Analysis of Public Transport Service Accessibility in the City of Kigali: Case Study of Kacyiru Sector

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## Introduction

- Public transport has gained greater attention in recent years for improving mobility and the quality of urban life.
- For that, all countries have committed through SDGs Goal 11 to provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations by 2030
- Rwanda has embarked in that direction as it is appears in transport policy documents
- In August 2013, the City of Kigali and RURA announced a 5-Year new plan of public transportation Generation One (PT-G1) aimed at reducing traffic congestion and increasing efficiency of public transport.

# Introduction (Ct'd)

- Bus line crossing Kacyiru sector are operated by KBS,RFTC and Royal Express transport companies
- In the implementation of PT-G1, many problems have emerged, those Include waiting for long time at some bus stops especially during peak hours, this affected accessibility of public transport especially in the city of Kigali
- Even if these reform was made, access to public transport is still critical especially in some parts of city of Kigali.
- The persistency of that problem inspired us to conduct a study on accessibility of public transport services in Kacyiru sector, Gasabo district, especially because there is so far no detailed study, which has assessed its level of performance and detected all its bottlenecks.

## Introduction (Ct'd)

#### Location of Kacyiru sector in the City of Kigali



- Kacyiru sector
  - Centrally located
  - Surface area: 5.78km<sup>2</sup>
  - Total population:37,088by 2012

### **Problem Statement**

- Kacyiru houses many services: the presidence of the Republic of Rwanda, ministries, headquarters of Kacyiru district, headquarters of Rwanda National Police, hotels, headquarters of various local and international NGOs, hospitals, various churches, etc.
- During our several trips in Kacyiru sector, different problems related to the accessibility of public transport were noticed, those include much many passengers waiting buses at bus stops and at Kacyiru bus terminal especially during peak hours.
- This problem hinders the efficiency of public transport in urban areas where people must move quickly for various reasons

## **Objectives of the study**

The general objective was to assess the accessibility to public transport services in Kacyiru Sector, in order to know the acuteness of the problem and propose ways of mitigation.

To attain the general objective, this study have specifically:

- 1. investigated the road network of public transport in Kacyiru sector,
- 2. analyzed the capacity of public transport,
- 3. studied the level of access by the population, and
- 4. suggested the strategies for improving the public transport service accessibility.

### **Methods, Materials and Procedures**

- 1. Library research
- 2. Field observation and counting
- 3. Interview
- 4. GIS technology

### Road length and bus stops spacing



- Public road length is 7, 33 Km, 1.2 km /sq.km, Unfortanely the road is east-west oriented this make public transport less accessible to people located in peripheral parties of the Sector.
- Number of bus stops: 13
- There is limited facilities at the bus stops and bus terminal

#### Mean of bus stop spacing:

$$= \frac{\sum_{i=1}^{n} x_i}{n}$$

Where

Xi= Distance between bus stops n= Number of intervals between bus stops

- ✓ Mean=7330 / 12= 611 m
- ✓ Greater than 402.33 m recommended by Jarret Walker
- The spacing and location of bus stops have a major effect on average speeds and passengers waiting time of bus

Proximity to the bus stop



Proximity	Shape	%
to the bus	Area in	
stops	Km.sq	
400	3,94	68
800	1,82	31
1200	0.045	1
Total area in	5,8	100
Km.sq.		

- 68% of Kacyiru population walk 400 m to reach at the bus stops
- It's similar to the one recommended by Santa Clara Transportation Company, USA.
- People can access easily the bus stops

### **Capacity of buses operating the routes through Kacyiru**

- Number of vehicles used for public transport in the sector: 83 vehicles, these include 13 buses which transport around 80 people and small buses that transport 29 people
- Average of shuttle: 10.5 but the number of shuttle ranges between 4 and 12; the highest number of shuttle is recorded CBD-Kimihurura-Kacyiru and CBD-Kinamba-ULK-FAWE-Kagugu lines with 14 shuttles a day
- Daily total capacity : 33,513 seats, this is 0.9 seat per Kacyiru dweller, theoretically, the number of seats is good.

Kinamba bus stop and Kacyiru bus terminal passenger's waiting time in minutes

33

35

37

35

Waiting Period Bus Average 70 63 time halt time to get Passengers' Waiting time in minutes 57 60 a bus time 50 45 7am-10 21 12 424143 40 36 am 32 27 27 30 26 21 14 am- 4 11 18 20 20 1819 19 16 20 pm 13 12 10 9 10 5pm-7pm 31 6 Kinamba-Kinironko kinamba-City Centre Kinamba-Gisoti kinamba Mabugogo Kachin Manza 2011UL NY2bug0g0 KachinnBemera 24 11 Average Passenger's average waiting time = 24 minutes, which is greater than 5 minutes recommended by RURA **Bus Route** ■ 07h a.m-10h a.m 11h a.m-04h p.m ■ 05h p.m-07h p.m during peak hours and 15 at off

peak hours

Passengers waiting time (in minutes) from 07h00 a.m up to 07h00 p.m

Number of passengers who wait the bus





- The number of Passenger is higher in morning because it's the period where people go to work and in evening because people are coming from work to their home
- Kinamba-Kimironko and Kacyiru-Kimironko lines experience the high number of waiting passengers because they are located in junction of different lines.

### Road segment with traffic congestion



- There are two road segments at peak hours that experiencing congestion, this situation slowdowns the movement of vehicles including buses
- The traffic congestion often occur in peak hours due to successive departure of buses from bus terminals and bus stops as results of many available passengers

## Conclusion

In fact, public transport service in Kacyiru sector is not well accessible.

- The buses are not available by when people need them especially on bus routes of Kacyiru-Nyanza and Kacyiru-City centre
- The result indicated that they wait an average time of 25 minutes
- Interview revealed the consequences passengers met when they spend a long period of time which include delaying in daily activities, losing too much money by using other transport means,...
- Traffic congestion, have been observed as one factor which lead to the delay of buses in journey
- 17 October 2017, the city of Kigali and RURA announced a new public transport system (PT-G2), We expect fit to improve the level of accessibility of public transport in the City of Kigali

## Recommendations

- RURA in collaboration with Royal Express should create a new bus route from Nyabugogo bus terminal to Nyanza that passes by Kacyiru bus terminal
- Gasabo District should build shelter, and provide seats, and other facilities on the bus stop such as shops, restaurants, public toilet to facilitate public transport services
- RURA should impose transport companies to respect time so that the passengers cannot spend a long time in journey or waiting for buses
- The City of Kigali should plan bus route for new main road to improve the level of accessibility to public transport.

Thank you for your attention