectives as follows:

### **7.1.2.1 Competition “for the market” and “in the market”**

To reduce subsidy levels there is a choice between reducing costs, increasing revenues or trying a combination of both. Usually the main focus is on reducing unit costs by introducing competition for the exclusive right to operate one or more bus services. This is called competition “for the market”.

It’s also possible to introduce competition by allowing different operators to compete with each other on the road. This is called competition “in the market.”

Considering the importance to ensure discipline and safety in the bus service, it is not desirable to encourage competition between operators for passengers. In order to build a reliable and sustainable Integrated Public Transport system in Rwanda, one of the main guiding principles of the Government of Rwanda is to ensure the competition “for the market” while preventing completion “in the market”.

### **7.1.2.2 *Balancing objectives***

Policymakers should also ensure that their financial objectives are achieved to the greatest extent possible without compromising other operational objectives. If policymakers consider it of top importance to ensure the lowest possible operating costs on an on-going basis then a system that requires the authorities to re-tender on a regular basis is more likely to achieve this goal than one that does not.

In addition to reducing costs it’s also possible to reduce subsidies by increasing revenues (i.e., increasing ridership and/or increasing fares or some combination of the two that results in increased revenue). It’s important to remember that ridership levels will vary depending on the fares charged. It may not be possible to achieve financial objectives and at the same time grant all the desired fare concessions implied by the social objectives.



## 7.2 SERVICE CONTRACT

This is a type of small duration contracts where a private operator performs specific tasks such as provision of buses. By using this option, it is possible to take advantage of private sector expertise for performing technical tasks or even to open such tasks to competition. Again, unlike other infrastructure sectors, it is possible to bring additional investment under this option in the public transport sector as is discussed below.

The Gross Cost Route Contract<sup>5</sup> is one of the models for private sector participation in bus operations, which can be applied for RURA and other municipal/city authorities. This requires the government authority to set the routes operated and the fares to be charged. The fare revenue accrues to the government authority, which then pays the private operator an agreed amount, irrespective of the occupancy and ridership. This approach is suitable in cases where the fare revenues are likely to be uncertain, such as in new routes or in low-density corridors and in cases where the government wants to subsidise commuters. However, in order to use Gross Cost Route Contract it is essential to keep record of revenue collection, preferably using automated recording device, such as smart cards. Since there is no mechanism in RURA/municipalities to an authentic record of all revenue collection, the Gross Cost Route contract will not be suitable for RURA/municipalities at present.

The Net Cost Route Contracts, which allow paying a fixed amount per km of service regardless of ridership and revenue collection by the regulator to the operator, might be appropriate for during initial phase for the route franchising contracts in Rwanda. Under these contracts, the quality actually achieved by the private operators need to be monitored by a public entity, such as RURA/municipalities with a system of penalties to deter under-performance. The government authority awards the routes via competitive tender to the lowest bidder of the technically qualified bidders.

### 7.2.1 Case Study on Service Contract for Kigali City

In order to assess the viability of Service Contract under a Net Route Cost system, a case study was undertaken for Kigali City. The results of the case study for all bus routes in different service hours for typical weekdays and weekends services combined (Mon-Fri and Sat-Sun) are shown in **Error! Reference source not found.** It appears from the table that most of the time period it generates loss. However, by combining the profitable hours of the peak times with non-profitable services, it is possible to generate a net profit of about RWF 2.4 billion per year, which is 25% of operating costs for the

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<sup>5</sup> A Gross-Cost Route Contract pays the operator to provide service on a specific route for a set period. All revenue collected is for the authority, not the operator.

Kigali City Service by adopting proper regulation under Net Route Cost System as demonstrated in the **Error! Reference source not found.**

**Table 7-2: Summary of the Profitability of All Bus Routes in Different Service Hours in Kigali City**

Service Hours	Total revenues for all bus routes per day in RWF	Total costs for all bus routes per day in RWF	Total profit for all bus routes per day in RWF	% Profit
04:00 to 05:00	116,885	390,191	-273,306	-70.0%
05:00 to 06:00	190,271	345,454	-155,183	-44.9%
06:00 to 07:00	1,219,179	1,177,043	42,135	3.6%
07:00 to 08:00	2,093,765	1,357,455	736,310	54.2%
08:00 to 09:00	12,866,820	1,376,116	11,490,705	835.0%
09:00 to 10:00	1,236,036	1,243,220	-7,184	-0.6%
10:00 to 11:00	1,236,666	1,279,649	-42,983	-3.4%
11:00 to 12:00	868,125	926,611	-58,487	-6.3%
12:00 to 13:00	729,434	780,244	-50,810	-6.5%
13:00 to 14:00	975,941	1,013,866	-37,925	-3.7%
14:00 to 15:00	1,338,233	1,402,125	-63,892	-4.6%
15:00 to 16:00	2,508,123	1,324,602	1,183,522	89.3%
16:00 to 17:00	2,890,340	7,199,789	-4,309,449	-59.9%
17:00 to 18:00	5,794,446	1,770,891	4,023,555	227.2%
18:00 to 19:00	915,125	5,718,795	-4,803,669	-84.0%
19:00 to 20:00	768,747	807,946	-39,198	-4.9%
20:00 to 21:00	518,199	607,559	-89,360	-14.7%
21:00 to 22:00	353,845	460,616	-106,770	-23.2%
22:00 to 23:00	213,836	398,028	-184,192	-46.3%
Total per day	36,834,016	29,580,200	7,253,816	24.5%
<b>Total per year</b>	<b>12,024,685,543</b>	<b>9,656,633,671</b>	<b>2,368,051,872</b>	<b>24.5%</b>

### **7.3 GOVERNMENT SUPPORT TO LAND PUBLIC TRANSPORT SERVICES**

As demonstrated in the previous paragraph and discussed throughout this document, there are constraints that may prevent the land public transport operators to make profit in some periods. Also considering the low density of our cities and rural villages settled in such way that there is a significantly low demand for public transport passengers in these rural areas, one should expect that to be able to achieve a desirable level of services in public transport, the sector may require a strong government support.

For appropriately regulated private operations of land public transport services, the government should provide facilitations to private operators that will include various forms of incentives which can include, but not limited to tax incentives. The nature and magnitude of government incentives will mainly depend on the level of services and other working conditions imposed by the regulator (that the country can financially afford) to the operators aiming at keeping the public transport business growing as per the demand for a long term efficient, sustainable and competitive public transport services. This also means that the magnitude of these incentives and conditions of eligibility for the Government incentives are to be determined during implementation phase of this policy by implementing institutions in collaboration with different stakeholders including the ministry of Finance and Economic Planning and Private public transport Operators.

## **8 MANAGEMENT SYSTEM FOR PUBLIC TRANSPORT**

Based on the findings of the current observations and stakeholder discussions, it is recommended to adopt an appropriate operation and management system for public transport in Rwanda considering a number of operational and policy measures as follow:

- i. Appropriate framework for modernization/automation, if necessary, of the planning and management functions of public transit systems;
- ii. Potentials for real time control of mass transit operations for monitoring of the location of transit vehicles, identification of deviation from schedule and providing solution to dispatches and operators;
- iii. Feasibility of a real time information system on passenger loading, vehicle running times, accumulated miles and hours and vehicle maintenance;
- iv. Appropriate security mechanism for public transit system

- v. Professionalization and consolidation of the bus industry, and ensuring continued investment in the sector;
- vi. Formulations of preventive measures for bus breakdowns and accidents;
- vii. Institutional arrangements;
- viii. Involving existing bus operators in the new system;
- ix. Formulating a maintenance system aimed at securing efficient public transport operations;
- x. Management of public transport interchange, terminal and other ancillary facilities;
- xi. Formulation of appropriate technical assistance framework;
- xii. Compatibility of the proposed urgent and medium term new infrastructure and public transport sector reform initiatives without precluding future upgrading into a high capacity Rapid Public Transit System

## **8.1 DEVELOPMENT OF LEGAL AND REGULATORY FRAMEWORK FOR PUBLIC TRANSPORT**

### **8.1.1 Legal and Regulatory Framework**

In order to ensure equal and non-discriminatory access for all public transport undertakings and attempt as far as possible to meet the needs of all customers and traffic types in a fair and non-discriminatory manner, it is recommended to adopt an appropriate legal, institutional and regulatory framework. This will comprise, inter alia:

- i. Licensing ;
- ii. Registration;
- iii. Safety certification;
- iv. Access to network (route allocation);
- v. Technical interoperability;
- vi. Harmonisation of norms and standards;
- vii. Appropriate capacity-allocation schemes;
- viii. Legal and regulatory framework of planning, operation and management of PT system;
- ix. Contracting/franchising arrangements with public transport operators;
- x. Framework for healthy competition and continued investment in the sector.

Appropriate restructuring of implementing institutions, specifically RTDA, will be necessary. This is because they not only can support the interests of public transport users but can also promote private sector involvement (possibly including finance) and maintain a level playing field in the form of fair tendering procedures for all operators. The presence of strong institutions at authority layer of the decision making process, i.e. RURA for regulation and RTDA for other tactical functions for land and water public transport can give the private sector confidence to invest in transport. This is also true for air public transport which will be managed by Rwanda Civil Aviation Authority.

## **9 CROSS-CUTTING IMPLICATIONS**

### **9.1 LEGAL IMPLICATIONS**

It appears that this Public Transport Policy and Strategy document has some legislative implications during the implementation stage. In order to include the implementation of land and water public transport policy under the responsibility of RTDA, the law establishing RTDA needs to be amended to empower it performing tactical functions for land public transport services in Rwanda. To adopt the document, Cabinet approval may suffice. However, during the implementation stage it might require ratifications of protocols or amendment of existing laws or even creating new laws.

### **9.2 IMPACT ON BUSINESS**

This policy and strategy document of public transport emphasizes on “Market-based solutions”, i.e. the selected motive force for the policy will be an increasing application of liberal market rules, but in the absence of market sources, there should be interventions by Government to support the market.

This is consistent with the Government of Rwanda’s policy of pursuing a private sector-led development and thus endeavours to create a business friendly environment. Therefore policy proposals will certainly assist in developing market friendly the business climate in Rwanda.

### **9.3 IMPACT ON EQUALITY, GENDER, UNITY AND RECONCILIATION**

This policy and strategy document seeks to ensure universal public transport services for all citizens irrespective of age, sex, caste, creed, and ability to perform in the society. Implementation of this policy should also ensure access to all modes of transport for infirm, disabled and elderly people. In addition, the implementation of the Public transport policy and strategy for Rwanda should be done in accordance with the Government of Rwanda policy on gender. This would likely have a far reaching positive impact on equality, unity and reconciliation efforts of Government of Rwanda.

## **9.4 STRENGTHENING OF VEHICLE INSPECTION REGIME**

There are many maintenance defect vehicles in Rwanda and existing vehicle inspection system is not working adequately. It is necessary to make it mandatory for operators to check the condition of the vehicle regularly. In consultation with private sector investors, efforts will be made to develop an effective vehicle inspection regime in Rwanda during the Phase I of the assignment. These include, among others, the following key planning and design tasks:

- i. Layout plan of the permanent and mobile vehicle inspection centres in Rwanda;
- ii. Design and construction of an integrated vehicle inspection system including location, size, interchange, parking and workshop facilities;
- iii. Improvement of related vehicle inspection infrastructure including service lanes, equipment, and IT facilities;
- iv. Integrated vehicle inspection system planning, operation and management;

The estimated cost for employing a consulting firm for carrying out the assignment using 20 to 30 man-month resources is about USD 300,000 (the estimate has been included in the cost for urban public transport system).

## **9.5 FORMATION OF SAFETY COUNCIL FOR LAND AND WATER TRANSPORT**

In order to address the traffic safety issues in Rwanda, it is essential to establish a Safety Council that is made up at least the following parties:

- MININFRA
- MINIJUST
- MININTER
- RURA
- RTDA
- City of Kigali
- Rwanda National Police
- Operators
- Road User representatives
- National Institute of Statistics

## **9.6 STAKEHOLDER CONSULTATION**

The study was commissioned by MININFRA and jointly conducted by a group of experts from MININFRA, City of Kigali, RTDA, RURA, Rwanda National Police and private bus operators.

The study conducted consultation across a range of stakeholders including MINECOFIN, MINICOM and MININTER. MINALOC and IDP members have been consulted and given their contribution to the improvement of the presented draft. We also took note of RDB comments and the draft has been submitted to RRA and all Ministers for comments. We met public transporters in Kigali and Rubavu to present the draft of this policy (Rwanda Transport Federation Cooperative (RTFC), Association des Transport des Personnes au Rwanda (ATPR), and Taxi and Motorcyclists Associations. The consultation has also been done using media (interactive discussions on radios and television, press conferences).

The assignment also consulted views of the general public through interactive shows on radios, and media by a Press Conference, prior to finalising the recommendations of the assignment.

To ensure effective consultations with all stakeholders, four stakeholder workshops were organised after the publication of the different task specific reports. The workshop presentations were aimed at briefing stakeholders and soliciting their views on the objectives and outcomes of the studies, the potential implication of the alternative integrated public transport development strategies and action plans to alleviate short, medium and long term transport problems of Rwanda.

IMCC meeting held on the 18<sup>th</sup> September 2012, under the chairmanship of the Right Honorable Prime Minister has analysed and supported this policy and strategy for public transport for Rwanda after recommending some adjustments. These adjustments have been included in this final document.

## **9.7 STEERING COMMITTEE FOR THE IMPLEMENTATION OF THE RECOMMENDED PUBLIC TRANSPORT STRATEGIES FOR RWANDA**

In order to resolve the existing transport problems and to develop a sustainable and integrated transport system for Rwanda, a Steering Committee under the chairmanship of the Minister (or Minister of State) with transport in its attributions and comprising representatives from the Ministry of Infrastructure, City of Kigali, Districts, Rwanda Transport Development Agency (RTDA), Rwanda Utility and Regulatory Authority (RURA), Rwanda National Police (Traffic) and transport operators associations will be established. The Committee will oversee and monitor the implementation of the transport development initiatives as outlined in the action plan of the report.

## 10 CONCLUSIONS AND RECOMMENDATIONS

### 10.1 CONCLUSIONS

The key conclusions, as drawn from this assignment, are presented as follows:

#### 10.1.1 Public Transport System in General

- (i) The total number of registered motorcycle till 2011 is 57,650, which is 48% of all registered vehicles in Rwanda<sup>6</sup>.
- (ii) Out of the total registered motorbikes about 9,609, i.e. only 17% have commercial licenses to operate as a public transport mode.
- (iii) Out of 72,264 seat capacity for road based public transport modes, buses, Medium Buss and minibuses cater for 84% of the total supply, whereas taxi cabs and motorcycle taxis provide 3% and 13% of the passenger capacity respectively;
- (iv) Minibuses, having 18 seat capacities are the principle mode of transport, which cater for 54% of the total supply
- (v) Although at present there are 41 public transport companies in Rwanda, the major market share of vehicles come from individual operators providing 70% of the current seat capacity;
- (vi) Since about 70% of the ONATRACOM vehicle fleet is non-operational, current passenger carrying capacity of ONATRACOM is 2,260, which represents only 1.6% of the supply; and
- (vii) At present there is no institution set up in Rwanda for undertaking tactical function of public transport service planning, design, and management.

#### 10.1.2 Intercity Public Transport System

- (i) The current intercity road public transport services are generally acknowledged to be inefficient and costly;
- (ii) Passenger transport services are uncoordinated;
- (iii) There is no mechanism in place to ensure quality service and customer care;
- (iv) The whole intercity public transport industry is profit driven without any regard to quality of services.

#### 10.1.3 Rural Public Transport System

- (i) Most of the roads in rural areas are unpaved and almost inaccessible during rainy seasons

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<sup>6</sup> Rwanda Revenue Authority, 2012



- (ii) The initial investment and operating costs for providing bus services are in remote rural areas are relatively high;
- (iii) Private operators are generally not interested to provide bus services in remote rural area because of relatively high investment and operating cost and low passenger demand;
- (iv) The most of services in remote rural areas are being provided by ONATRACOM, the sole bus service provider under public management.

#### **10.1.4 Urban Public Transport System of Kigali City**

- (i) Due to the rapid increase of population and private car ownerships, traffic congestion and the deterioration of overall transport system have increased remarkably in Kigali City;
- (ii) The multimodal transport system in the Kigali City has not been functioning well due to lack an integrated transport system ensuring proper coordination of different modes of transport, like private transport, motorcycle and other taxi services, bus services and pedestrian traffic;
- (iii) There is no appropriate parking policy for both private and public transport vehicles particularly for the Central Business District of the Kigali City, which appears to be one of the major contributors to increase in congestion;
- (iv) The existing public transport system is highly disorganised, which consists of numerous number of mini-bus services operating without any standard route and time schedule;
- (v) The existing taxi cars and motorbike services are also very disorganised without any proper regulation, fare structure and real-time information or automated hiring system;
- (vi) Due to the absence of an integrated ticketing system involving multi-mode, multi-route, and multi-operator public transport system, it is challenging to develop a consolidated and integrated public transport system for Kigali City;
- (vii) The existing signalised junctions and pedestrian crossings are not functioning well due to absence of coordinated and demand responsive traffic signal system;
- (viii) There is no public transport priority or private car restriction measures in operation for integrated traffic demand and supply management for Kigali City; and
- (ix) It is possible to ensure bus services in all designated routes from 04:00 am to 11:00 pm for all weekdays including.

## **10.2 RECOMMENDATIONS**

The key recommendations of the study are as follows:

### **10.2.1 Public Transport System in General**

- (i) It is recommended to establish a strong planning, management and regulatory authority for undertaking tactical functions for public transport services in Rwanda by initiating appropriate restructuring public transport institutions. This can be achieved by expanding the mandate of RTDA so that it can perform tactical functions excluding regulations for land and water public transport. RURA will continue to perform regulatory functions of land and water public transport services. RCAA will remain in charge of implementing the Government policy and strategies for air transport.
- (ii) Existing fragmented services should be consolidated by giving preferential treatment to standard bus operators in the form of public limited companies with a large fleet of standard buses. Government incentives that may be in various form, which could include, but not limited to tax incentives, may be required to support the public transport services both for establishment of well organised public transport system and supporting public transport operator activities; and
- (iii) It is recommended to develop a comprehensive bus service operation system under a route franchising approach to regularize existing fragmented and informal bus services of Rwanda.

### **10.2.2 Intercity Public Transport System**

- (i) It is recommended to add of new links and upgrade existing unpaved roads to paved roads to improve road network connectivity to provide a consolidated, scheduled, and high quality bus service;
- (ii) It recommended to introduce Quality Bus Service as a dedicated service on major roads linking important cities and nodes within Rwanda providing a faster and more convenient service that would successfully compete with the private car;

### **10.2.3 Rural Public Transport System**

- (i) In order to ensure adequate, all weather and competitive bus services in rural areas by involving private sectors, it is imperative to improve the ridding quality and Level of Services of the National and District roads Category 1 in Rwanda by upgrading the unpaved roads into paved road;
- (ii) Since the private sectors are reluctant to provide bus service in remote rural areas, it is recommended to initiate a properly regulated bus service under a route franchising approach; and

- (iii) It is recommended to restructure ONATRACOM from which a public limited company is to be set up under a PPP venture to take over the responsibility of bus service operations in rural areas. The government may decide to pull out of the company gradually when the private sector alone may be capable of providing bus services in rural bus routes at affordable fares.

#### **10.2.4 Urban Public Transport System of Kigali City**

- (i) It is recommended to adopt a “Smart growth” land-use and transport policy for the Kigali City, which will ensure high density, mixed use and walkable transport and land-use development in the line with Kigali Conceptual Master Plan and the proposed “National Strategy for Climate Change and Low Carbon Development” .
- (ii) In order to develop a sustainable public transport system for Kigali City, efforts should be made to adopt an integrated traffic demand and supply management approach in different phases;
- (iii) To manage the demand for parking and to control traffic congestion, appropriate parking policy for both private and public transport vehicles should be developed for Kigali City, Central Business District in particular;
- (iv) In order to consolidate the existing fragmented minibuss service operation, efforts should be made to encourage fewer number of bus operators in form of public limited companies with a large fleet of standard high occupancy vehicles;
- (v) To ensure availability and reliability of the bus service, a combination of radial and circular bus services should be developed with strict time schedule and real time information system;
- (vi) To integrate multi-mode, multi-route and multi-operator public transport system, efforts should be taken to introduce a smart and integrated public transport ticketing system;
- (vii) To integrate pedestrians with the public transport system efforts should be made to develop pedestrian friendly transport system by providing adequate footpath and at grade priority crossing systems for the pedestrians;
- (viii) To ensure uninterrupted movements of public transport vehicles in major transports corridors giving them absolute priority, Dedicated Bus lane (DBL), Bus Rapid Transit (BRT) and a scheduled feeder service system should be developed in the Kigali City.

## APPENDIX-A: RURAL AND INTERNATIONAL PUBLIC TRANSPORT SERVICE

**Table A-1: Details of Bus Operating Companies of International Service**

No	Name of the Company	Ownership	Country of Origin	Origin	Destination	One way trip length (km)	Travel time (hour)	Fare per one way trip (RWF)	Passenger Carrying Capacity of Vehicle	Average number of passenger per trip	Frequency of trip per day	Frequency of trip per week	Time Schedule	Total Annual Passenger
1	Kampala coaches ltd	Private	Kenya	Kigali	Nairobi	1,000	24	25,000	60	55	2	7	5h:00am and 16h:00pm	40,040
2	Onatracom	Public	Rwanda	Kigali	Kampala	600	8	6,000	60	60	2	7	6h:00am and 17h:00pm	43,680
3	Belvedere lines	Private	Rwanda	Kigali	Goma	165	4	4,000	30	28	6	7	6h,8h,10h,12h,14h&16h	61,152
4	Gaaga Buses ltd	private	Uganda	Kigali	Kampala	600	9	6,500	50	50	2	7	5h:00am and 16h:00pm	36,400
5	Akamba Public services ltd	Private	Tanzania	Kigali	Dar saalam	1,500	48	30,000	60	60	1	7	6h:00am	21,840
6	Juaguar executive LTD	private	Uganda	Kigali	Kampala	600	8	6,500	50	50	2	7	6h:00am and 12h:00pm	36,400
7	Horizon coach	Private	Rwanda	Kigali	Bujumbura	290	6	6,000	30	29	2	7	6h:00am and 14h:00pm	21,112

8	Yahoo car express	Private	Burundi	Kigali	Bujumbura	290	6	6,000	25	24	3	7	6h:00,12h:00 and 16h:00	26,208
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**Table A-2: Profitability Analysis of Rural Bus Service During 2012 to 2017 Period**

Year	No of Passengers per year	Required No of Buses (60/80 Seater)	Vehicle Operating Cost (USD)	Capital Costs (USD)	Revenue from Fare (USD)	Net Revenue (USD)	% Profit	Discounted Revenues per year (USD)	Discounted Costs per year (USD)	NPV (12%)
2012	2,741,104	162	17,167,780	18,439,024	25,970,984	-9,635,821	-27.1%	25,970,984	35,606,805	-9,635,821
2013	2,878,159	166	17,300,207	2,446,379	27,269,533	7,522,947	38.1%	24,347,797	17,630,880	6,716,917
2014	3,022,067	169	17,475,003	2,423,615	28,633,009	8,734,392	43.9%	22,826,060	15,863,056	6,963,004
2015	3,173,171	172	17,542,677	2,514,672	30,064,660	10,007,311	49.9%	21,399,431	14,276,425	7,123,006
2016	3,331,829	177	17,786,030	2,586,267	31,567,893	11,195,596	55.0%	20,061,967	12,946,963	7,115,004
2017	3,498,420	188	18,175,212	2,931,032	33,146,287	12,040,043	57.0%	18,808,094	11,976,250	6,831,844
	<b>18,644,750</b>						<b>Total</b>	<b>133,414,332</b>	<b>108,300,379</b>	<b>25,113,953</b>

## APPENDIX-B COST ESTIMATES FOR INTEGRATED PUBLIC TRANSPORT SYSTEM FOR KIGALI CITY

**Table B1: Cost Estimates of Improved Public Transport System during  
Phase II (2014-2016) in Kigali City**

Item	Cost per unit	Units	Reference info.	Quantity requested	Cost
<b>Landscaping including feeder services</b>			<b>No. of km.</b>	<b>No. of km of each type</b>	
High-quality (1 tree per 10 metres + plantings)	50,000	US\$ per kilometre	100.0	100.0	\$5,000,000.00
<b>Station identification - sign post including feeder services</b>			<b>No. of stations</b>	<b>No. of stations with post</b>	
Station identification post	800	US\$ per station	100	100.0	\$80,000.00
<b>Maps and information</b>			<b>No. of stations</b>	<b>No. of stations or kiosks</b>	
Maps at stations and in vehicles	6,000	US\$ per station	100	100.0	\$600,000.00
<b>Pedestrian crossings</b>			<b>No. of stations</b>	<b>No. of stations with crossings</b>	
Pedestrian crosswalk with signal	20,000	US\$ per station	100	100.0	\$2,000,000.00
<b>Pedestrian access to station areas</b>			<b>No. of bus way km</b>	<b>km of improved footpaths</b>	
Improvements to pedestrian access ways	35,000	US\$ per km	100.0	100.0	\$3,500,000.00
<b>Bicycle integration</b>			<b>No. of stations</b>	<b>No. of stations w/ parking</b>	

Bicycle parking at stations	8,000	US\$ per station	25	25.0	\$200,000.00
<b>Taxi integration</b>			<b>No. of stations</b>	<b>No. of taxi stands</b>	
Formal taxi stands at stations	60,000	US\$ per station	25	25.0	\$1,500,000.00
<b>Park-and-ride facilities</b>				<b>No. of facilities</b>	
Park-and-ride facility (open lot parking)	1,500,000	US\$ per facility	3	3.0	\$4,500,000.00
<b>Feeder vehicle technology</b>			<b>No. of buses per km</b>	<b>No. of km of feeder services</b>	
Clean diesel - paid by operators	0	US\$ per bus	1.2	100.0	\$0.00
<b>Feeder system</b>			<b>Km. of feeder roads</b>	<b>No. of km of each type</b>	
Feeder bus way/station improvements	75,000	US\$ per kilometre	100	100.0	\$7,500,000.00
<b>Property acquisition</b>				<b>No. of sites or km</b>	
Park-and-ride site in peripheral area <sup>3</sup>	2,000,000	US\$ per site	3	3.0	\$6,000,000.00
Terminal site in central area <sup>1</sup>	60,000,000	US\$ per site	1	1.0	\$60,000,000.00
Street widening in central district (4 lanes eqv.)	40,000,000	US\$ per kilometre	1	1.0	\$40,000,000.00
				<b>Sub-total</b>	\$130,880,000.00
<b>Contingency</b>					
10% contingency		US\$			\$13,088,000.00
				<b>Total</b>	<b>\$143,968,000.00</b>

**Table B2: Cost Estimates of an Integrated BRT and Feeder Bus System during Phase III (2017-2032) in Kigali City**

<b>BRT Infrastructure Cost Calculator</b>					
<i>Input number of bus way kilometres</i>	16.8				
<b>Item</b>	<b>Cost per unit</b>	<b>Units</b>	<b>Reference info.</b>	<b>Quantity requested</b>	<b>Cost</b>
<b>Bus way construction / roadway reconfiguration</b>			<b>No. of km.</b>	<b>No. of km of each type</b>	
Use existing asphalt on bus way / new concrete at stations	150,000	US\$ per kilometre	16.8	16.8	\$2,520,000.00
<b>Lane separators</b>			<b>No. of km.</b>	<b>No. of km of each type</b>	
50 cm separator wall	25,000	US\$ per kilometre	16.8	16.8	\$420,000.00
<b>Bus way colouration</b>			<b>No. of km.</b>	<b>No. of km of each type</b>	
Bus way with fully colourised lanes	50,000	US\$ per kilometre	16.8	16.8	\$840,000.00
<b>Landscaping including feeder services</b>			<b>No. of km.</b>	<b>No. of km of each type</b>	
<b>Intersection underpass</b>				<b>No. of underpasses</b>	
No underpasses	0	US\$ per underpass			\$0.00



<b>Passing lanes at stations (i.e. express services)</b>			<b>No. of stations</b>	<b>No. of stations w/ passing</b>	
No express services	0	US\$ per station	13	13.0	\$0.00
Express services	50,000	US\$ per station	12	12.0	\$600,000.00
<b>Station construction</b>			<b>No. of stations</b>	<b>No. of stations of each type</b>	
3 metre wide stations	200,000	US\$ per station	19	19.0	\$3,800,000.00
5 metre wide stations	350,000	US\$ per station	6	6.0	\$2,100,000.00
<b>Station air conditioning/ heating</b>			<b>No. of stations</b>	<b>No. of stations with each type</b>	
Mist generators / fans	5,000	US\$ per station	25	25.0	\$125,000.00
<b>Automatic sliding doors at boarding interface</b>			<b>No. of stations</b>	<b>No. of stations w/ each type</b>	
No sliding doors	0	US\$ per station	19	19.0	\$0.00
Sliding doors (8 doors per station)	40,000	US\$ per station	5	5.0	\$200,000.00
Sliding doors (16 doors per station)	80,000	US\$ per station	1	1.0	\$80,000.00
<b>Station identification - sign post including feeder services</b>			<b>No. of stations</b>	<b>No. of stations with post</b>	
<b>Station security</b>			<b>No. of stations</b>	<b>No. of stations w/ each type</b>	
Security cameras	8,000	US\$ per station	25	25.0	\$200,000.00
<b>Fare collection readers</b>			<b>No. of stations</b>	<b>No. of stations w/ each type</b>	
Smart card system (4 readers per station)	10,000	US\$ per station	25	25.0	\$250,000.00
<b>Fare collection turnstiles</b>			<b>No. of stations</b>	<b>No. of stations with turnstiles</b>	
Drop-arm turnstile (4 turnstiles per station)	2,800	US\$ per turnstile	25	25.0	\$70,000.00

<b>Fare registering unit/ vending machine</b>			<b>No. of stations</b>	<b>No. of stations with machines</b>	
Smart card system	15,000	US\$ per machine	25	25.0	\$375,000.00
<b>Fare media</b>			<b>No. of cards</b>	<b>No. of cards</b>	
Smart card system with micro processing ability	3.50	US\$ per card	48500	48,500.0	\$169,750.00
<b>Fare system software</b>			<b>No. of software</b>	<b>No. of software</b>	
Smart card system	500,000	US\$ per software	1	1.0	\$500,000.00
<b>Intelligent Transportation Systems (ITS)</b>			<b>No. of stations/inters.</b>	<b>No. of stations/inters.</b>	
Real-time information displays	7,500	US\$ per station	100	100.0	\$750,000.00
<b>Trunk vehicle technology</b>			<b>No. of buses per km</b>	<b>No. of km of bus way</b>	
Clean diesel - paid by operators	0	US\$ per bus	2.4	16.8	\$0.00
<b>Boarding bridge between bus and station</b>			<b>No. of buses per km</b>	<b>No. of km of bus way</b>	
Boarding bridge for each bus doorway (paid by operator)	0	US\$ per bus	2.4	16.8	\$0.00
<b>Control centre (including software)</b>			<b>No. of control centres</b>	<b>No. of selected type</b>	
Control centre physical construction	1,500,000	US\$	1	1.0	\$1,500,000.00
Radio-based control only (equipment)	100,000	US\$	1	1.0	\$100,000.00
GPS system (equipment)	1,000,000	US\$	1	1.0	\$1,000,000.00

Software	3,000,000	US\$	1	1.0	\$3,000,000.00
<b>Terminals and depots</b>				<b>No. of terminals or depots</b>	
Terminal facilities	3,000,000	US\$ per terminal		4.0	\$24,000,000.00
Depot facilities	5,000,000	US\$ per depot		4.0	\$40,000,000.00
Restrooms at terminals	15,000	US\$ per terminal		4.0	\$120,000.00
<b>Intermediate transfer stations</b>				<b>No. of corridors</b>	
Standard intermediate transfer station	400,000	US\$ per corridor		12.0	\$9,600,000.00
Large intermediate transfer station for multiple feeder services	1,500,000	US\$ per corridor		6.0	\$36,000,000.00
				<b>Sub-total</b>	\$128,319,750.00
<b>Contingency</b>					
10% contingency		US\$			\$12,831,975.00
				<b>Total</b>	<b>\$141,151,725.00</b>
				<b>Cost per kilometre (including planning costs)</b>	<b>\$8,401,888.39</b>

# APPENDIX-C: WORKING PROGRAMS FOR PUBLIC TRANSPORT DEVELOPMENT INITIATIVES FOR KIGALI CITY

**Table D-1: Timescale for the Working Programs for Development of an Integrated Transport System for Kigali City**

Activities	Responsibility
Phase I: (0 to 2 years)	
Setting up a High Level Steering Committee for the PT country wide	GoR
Implementation of parking strategies in the Kigali City	RTDA, RURA, City of Kigali
Development of Road Hierarchy and Classification	City of Kigali/ RTDA
Development of Standard Bus Routes and Schedules	RTDA, RURA/ City of Kigali/ Bus Operators
Introduction of Standards for Public Transport Vehicles and Operators	RTDA/ City of Kigali
Implementation of Traffic Safety Improvement Strategies (soft measures)	RTDA / City of Kigali/ National Police
Development of Standards and Specifications for Implementation of a Smart Integrated Ticketing System	City of Kigali/ Bus Operators/ RTDA, RURA
Introduction of tax holidays for importation of standard large bus for qualified operators and other incentives to the PT sector	GoR
Commencement of Standard and Large Bus Pilot Demonstration Project	RTDA/ City of Kigali
Establishment of Data Base of Road Inventory for Road Maintenance	City of Kigali/RTDA
Strengthening Road Maintenance Capacities	City of Kigali/ RTDA/ RMF

Capacity Building of Planning and Design	City of Kigali/RTDA
Short-term Solutions to Identified Emergency Transport Problems	RTDA/ City of Kigali/RTDA/Traffic Police
Development of a Public Transport Fare Policy	RTDA, RURA/ City of Kigali/PT Operators
Implementation of a Hybrid Manual and Automatic Integrated Ticketing Strategy	RTDA/ City of Kigali/Bus Operators
Implementation of the Recommended Public Transport Sector Reforms Programmes	RTDA/ City of Kigali
Submission of the Phase I Implementation Report to the Steering Committee	RTDA/ City of Kigali/RTDA
Phase II: (3 <sup>rd</sup> to 5 year)	
Implementation of the Recommended of Parking Strategies for Kigali City	RTDA/ City of Kigali
Construction/Reconstruction of Intercity Bus terminals and Bus Stops	RTDA/City of Kigali
Implementation of pedestrian walkway where possible (on both side of roads) and bicycle lanes on heavy traffic trunk roads, district roads and collectors.	City of Kigali/RTDA
Development of sufficient number of pedestrian priority and signalised (automatic pedestrian demand actuated Puffin crossings) on-street at grade pedestrian crossings throughout Kigali City;	City of Kigali/RTDA
Development of three parking yards for private vehicles in outer edges of the Kigali City.	RTDA/ City of Kigali
Development of park and ride facilities using three parking yards in the outer edges of the City	RTDA/ City of Kigali/Bus Operators
Improve existing congested/critical bottle-necks by either widening or upgrade.	City of Kigali/RTDA
Integration of NMT, Motorcycles, taxis and public transport	RTDA,/City of Kigali

Introduce New Middle Ring Road connecting Radial Trunk/District/Loop Roads by construction of missing links,	City of Kigali/RTDA
Development of a Proven Smart Ticketing System	RTDA/ City of Kigali/ Bus Operators
Implementation of an Smart and Integrated Ticketing System for a Number of Designated Routes in the Kigali City	RURA, RTDA /City of Kigali/ Bus Operators
Development of a Smart and Integrated Taxi Service	RTDA /City of Kigali/RURA
Convert existing traffic signals into automatic vehicle actuated and demand responsive traffic signals;	City of Kigali/RTDA
Connect new residential area by paving of the existing unpaved radial roads.	City of Kigali/RTDA
Upgrading and development of New Public Transport Infrastructures for Kigali City	City of Kigali/RTDA
Submission of the Phase II Implementation Report to the Steering Committee	RTDA /City of Kigali/RTDA
Phase III: (6 <sup>th</sup> to 20 years)	
Development of a Medium Level Bus Rapid Transit System for Kigali City for main bus corridors	RTDA /City of Kigali
Implementation of an Smart and Integrated Ticketing System for the Public Transport System	RURA, RTDA /City of Kigali
Implementation of the Land use Plan for Transit Oriented Development in accordance with the Kigali Sub Area Plan.	RTDA /City of Kigali
Implementation of All Recommended Demand Management / Traffic restraint Measures	RTDA /City of Kigali
Delegation of the full authority to the City of Kigali for the operation and management of the recommended multimodal transport system for the city	GoR
Submission of the Phase II Implementation Report to the Steering Committee	RURA, RTDA /City of Kigali