

# PLANNING OF A PUBLIC TRANSPORT SYSTEM FOR THE CITY OF KIGALI, RWANDA

NJW VAN ZYL, L SWANEPOEL and M BARI \*

Royal HaskoningDHV (Pty) Ltd, Fountain Square Building,  
78 Kalkoen Street, Monument Park, Pretoria, Tel: +27 12 367-5840,

Email: klaas.vanzyl@rhdhv.com

\*Rwanda Ministry of Infrastructure

PO Box 24, Kigali, Rwanda

## ABSTRACT

The City of Kigali, capital of Rwanda, is challenged by a rapid increase in congestion and air pollution on its roads, especially during peak periods. This is a direct result of high population growth and an exponential increase in private car ownership. Public transport services, consisting of bus, minibus, and motor cycle taxis (moto-taxi's), are poor, largely informal and unco-ordinated. Roads are generally in a poor condition, many of which are gravel roads, not suitable for public transport. To solve these problems, the Government of the Republic of Rwanda through the Ministry of Infrastructure and Rwanda Transport Development Agency (RTDA) initiated a project for the planning and conceptual design of a public transport system for Kigali City.

The Paper provides the highlights of the study process and key results, with the focus on features of the current and proposed public transport system. Unique characteristics of Kigali and challenges to formalise the public transport system, as well as comparisons with the South African context are described. The Project covered travel demand assessment, Stated Preference surveys, development of a hierarchical multi-modal modelling suite including macro- and micro-simulation, development and evaluation of alternative public transport options, public transport infrastructure development and operational management programs for the short, medium and long-term, as well as an institutional and legal framework.

# 1 INTRODUCTION

The City of Kigali is challenged by an increase in congestion and pollution on its roads, especially during peak periods. This phenomenon is a direct result of an increasing population associated with an exponential increase in private car ownership. Public transport services, consisting of bus, mini-bus taxis, and motor cycle taxis, are poor, largely informal and uncoordinated. Roads are generally in a poor condition, many of which are gravel roads, not suitable for public transport. To solve these problems, the Government of the Republic of Rwanda through the Ministry of Infrastructure initiated a project for the planning of a public transport system for Kigali City. The project involved, amongst others, travel demand assessment, multi-modal transport analysis and planning of a comprehensive public transport system in Kigali City.

The overall goal of the planned public transport system is to improve the quality of life for the city's residents through the provision of an integrated public transport network that is rapid, safe and secure, convenient, clean, affordable, and socially equitable.

Other goals are:

- To gain modern infrastructure, cost effective and quality services, while ensuring sustainable economic growth and developing an efficient transport system for passengers and goods both at national and regional level.
- To reduce traffic congestion, energy use and pollution, and thus to increase the mobility and accessibility of people and goods within the urban transportation system of Kigali City, which in turn would contribute more efficiently to the growth of the national economy and to poverty reduction.

The aim of the Paper is two-fold. The first aim is to provide the highlights of the study process and key results, with the focus on the features of the current and proposed public transport system. The second aim is to describe the unique characteristics of Kigali and challenges to formalise the public transport system, as well as making comparisons with the South African context.

The paper covers the following aspects:

- Planning process;
- Current city structure and transport patterns;
- Public Transport Action Plan, covering infrastructure, operations and financial implications
- Legal and Institutional Framework
- Conclusions

## 2 PLANNING PROCESS

### 2.1 Overview

The planning process was comprehensive and followed international best practice. It covered all the planning components of a typical feasibility study and similar to that of the Integrated Rapid Public Transport Network (IRPTN) planning process in South Africa.

The Kigali Public Transport (PT) Plan was developed in the following three phases:

- I. Status Quo Assessment of Land use and Public Transport System;
- II. Development and Evaluation of Public Transport Options
- III. Preparation of an Action Plan for Public Transport Development

**The Status Quo Assessment** covered the current land use and city structure, travel characteristics, public transport services and their usage, traffic conditions and public transport infrastructure. The current transport policy, legal, institutional and financial arrangements were also assessed. The Kigali PT Plan was built on the previous land use and transport plans that were developed, and these were also reviewed. The proposed future city structure as described in the “*Kigali Conceptual Master Plan*” of the Kigali City Council provided the land necessary use inputs needed for the study.

Travel and origin-destination data were obtained from the road-side and taxi rank interviews of users. The GIS data of the Kigali City Council (KCC) was extensively used. Land use and network data required for the demand modeling process was captured on GIS. Various traffic surveys were conducted in Kigali during May and June of 2011 for the assessment of the current traffic and transport patterns in the city, including:

- traffic and pedestrian counts;
- road-side and rank interviews;
- Stated Preference surveys to calibrate the mode choice model; and
- Classified turning movement counts.

**The Development and Evaluation of Public Transport Options** involved an extensive analysis and demand modelling process. A hierarchical multi-modal modelling suite was developed inclusive of a macro demand model of the city and a micro-simulation of the CBD. The terms of reference required a modelling process that was much more extensive than done anywhere in the Republic of South Africa (RSA), in view of the number of time periods and scenarios modelled. The macro model covered three time periods (morning peak hour, inter-peak hour and afternoon peak hour) for a typical weekday as well as similar three time periods for a typical weekend. The macro model was based on the well known four-step process of trip generation, trip distribution, mode choice and assignment.

A micro- simulation model was also developed, representing the CBD that is linked to the macro model and following the same network structure and time periods. In total 12 base-year models were developed (three week day and three week-end, for macro and micro-simulation). For each model, two future design years were tested. This yielded 36 models in total.

Due to the rather limited scope and level of detail of the input data the basic model structure was made relatively simple and robust. Despite the simple model structure it was adequate to evaluate the alternative public transport systems and developing the public transport master plan. The model gave plausible results and explained differences between scenarios.

Five alternative public transport strategies were developed and tested with the demand model, including continuation of the existing public transport system. Two city structures were also evaluated i.e. the approved Kigali City Master Plan as well as a Compact City Scenario. An economic evaluation was conducted on the five alternative public transport systems based on the Kigali City Master Plan and compared with the continuation of the existing public transport system. The preferred option was tested with a financial model as well as a second option for comparison purposes.

**The Action Plan** has been divided into three distinct phases, being urgent actions over the next two years, short-term over the next five years up to 2017, and long-term over the next twenty years up to 2032. The three time frames above were viewed as phases or steps towards an ultimate single solution, rather than separate solutions, which will replace each other over time. The long-term plan was developed first, which was subsequently broken down into urgent, short- and long-term actions.

The Action Plan addressed the following components:

- I. Public transport operations of the proposed system entailing route determination and coarse scheduling of services based on demand, operational implications such as capacity utilisation, bus trips and kilometres, and fleet sizes.
- II. Infrastructure requirements in terms of road upgrading and public transport facilities.
- III. Operation and Management System, consisting of various Intelligent Transport System technologies, to gather data about the transport network and use that data to provide information to the network users and network managers.
- IV. Legal, Regulatory, and Institutional Framework
- V. Financial Model to guide the funding of the public transport system, including infrastructure and operating costs, and subsidy requirements.

Similar to South Africa, the availability of adequate data in terms of format and level of detail was a challenge, although South Africa is more fortunate in that data collection and planning systems have been established that provide some level of basic data. For example, a regular traffic counting program, household interview surveys and Current Public Transport Records of supply and demand are often available in RSA. In Rwanda, legislation and regulations requiring planning authorities to conduct surveys and develop plans are also lacking. It was recommended that a comprehensive and detailed household interview survey combined with more detailed traffic and public transport operational surveys be conducted in the future to develop the short- and medium-term plans in more detail, ideally to coincide with the next population census.

## 2.2 Key stakeholders

Key stakeholders that were consulted as part of the planning process were:

- Ministry of Infrastructure (MININFRA), including public transport policy and strategy as part of its functions;
- Rwanda Transport Development Agency (RTDA) is a semi-autonomous body under the Ministry of Infrastructure, and responsible for the national road and rail network;
- City of Kigali, local authority responsible for all municipal services in Kigali.
- Rwanda Public Transport Authority (ONATRACOM), a national quasi-private company responsible for inter-regional bus services;
- Rwanda Regulatory Agency (RURA), responsible for regulation and licensing of public transport in Rwanda;
- Bus Operators: Kigali Bus Service operating 5 routes within Kigali; International Express and ONATRACOM providing long-distance services between Kigali and other towns in Rwanda;
- The Association of Transport Companies (ATRACO), a minibus taxi association, informally operating 20 routes in the City;
- Moto-Taxi Operators using motor bikes provides extensive informal services throughout Kigali and not organised into any association; and
- Taxi-cabs providing metered taxi services.

## 3 KIGALI LAND USE AND TRANSPORT CHARACTERISTICS

### 3.1 Location and City Structure

Kigali, situated in the centre of Rwanda, has been the economic, cultural and logistical hub of the country since its independence in 1962. Rwanda is landlocked between Uganda, Burundi, the DRC and Tanzania. It has a pleasant climate, with average day time temperatures of around 27°C, despite being situated in the tropics. The City is well-known for its oval-shaped hills, which progressively converge and are separated from each other by large valleys. After growing slowly for four decades, Kigali underwent a growth thrust after the 1994 war and genocide, as Rwandans returned from other parts of the world and settled in the capital, where they felt safe. The City's population of approximately 1 million is increasing at an annual rate of between 2.5 and 3.1 per cent. Figure 1 and 2 shows a map of Kigali and a photo of the land scape respectively.



**Figure 1: Kigali City and District Boundaries and Paved Roads**

The current public transport system is constrained by the hilly topography, which also impacts on the settlement pattern. Kigali is predominantly low density single stand houses with pockets of higher density development, related to office and commercial land uses. The low densities and population distribution are generally detrimental to the provision of viable public transport.



**Figure 2: Kigali City Landscape**

One of the South African cities that best compares with Kigali in terms of population size is Nelson Mandela Bay (NMB), with a population of 1.15 million. However, the density of Kigali is more than double that of NMB i.e. 1322 people per square kilometre compared to 522. Comparison of Kigali with typical RSA cities highlights the negative impact of the spatial policies of the past in RSA.

### 3.2 Transport infrastructure

The current road network in the city consists of 732 km of roads of which 14% is paved. The rest of the roads are gravel tracks, which are in a poor state due to a lack of stormwater facilities. The majority of roads and streets are gravel, which impede public transport services and affect mobility negatively during rains. Figure 3 give photos of a few transport infrastructure components.

The quality of the main arterials is generally very good with an extensive resurfacing programme currently being carried out. Paved roads form the main arterials and run on top of the hills, with secondary roads, mostly gravel or cobbled stone, running down into the valleys. Public transport services mainly operate on the surfaced roads. Only Moto-taxis operate on all roads.

There are five main Taxi parks which are generally unorganised and are lacking passenger facilities. The largest one of these catering for bus, mini-bus and Moto Taxis, is the long distance terminal in Nyabogogo just next to the CBD. There is a lack of space for pedestrians and motorcycles.



**Figure 3: Transport Infrastructure in Kigali**



### 3.3 Traffic conditions

Figure 4 below indicates that there are three distinct peaks in the traffic coinciding with the AM-, Off-Peak and PM-peak periods. The off-peak volumes are relatively high compared to the peak hours and high volumes are experienced through-out the day. Traffic volumes are also significant for a long period starting from 6h00 in the morning until 22h00 in the evening. The high off-peak volumes and long daily period are beneficial to the provision of viable public transport. In South Africa the traffic or demand profiles are not supporting public transport showing short peak periods and low off-peak volumes.



**Figure 4: Profile of Daily Traffic Volumes (Summary of Traffic at Various Counting Stations)**

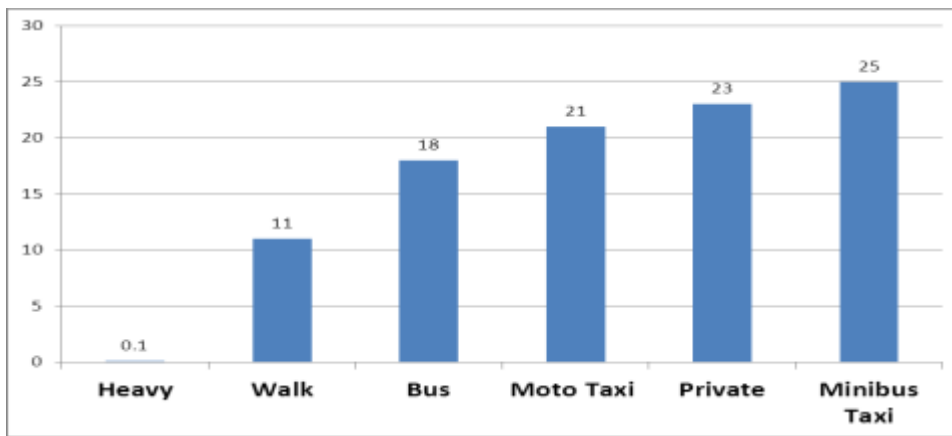
Similar to South Africa, road safety is a major concern, with an average of 150 persons per month reported to be involved in accidents, many of which are fatal. A large proportion of traffic accidents in Rwanda and specifically in Kigali, involve moto-taxis (motorbikes).

### 3.4 Public transport services

Passengers in Kigali are dependent on various road-based modes of public transport which include buses, mini-buses, and motor-bike taxis (Moto taxis), and significant proportion of walking. The Moto-taxis is unique to Rwanda, and some other cities in Africa, which are not found in the RSA. They fulfill an important role between mini-bus taxi and NMT, being very flexible, fast and cheap. The size of the city and hilly terrain does not support any form of rail transport.

The estimated share of public transport is 73% of motorised passenger transport, including Moto Taxis. In view of the relative short travel distances, walking is also popular. Private vehicle ownership is increasing rapidly in the city as the country develops, with 50% of users licensed for car, motorbike, or heavy vehicle. Figure 5 shows the daily modal split across all trip purposes. Mini-bus taxi has the highest share, followed by private transport and Moto taxi. Figure 6 shows images of public transport modes in Kigali.





**Figure 5: Modal Share of Passenger Trips in Kigali**

The share of public transport is much higher than cities in the RSA. For example, Nelson Mandela Bay (NMB) which is roughly of a similar size in terms of population has a public transport share of 44% of motorised trips, compared to the 73% of Kigali for motorised trips (NMB, 2012). For the whole of the NMB metropolitan area, walking is rather low at 2 %, but in low income areas it has an equal or even dominant share. The range of mode choices of NMB is somewhat different as it has a limited commuter rail service, with a share of about 1%.

The 2013 National Household Travel Survey in the RSA indicated an overall share of public transport of 51% of motorised trips made by metropolitan workers (Statistics South Africa, 2014). Over the last decade there has been a general increase in the percentage of households who used public transport, i.e. mini-bus taxis (from 59% to 68,8%), buses (16,6% to 20,1%) and trains (5,7% to 9,9%). In terms of all trips, the share of walking as main mode of transport of metropolitan workers is 11%, similar to Kigali.

In general, public transport in Kigali is inadequate, uncoordinated and largely informal. The dominant public transport mode is minibus, followed by Moto taxi. ATRACO, the mini-bus taxi association in charge of the city-wide mini-bus service, currently operates on 20 routes in the city, with some 500 to 600 vehicles in the fleet. The ATRACO fleet consists mainly of old Toyota 15 seater mini-buses.

The Kigali Bus Service currently operates 5 routes in Kigali City with a fleet of 43 buses (26 seaters). Although more formal in that they operate on fixed routes, they operate similar to mini-bus taxis i.e. without time tables. There is an over-supply of Moto taxis, approximately 7000 motorcycles in operation in the greater Kigali City area contributing to traffic congestion. However, they offer cheap and flexible transport.

Public transport modes such as bus and minibuses have the longest average trip time and take on average 10 minutes longer than private transport. However, trip distances are generally short. In general trip times vary between 20 and 35 minutes, with walking just less than 40 minutes. The interview surveys indicated that 50% of respondents do not have a license and are hence captive to public transport and NMT. Along certain corridors there are high pedestrian volumes, but the use of bicycles is rather limited.



**Figure 6: Images of Moto taxis and a minibus taxi rank**

### **3.5 Institutional and financial issues**

Some of the most serious urban transportation problems can be traced to the shortage of skilled managers and professionals in the City and in the transport industry as a whole. Fiscal problems, springing from low local tax revenues, is another major factor affecting the performance of urban transport institutions. There is a lack of legislation providing for local government to manage and regulate the procurement of public transport operators, licensing of operators, public transport vehicles and routes on which they are allowed to operate. The existing legislation indicates overlapping functions of institutions dealing with public transport, which are confusing. There is also a lack of legislation regulating the financial system of road construction and that of public transport. Local government is not involved in the management of the public transport system, and this is the main challenge facing the development and sustainability of public transport in Rwanda and in Kigali City.

## 4 PUBLIC TRANSPORT ACTION PLAN

### 4.1 Overview of plan

In the development of the public transport plan, best practice lessons learnt and concepts were obtained and customized for Kigali conditions from successful systems operating in Bogota (Columbia), Curitiba (Brazil), cities in South Africa and Lagos (Nigeria), amongst others. In view of the major fiscal constraints experienced by Rwanda, affordability was regarded as the main criterion in the selection of suitable public transport options.

The following alternative public transport systems were tested with the model and evaluated:

- Alternative 0 (BASE): Base or reference case involving no capital investment, and just maintaining the current public transport system.
- Alternative 1 (PT): Formal public transport system with additional routes and services to serve the demand, with no dedicated bus lanes.
- Alternative 2 (PT+KERB DBL): As above but providing Dedicated Bus Lanes (DBL) along congested sections, along outer kerb-side lanes.
- Alternative 3 (PT+MED DBL): As above, but providing DBL along median lanes, to test the benefits of median versus kerb-side DBL in comparison to Alternative 2.
- Alternative 4 (BRT): Similar to Alternative 1, but with a BRT along the highest volume corridor, to test the benefits of BRT

Although none of the corridors indicated sufficient demand for a BRT, a BRT was tested along only one high demand corridor.

The capital infrastructure cost and operating costs for each alternative were calculated. The following user benefits were included in the evaluation:

- Travel time savings
- Road User Cost savings
- Accident cost savings
- Carbon emission savings

Table 1 shows the economic evaluation results in terms of the Net Present Value (NPV), Internal Rate of Return (IRR) and Benefit Cost Ratio (BCR). Alternatives 2, 3 and 4 were all compared to Alternative 1, a conventional public transport system. All the alternatives are significantly more economically viable than a conventional formal public transport system. Alternatives 2 and 3 perform the best and their results are also very similar. The performance of Alternative 4, the BRT option, is less than that of Alternatives 2 and 3, although still adequate.

During the development and evaluation of various public transport options, it was concluded that all the formal, improved, public transport systems are highly economically viable compared to the current poor public transport system. Additional investments in dedicated bus lanes along congested sections, whether in the form of normal bus lanes or BRT, are all more viable than a formal public transport system running in mixed traffic. Given the problematic topography of Kigali, a commuter rail system, which is commonly regarded as the ideal solution for most cities' public transport situations, would not be feasible.

**Table 1: Economic Evaluation Results**

	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
	<b>(PT)</b>	<b>(PT+KERB DBL)</b>	<b>(PT+MED DBL)</b>	<b>(BRT)</b>
<b>Infrastructure Cost (USD million)</b>	\$ 390	\$ 693	\$721	\$757
<b>NPV (USD million)</b>	Reference	\$3,626	\$ 3,600	\$ 1,065
<b>IRR</b>	Reference	86%	80%	30%
<b>BCR</b>	Reference	12	11	4

Additional investments in dedicated bus lanes along congested sections, whether in the form of normal bus lanes or BRT, are all more viable than a formal public transport system running in mixed traffic. Due to the complexities and high cost of implementing a BRT, a further detailed feasibility study is recommended before phasing in BRT along selected routes.

Although the system without bus lanes is less economically viable than the Bus Lane option, it is much more affordable, and hence the ideal system to start with over the short-term. It was recommended that a formal public transport system with kerb-side dedicated bus lanes be implemented as the priority system over the long-term in view of its greater flexibility. However, in the short-term, it was recommended that a formal system be implemented running in mixed traffic, until increased congestion and available funding allows for dedicated bus lanes to be implemented. Following the implementation of the dedicated bus lanes, a BRT along selected routes, if found financially viable in terms of demand, can be phased in during a later stage.

The proposed system for Kigali is aimed at an Integrated Dedicated Bus Lane (DBL) System with Integrated Rapid Public Transport Network (IRPTN) characteristics, similar to the IRPTN strategy currently being implemented in the RSA. In order to achieve this over the long-term by 2032, intermediate goals and actions were formulated for the urgent actions by 2014 and short-term by 2017 respectively.

Over the initial two years, the re-organization and improvement of the existing modes of public transport services were proposed. This will further entail the consolidation and formalization of infrastructure, schedules, fares, systems, etc., as well as the introduction of feeder- and distribution services. Over the short-term, priority will be given to corridors and nodal points along public transport routes with the simultaneous introduction of High Occupancy Vehicle (HOV) Lanes. Thereafter, the HOV lanes will be transformed into Dedicated Bus Lanes (DBLs) for exclusive use by Dedicated Right-of-Way Buses. This scenario will over the longer term then be further developed, so as to ensure a fully-fledged integrated and “Customized” DBL System with Integrated Rapid Public Transport Network (IRPTN) characteristics.

Figure 7 shows the recommended integrated public transport network for the long-term. The future bus routes cover the built-up area significantly better compared to the base year (2012) and all the major nodes are connected and accessible by bus. The minibuses routes are supplementary to the bus routes. In total 20 bus routes, 12 minibus and 5 external routes are envisaged. Moto-taxis are restricted to only provide feeder/distributor services in the peak periods over short distances, thus within suburbs.

In total 962 lane-kms of road will require upgrading, of which 176 lane-kms are earmarked for dedicated bus lanes. Some 470 lane-kms of cobbled stone or gravel roads need to be paved. The small size of the city and subsequent short trip distances does not justify transfers. Therefore the future routes were designed to keep transfers to an absolute minimum. Three locations have been identified for transfer purposes, being the Nyarugenge CBD, Remera and Kicikiro.

The proposed public transport system indicated the following operating characteristics:

- Bus fleet of 1,398 buses
- Total daily bus trips of 13,679
- Total daily minibus trips 14,408
- Mini-bus fleet of 805

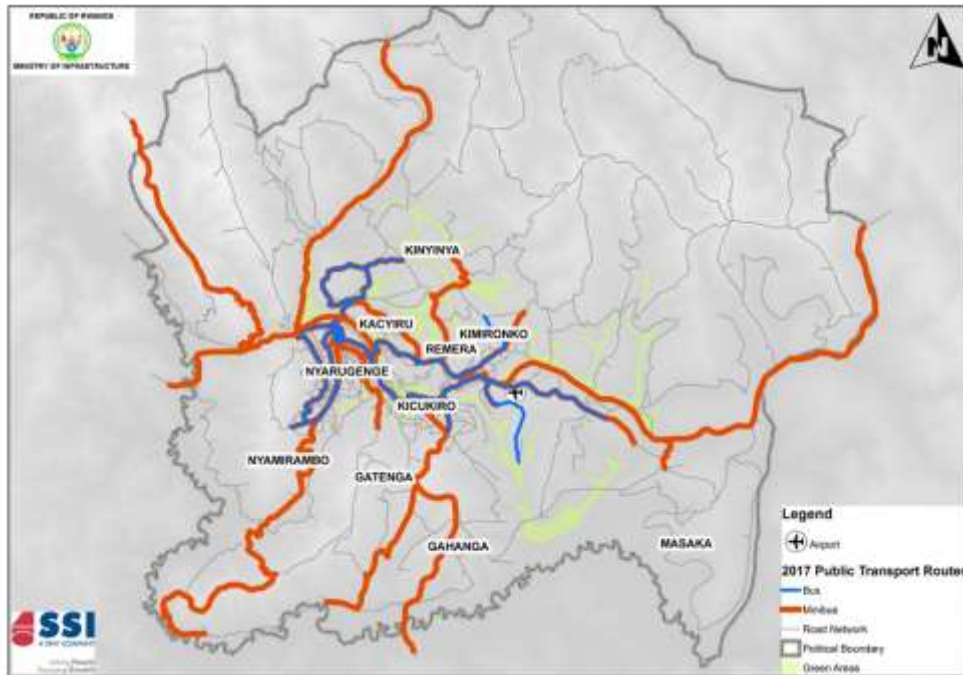


Figure 7: Long-term Public Transport Network Planned for Kigali

#### 4.2 Financial implications

Table 2 gives the financial implications of the long-term public transport operations in terms of vehicle purchase cost and total operating costs, comprising of fixed and variable cost, for bus and mini-bus. Variable cost was estimated to be approximately 26% of total operating cost. The full system utilised both bus and mini-bus depending on the demand.

Table 2: Cost of public transport operations of the long-term plan

	Bus	Mini-bus	Total Fleet
<b>Fleet Size</b>	1.398	805	2203
<b>Vehicle Purchase Cost (USD)</b>	\$262 million	\$28 million	\$290 million
<b>Total Operating Cost per annum (USD)</b>	\$230.03 million	\$60.06 million	\$290.09 million



Although the subsidization of public transport services is a world-wide phenomenon, it was recommended that a policy of 100% cost coverage be phased in over time, provided that it is affordable for passengers and politically acceptable. To achieve a 100% operating cost coverage the current average fare per km of Rwf20 need to be increased to Rwf47, yielding a small profit of \$3.2 million per annum for the full system.

Table 3 summarises the total infrastructure and operating subsidy for the Urgent, Short-term and Long-term plans. It was recommended that current unit fare levels be maintained for the first five years, and break-even fares only phased in towards the long-term. As a result an operating subsidy is required over the urgent-term and short-term, and increasing from year 2 to year 5.

**Table 3: Financial Implications for Government by Time Period**

	Urgent Action Plan (2-Year)	Short-term Plan (5-Years)	Long-term Plan (20 Years)
Total Infrastructure Cost	\$96.4 million	\$217.8 million	\$732 million
Annual Operating Subsidy	-\$33.4 million at current unit fares	-\$113.3 million at current unit fares	+\$3.2 million at breakeven unit fare

### 4.3 Legal and institutional framework

The “Public Transport Policy and Strategy For Rwanda” (MININFRA, 2012) recognises the following legal and institutional problems with regards to Kigali City specifically:

- Lack of a city master plan to guide land/use transport investments.
- Lack of legal/regulation framework for public transport.
- Lack of expertise in public transport planning and management.
- No clear policy on public transport development.
- Lack of clarity in the roles and responsibilities of each stakeholder operating in the sector.

In its 2020 Vision, the government of Rwanda states that it does not want to be involved in providing services and products that can be delivered more efficiently by the private sector. Following from the above vision, it was clear that the current institutional and legal framework regarding the regulation of public transport needs to be amended to ensure that the government’s vision (including all its agencies or entities) is realised.

The Rwanda Public Transport Policy recommended that the regulation of public transport services should be devolved to the lowest level of government according to international best practice i.e. local authorities. Applicable government functions relating to the management of public transport services should be devolved/transferred to the proposed Rwanda Public Transport Authority (RPTA), for managing inter-city and rural public transport in Rwanda, and municipal Transport Authorities (TA), for managing municipal public transport services, if they have the capacity and expertise to exercise these functions effectively and efficiently. This is in line with international best practice, and also with the RSA's national transport legislation (NLTA, 2002).

The Legal and Institutional framework reviewed the current roles of key government institutions and recommended clear roles for each of them. It further recommended that all relevant legislation should be reviewed in detail so as to determine which functions and responsibilities should be transferred to the RPTA (if established) and the TA, respectively, in order to establish an effective legal and institutional framework for the regulation of public transport services in Kigali and indeed, in Rwanda itself.

It was recommended that Kigali moves quickly towards the establishment of a Transport Authority (TA), to support the new public transport system. The main functions would be to plan, regulate and co-ordinate the supply of adequate and effective public transport, as well as to plan the provision/upgrading, maintenance and rehabilitation of supporting infrastructure. However operations should be left in the competent hands of the private sector. Kigali should however begin with building capacity to manage the public transport system and identifying the priority actions, investments and enabling measures needed for improvement.

It was strongly recommended that a TA for Kigali be established as soon as possible by way of a Founding Agreement because legislation may take a long time to draft and pass through the parliamentary process. Legislation should however be prepared in the meantime to provide for the establishment of the TA in Kigali City and the TA's in other municipal areas to ensure that these TA's become proper statutory entities later on.

There should also be a clear distinction between the roles of the Transport Authority and the role of the private sector public transport operator. The TA should fulfil the government management function and provide and fund infrastructure. On the other hand the Operator should focus on the operations of the public transport vehicles. By implication, this would include procurement and funding of the vehicle fleet.

Although it was recommended that the regulation of public transport services should be devolved to the lowest level of government, i.e. municipalities, in a recent decision by the Ministry, it was decided that the Transport Authority function should reside with the existing RTDA institution, instead of creating a separate body for the RPTA. It was also decided that RURA should keep all regulating functions, and hence would handle all the public transport operating licensing functions. It will therefore be critical that the RTDA and the City of Kigali closely co-ordinate and integrate their functions relating to public transport. It was recommended that the RTDA and City of Kigali signs a Memorandum of Understanding, followed by a detailed Service Level Agreement (SLA) so that all functions relating to public transport are integrated between the two institutions. Other improvements recommended over the first five years were the alignment of Structure Plans with the Public Transport Plan, the development of institutional structures and the improvement of Law Enforcement.

#### **4.4 Transformation of Current Public Transport Industry**

As part of the implementation, it was recommended that the current public transport industry must be transformed into one or more private public transport companies, who will be contracted to provide the new services. This must be done without any loss of jobs and income. It was proposed that the example of industry transformation in the RSA should be followed relating to the transformation of the bus and minibus-taxi operator industries to provide for the implementation of new BRT systems. The concept and lessons learned would provide valuable inputs into the Kigali process.

Priority should be given to the restructuring of the existing bus and mini-bus services into a formal integrated public transport system. New institutional structures should be put in place and capacitated to start transforming the current public transport services. For the institutional restructuring, new legislation would have to be enacted, which would take time. It was therefore recommended that structures are initiated within the existing legal and institutional framework. Most urgent is that the City of Kigali starts to take ownership of the public transport function, by creating a public transport department within the City to fulfill the planning and management function. They must be the main institution driving the further development of the recommended public transport system.

## 5 CONCLUSIONS

The Paper summarised the key features of the current land use and transport patterns of the City of Kigali and highlighted similarities and differences between Kigali and South African cities. The key results of the Kigali Public Transport Action Plan have been described and comparisons made with certain aspects of planning done in South Africa. Although South Africa has advanced further in terms of the development of infrastructure and modern public transport systems, as well as planning systems and legislation, both countries can learn from each other. During numerous visits to Kigali, the RSA project team became aware of significant interaction between the two countries in terms of government, education, and business and it is hoped that the two countries can build further on these to the benefit of both.

### **Acknowledgement**

The Rwanda Transport Development Agency (RTDA) and Rwanda Ministry of Infrastructure (MININFRA) are gratefully acknowledged for their support for the project and permission to present this paper.

## 6 REFERENCES

Institute for Transport Development and Policy (ITDP) 2007. Bus Rapid Transit Planning Guide, New York, June 2007

Republic of Rwanda, Ministry of Infrastructure. Consulting Services for the Planning and Design of a Public Transport System for Kigali City (Volumes 1, 2 and 3). Kigali, Rwanda, December 2012.

Ministry of Infrastructure and Kigali City. Kigali Conceptual Master Plan, Report produced by OZ Architects Consortium, 2007

National Institute of Statistics of Rwanda (NISR), Population statistics, Kicukiro, Nyarugenge and Gasabo Districts Baseline, 2008

Nelson Mandela Bay Metropolitan Municipality, Comprehensive Integrated Transport Plan, 2012.

Republic of Rwanda, Ministry of Infrastructure. Public Transport Policy and Strategy for Rwanda. Kigali, October 2012

Statistics South Africa, National Household Travel Survey February to March 2013, Statistical Release P0320, March 2014