**REPUBLIC OF UGANDA**
**MINISTRY OF WORKS AND TRANSPORT**
**(MOWT)**

# THE STUDY ON
# GREATER KAMPALA
# ROAD NETWORK AND
# TRANSPORT IMPROVEMENT
# IN THE REPUBLIC OF UGANDA

## FINAL REPORT
## EXECUTIVE SUMMARY

NOVEMBER 2010

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

NIPPON KOEI CO., LTD.
EIGHT-JAPAN ENGINEERING CONSULTANTS INC.

COMPOSITION OF THE REPORT

- EXECUTIVE SUMMARY
- VOLUME I MAIN REPORT
- VOLUME II PRELIMINARY DESIGN DRAWINGS
- VOLUME III ANNEXES
- SUPPLEMENTAL TRAFFIC SIGNAL OPERATION AND MAINTENANCE MANUAL

CURRENCY EXCHANGE RATE

Following currency exchange rates (Interbank Average Exchange Rates of Bank of Uganda for 30th June 2010) were adopted in this report unless otherwise stipulated.

(1) Ugandan Shillings vs. US Dollar
USD 1= 2,271.94 Shillings

(2) Japanese Yen vs. US Dollar
USD 1= JPY 88.44

# Preface

In response to the request from the Government of Uganda, the Government of Japan decided to conduct “The Study on Greater Kampala Road Network and Transport Improvement in the Republic of Uganda” (the Study), and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA dispatched the Study team, headed by Mr. Hiroki SHINKAI of Nippon Koei. Co., Ltd. and organized by Nippon Koei Co., Ltd. and Eight-Japan Engineering Consultants Inc., to Uganda three times from November 2009 to August 2010.

The Study Team had a series of discussions with the officials concerned of the Ministry of Works and Transport (MoWT) and other Steering Committee members and carried out field surveys on related studies at the study area. After returning to Japan, the Study team conducted further studies and completed this final report.

I hope that this report will be contributed to the promotion of the project and to the enhancement of friendly relations between two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government of Uganda, especially the counterpart agency of the Ministry of Works and Transport for their close cooperation extended to the Study.

November, 2010

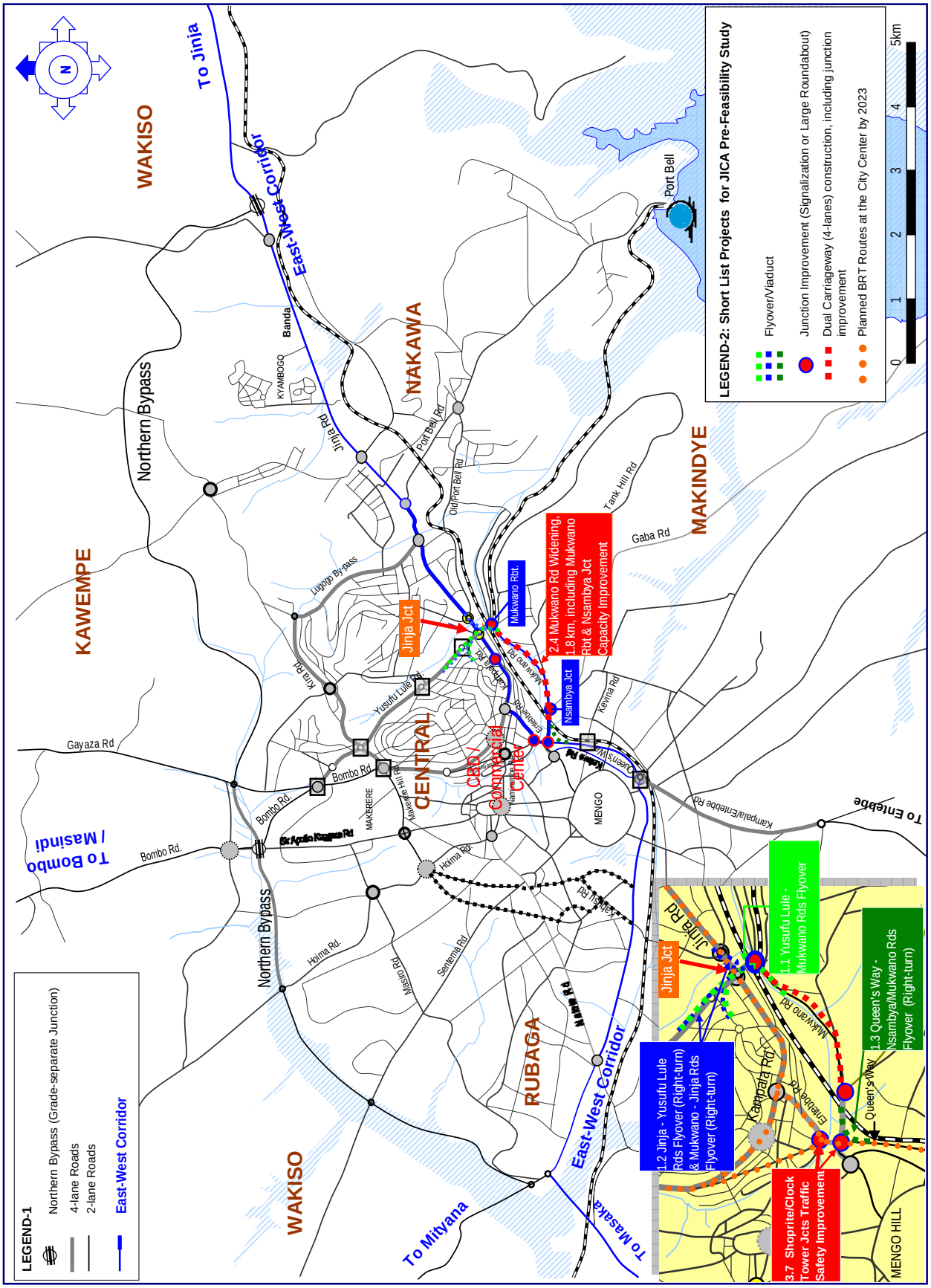
Kiyofumi Konishi
Director General
Economic Infrastructure Department
Japan International Cooperation Agency

## LOCATION MAP OF THE STUDY

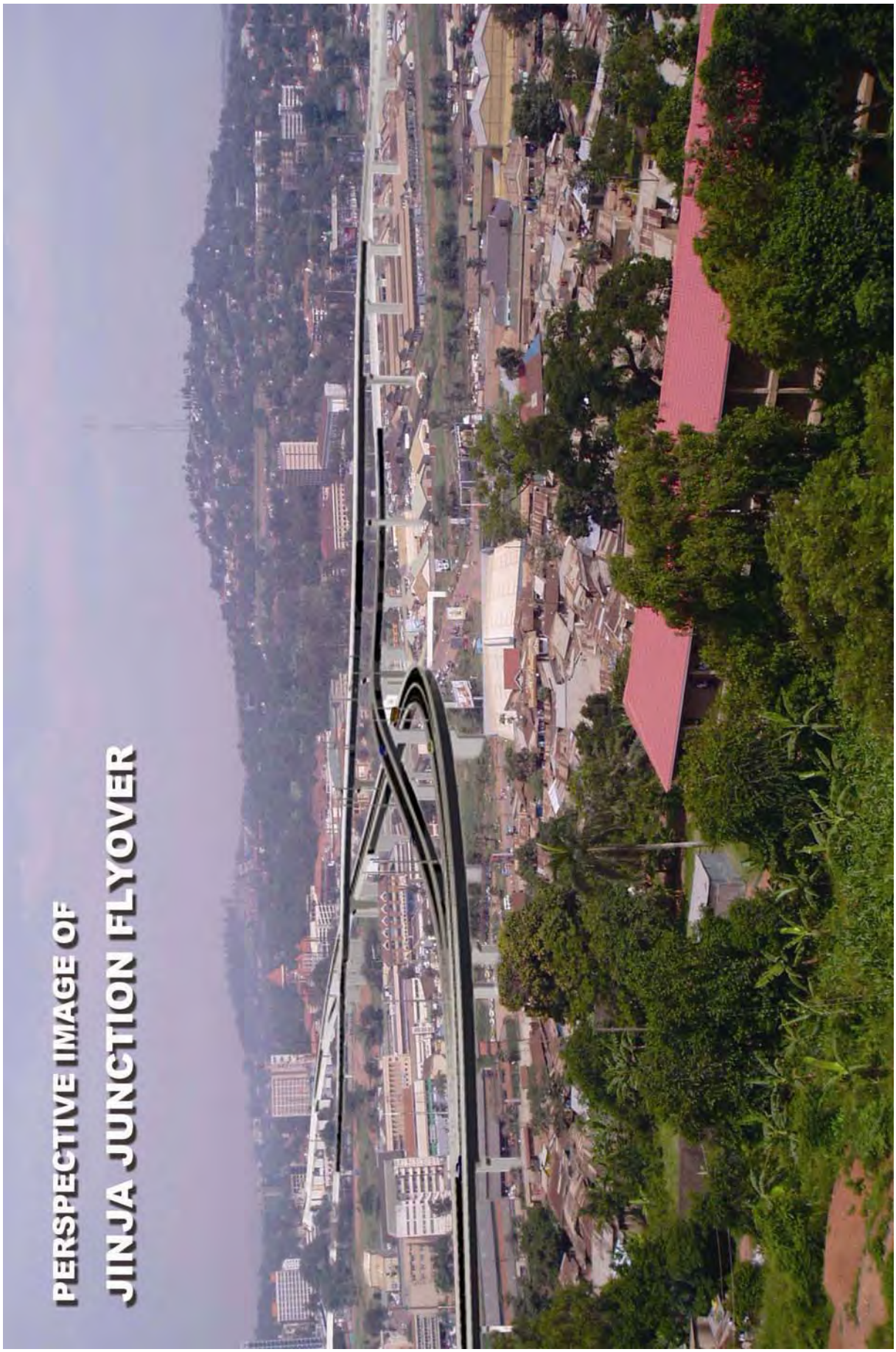

The Study on Greater Kampala Road Network and Transport Improvement

STUDY AREA (Greater Kampala Metropolitan Area) includes;

* Kampala City Council
* Entebbe Municipal Council
* Mukono Town Council and Part of Mukono District
* Wakiso Town Council and Part of Wakiso District
* Kira Town Council, and
* Nansana Town Council




*Location Map-2*




*Perspective Image*

# FINAL REPORT

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# LIST OF ABBREVIATIONS

**A**

| | |
|---|---|
| AADT | Annual Average Daily Traffic |
| AASHTO | American Association of State Highway and Transportation Office |
| AAU | Automobile Association of Uganda |
| AC | Asphalt Concrete |
| ADT | Average Daily Traffic |
| AfDB, ADB | African Development Bank |
| AU | African Union |

**B**

| | |
|---|---|
| Bill. or Bil. | Billion |
| B/C | Benefit/Cost Ratio |
| BD or B/D | Basic Design |
| BM | Backlog Maintenance |
| BRT | Bus Rapid Transit |

**C**

| | |
|---|---|
| CAA | Civil Aviation Authority |
| CBR | California Bearing Ratio |
| CBD | Central Business District |
| CBO | Community Based Organization |
| CIF | Cost, Insurance, Freight |
| COMESA | Common Market for Eastern and Southern Africa |
| CPI | Consumer Price Index |
| CPS | Central Police Station |
| CSR | Corporate Social Responsibility |

**D**

| | |
|---|---|
| DANIDA | Danish International Development Agency |
| DBST | Double Bituminous Surface Treatment |
| DECs | District Environmental Committees |
| DFID | Department for International Development, UK |
| DFR | Draft Final Report (of the Study) |
| DUCAR | District, Urban and Community Access Roads |

**E**

| | |
|---|---|
| EA | Environmental Assessment |
| EAC | East African Community |
| EDF | European Development Fund |
| EIA | Environmental Impact Assessment |
| EIRR | Economic Internal Rate of Return |
| EIS | Environmental Impact Statement |
| EMC | Entebbe Municipal Council |
| EMP | Environmental Management Plan |
| EMS | Environmental Management System |
| ERP | Economic Recovery Plan |
| EU | European Union |

**F**

| | |
|---|---|
| FC | Foreign Component or Foreign Currency |
| FY | Fiscal Year |

**G**

| | |
|---|---|
| GDP | Gross Domestic Product |
| GIS | Global Information System |
| GKMA | Greater Kampala Metropolitan Area |
| GNP | Gross National Product |
| GOJ | Government of Japan |
| GOU | Government of Uganda |
| GRDP | Gross Regional Domestic Product |
| GRSF | Global Road Safety Facility |
| GVW | Gross Vehicle Weight |

**H**

| | |
|---|---|
| Ha | Hectare |
| HDM-4 | Highway Development and Management Version 4 Program |
| HIPC | Heavily Indebted Poor Countries |
| HIV | Human Immune-Deficiency Virus |

**I**

| | |
|---|---|
| IBRD | International Bank for Reconstruction and Development |
| ICB | International Competitive Bidding |
| ICC-U | Injury Control Center - Uganda |
| ICD | Institutional Capacity Development |
| IDA | International Development Association |
| IEE | Initial Environment Examination |
| IR | Interim Report |
| IRR | Internal Rate of Return |
| IT | Information Technology |

**J**

| | |
|---|---|
| JICA | Japan International Cooperation Agency |

**K**

| | |
|---|---|
| KCC | Kampala City Council |
| KDMP | Kampala Drainage Master Plan |
| KIBP | Kampala Industrial and Business Park |
| KIIDP | Kampala Institutional and Infrastructure Development Project |
| km | kilometer |
| KUTIP | Kampala Urban Transport and Improvement Plan |

**L**

| | |
|---|---|
| LC | Local Component or Local Currency |
| LDCs | Least Development Countries |
| LVEMP | Lake Victoria Environmental Management Program |
| LOG | Local Government |

**M**

| | |
|---|---|
| MAAP | Micro Accident Analysis Package |
| MATA | Metropolitan Area Transport Authority |
| MBA | Maintenance by Administration (force account) |
| MBC | Maintenance by Contract |
| MC | Motor Cycle |
| MCA | Multi-Criteria Analysis |
| MDC | Mukono District Council |
| MDGs | Millennium Development Goals |
| Mill. or Mil. | Million |
| MFPED | Ministry of Finance, Planning and Economic Development |
| MIS | Management Information System |

| | |
|---|---|
| MLHUD | Ministry of Lands, Housing and Urban Development |
| MOE | Ministry of Education |
| MOFPED | Ministry of Finance Planning and Economic Development |
| MOH | Ministry of Health |
| MOIA | Ministry of Internal Affair |
| MOLG | Ministry of Local Government |
| MOWHC | Ministry of Works, Housing and Communications (Presently, MOWT) |
| MOWT | Ministry of Works and Transport |
| MTEF | Medium Term Expenditure Framework |
| MTRA | Multi-sector Transport Regulatory Authority |

**N**

| | |
|---|---|
| NAFEBO | National Federation of Boda Boda Operators |
| NCB | National Competitive Bidding |
| NCRP | Nakivubo Channel Rehabilitation Project |
| NEA | National Environmental Act |
| NEMA | National Environmental Management Agency |
| NGO | Non-Governmental Organization |
| NRSA | National Road Safety Authority |
| NRSC | National Road Safety Council |
| NPV | Net Present Value |
| NTMP | National Transport Master Plan |
| NTMP/GKMA | National Transport Master Plan including A Transport Master Plan for the Greater Kampala Metropolitan Area |
| NWSC | National Water and Sewerage Corporation |

**O**

| | |
|---|---|
| OD | Origin – Destination |
| ODA | Official Development Assistance |
| OJT | On-the-Job Training |
| O & M | Operation and Maintenance |

**P**

| | |
|---|---|
| PAP | Persons Affected by Project |
| PBM | Performance Based Maintenance |
| P/C | Public Consultations |
| PCC | Portland Cement Concrete |
| PCU, pcu | Passenger Car Unit |
| PEAP | Poverty Eradication Action Plan |
| PIP | Project Implementation Plan |
| PPP | Public Private Partnership |
| Pre-FS | Pre-Feasibility Study |
| PRSP | Poverty Reduction Strategy Paper |
| PS | Permanent Secretary |
| PSV | Public Service Vehicles |

**Q**

| | |
|---|---|
| QC | Quality Control |

**R**

| | |
|---|---|
| RAFU | Road Agency Formation Unit |
| RAP | Resettlement Action Plan |
| RDP | Road Development Program |
| RDPP-1,-2,-3 | Road Development Program, Phases 1, 2 and 3 |
| ROW | Right of Way |
| RSDP | Road Sector Development Program |

| | |
|---|---|
| RSIAP | Road Safety Improvement Action Plan |
| RVR | Rift Valley Railways Uganda Ltd. |
| RUC | Road User Charge |

**S**

| | |
|---|---|
| SADC | Southern African Development Community |
| SC | Steering Committee (for the Study) |
| SFR-II | Strategic Framework for Reform - II |
| SH | Stakeholders |
| SHODAU | Special Hire Operators and Drivers Association of Uganda |
| Shs | Ugandan Shillings (UGX) |
| SOE | State of Environment |

**T**

| | |
|---|---|
| TA | Technical Assistance |
| TICAD | Tokyo International Conference on African Development |
| TLB | Transport Licensing Board |
| TMP/GKMA | Transport Master Plan for Greater Kampala Metropolitan Area |
| TOD | Transit Oriented Development |
| TOR, TORs | Terms of Reference |
| TRL | Transport Research Laboratory |
| TSDP | Transport Sector Development Project |
| TWG | Technical Working Group (for the Study) |

**U**

| | |
|---|---|
| UBOA | Uganda Bus Operator's Association |
| UBOS | Uganda Bureau of Statistics |
| UDSIOA | Uganda Driving School Operators and Instructors Association |
| UGX | Ugandan Shillings (Shs) |
| UIA | Uganda Investment Authority |
| UNBS | Uganda National Bureau of Standards |
| UNP | Uganda National Police |
| UNRA | Uganda National Roads Authority |
| UPF | Uganda Police Force |
| URA | Uganda Revenue Authority |
| URC | Uganda Railways Corporation |
| URCS | Uganda Red Cross Society |
| URF | Uganda Road fund |
| UTODA | Uganda Taxi Operator and Drivers Association |
| USD, US$, $ | United States Dollar |
| UNDP | United Nations Development Program |
| UTODA | Uganda Taxi Operators & Drivers Association |

**V**

| | |
|---|---|
| VAT | Value Added Tax |
| VOC | Vehicle Operation Cost |

**W**

| | |
|---|---|
| WB | World Bank |
| WDC | Wakiso District Council |
| WHO | World Health Organization |
| WID | Wetlands Inspection Division |

# SYNOPSIS

| | |
|---|---|
| **1. Country** | The Republic of Uganda |
| **2. Name of Study** | The Study on Greater Kampala Road Network and Transport Improvement in the Republic of Uganda |
| **3. Counterpart Agency** | Ministry of Works and Transport (MoWT) |
| **4. Objectives of Study** | 1. To conduct a pre-feasibility study of prioritized projects<br>2. To formulate a public transport plan<br>3. To formulate a road safety improvement plan<br>4. To transfer relevant skills and technologies to personnel concerned with the Study |
| **5. Study Area** | The Greater Kampala Metropolitan Area (GKMA) |

**6. Scope of Study**

(1) Collection and analysis of existing data (Previous investigation, Socio-economic condition, Natural condition, Related study reports, etc.)

(2) Reviewing the final report of National Transport Master Plan including a Transport Master Plan for the Greater Kampala Metropolitan Area (NTMP/GKMA), May 2009

(3) Selection of the projects for pre-feasibility study related to the road improvement plan

(4) Undertaking pre-feasibility study for the selected projects

(5) Formulation of a public transport plan

(6) Formulation of the road safety improvement plan

**7. Major Findings and Key Issues**

(1) Area of GKMA is 970 $km^2$. Its population was 2.5 million in 2008 and is projected to reach 4.5 million in 2023.

(2) The GOU launched the National Development Plan (NDP) in April 2010, whose theme is "Growth, Employment and Socio-Economic Transformation for Prosperity". The development of GKMA and implementing the Bus Rapid Transit (BRT) system are among the core projects of NDP.

(3) Kampala City Council has a total of 1,030 km of roads of which 330 km (32%) are paved. In addition, approximately 75 km of road network is under the responsibility of either MoWT or Uganda National Road Authority (UNRA). Most of these roads are 2 lane roads.

(4) The traffic congestion in GKMA, especially in Kampala City, has further worsened and may endanger sustainable national and regional economic development. Major causes of the traffic congestion are rapid urbanization, national economic growth, high traffic increase, poor road network, urban structure concentrated in one city center, lack of traffic demand management, inappropriate public transport system, etc.

(5) According to the interview survey on the worst congested junctions conducted by the Study Team, over 90% replied that the traffic congestion at Shoprite and Clock Tower Junctions is the most serious. Approximately 48,000 pedestrians pass these junctions daily and many traffic accidents involving pedestrians have been recorded.

(6) A pre-feasibility study of the BRT had been conducted and its final report was submitted in May 2010. It planed to introduce BRT on eight routes by 2030. A feasibility study and detailed design for the BRT pilot project (14 km) will commence in early 2011.

(7) The introduction of BRT would drastically change traffic flows in the city center as the Kampala / Entebbe Junction is closed to the general traffic. In addition, its basic concept might be changed through public consultations or based on results of the feasibility study of the BRT pilot project.

(8) The current public transport in Kampala City mostly relied on minibuses (locally called as "taxi") and motorcycle taxis (locally called as "boda-boda"). The largest problems of the minibus are the unfixed schedule of operation, uncertain level of fares, and poor services. Two large minibus parks in the city center have also caused serious traffic congestion.

(9) The road traffic accidents increased rapidly from 1990 to 2007, with a rate of 7.8% per annum. In terms of motorized vehicle fatalities, Uganda's rate is 65 persons per 10,000 vehicles and ranked as one of the worst African countries.

(10) Lack of traffic demand management strategy, inappropriate walkways, shortage of parking spaces and inadequate maintenance system for traffic signals are noted in respect of traffic management.

## 8. Conclusions and Recommendations

### 8.1 Conclusions

#### (1) Road Network Improvement

1) The Study Team has reviewed NTMP/GKMA and suggested that Gaba Road and Kira/Old Kira Roads, as radial roads, and Kampala – Entebbe International Airport Expressway should be added to NTMP/GKMA.

2) The Study Team conducted a pre-feasibility study (Pre-FS) and preliminary designs for the following priority projects which is coordinated with or supplements the BRT pilot project.

- 1.1 & 1.2: Jinja Junction Flyover (Yusufu Lule – Mukwano Roads Flyover, Jinja – Yusufu Lule Roads Flyover and Mukwano – Jinja Roads Flyover), Length 4.0 km in total.
- 1.3: Clock Tower Flyover, Length 0.6 km in total.
- 2: Mukwano Road Widening to a Dual Carriageway Highway, Length 1.8 km.
- 3: Shoprite & Clock Tower Junctions Traffic Safety Improvement.

3) The Study Team has planned to implement the Pre-FS projects in two phases. Phase 1 covers the implementation of three projects, namely, Jinja Junction Flyovers, Mukwano Road Widening and Shoprite and Clock Tower Junctions Traffic Safety Improvement in the medium term (by 2018). Phase 2 covers the implementation of Clock Tower Flyover construction in the long term (by 2023).

4) The total civil works cost of Phase 1 projects was estimated at UShs 220.6 billion or US$ 97.1 million at the year 2010 price (base cost). The cost of Phase 1 projects, including consultancy services, price and physical contingencies, land acquisition and compensation and administration, is estimated at UShs 353.5 billion or US$ 155.6 million.

5) The Initial Environmental Examination (IEE) was conducted for screening and initial environmental evaluation for Pre-FS projects. The EIStudy/EIA shall be required for the Pre-FS projects subject to the approval of the National Environmental Management Authority (NEMA) of GOU in the FS stage.

6) All Pre-FS projects are economically (EIRR>20%) and technically feasible. The projects will also contribute to traffic accidents reduction, promotion of urban/regional/national economic development, strengthening the international corridor, poverty reduction, and global warming ($CO_2$) mitigation.

**(2) Road Traffic Safety**

1) The Study Team has established two targets in its Traffic Safety Strategic Plan. One is to reduce the number of fatalities to half by the year 2015 and the other is to strengthen the capacity and function of the organizations involved in road safety and rules /regulations.
2) To achieve the two targets, basic planning policies and implementation strategies should be discussed including basic elements, database preparation, appropriate environmental mechanisms and human resources development.
3) The Study Team has recommended the Traffic Safety Action Plan composed of action plans and capacity enhancement/development of traffic safety institutions, for 2011 – 2015.

**(3) Public Transport Improvement**

1) As the total number of minibuses accounted for 30% of all type of vehicles, it is inevitable to shift from minibus to larger bus for the alleviation of traffic congestion and provide stable and comfortable public transport services.
2) Since the number of passengers of a minibus is small and the transport efficiency is low, the minibus should be replaced gradually by large bus, medium bus and BRT.
3) Five routes of large bus are planned for the area where the BRT will not cover and passenger demand is large. Operation of medium bus will be limited to the area where the BRT and large bus can not cover. For the transfer of passengers from medium bus to BRT and large bus, nine (9) terminals should be developed along the BRT and large bus routes.
4) Four (4) Inter-urban Bus Terminals (IUBT) are proposed to be constructd outside the Northern Bypass and along radial trunk roads. The required function of the proposed IUBT is not only to serve as passenger transit but also as transportation service to shopping areas and other services.

**(4) Traffic Management**

The Study Team has advised GOU to take following actions:

1) Implement the measures in accordance with "Strategy for the Improvement of Traffic Flow in Kampala in December 2009" recommended by the Task Force, and introduce traffic demand management approach and strategies with cooperation of international development partners.
2) Develop and upgrade pedestrian friendly walkways (footpath) in the CBD and other city centers.
3) Establish building standards ensuring parking spaces and introduce car park sharing scheme and parking guide information system to maximize utilization of the existing parking spaces.
4) Establish the overall signalization plan and programs, including systematic installation and maintenance plans for new traffic signals.

## 8.2 Recommendations

**(1) Road Network Improvement**

1) Both governments should hold meetings after completion of the Study and discuss on how and when GOJ could assist in the implementation of the Pre-FS projects, including a feasibility study, in order to move forward.
2) The Study Team recommends implementation of the Pre-FS projects in two phases, as follows:
   - Phase 1: Jinja Junction Flyovers, Mukwano Road Widening and Shoprite and Clock Tower Junctions Traffic Safety Improvement in the medium-term by 2018, as one package.
   - Phase 2: Clock Tower Flyover Project in the long-term by 2023

The Study Team also recommends that Mukwano Road Widening, and Shoprite and Clock Tower Junctions traffic safety improvement could be implemented prior to the Jinja Junction Flyovers if availability of budget is limited.

3) The feasibility study for the BRT B1, Kampala – Kajansi section, should include the Kibuye Junction Flyover plan and Queen's Way Widening.

4) The Study Team recommends conducting follow-up survey to monitor the progress of the FS and DD of BRT, and to discuss technical issues which might affect the implementation of Pre-FS projects.

**(2) Road Traffic Safety Plan**

The following three development programs should be implemented at the earliest stage:

- Traffic Safety Human Resource Development Project
- Comprehensive Vehicle Management System Development Project
- Project for the Study on Development of Traffic Control Device Integration and Traffic Surveillance System

**(3) Public Transport Improvement**

1) In line with the introduction of BRT and change to large/medium bus services, reinforcement of the government organization and human resources development is required.

2) As Uganda does not have much experience in the development of public bus terminals, assistance of development partners are recommended on technical and management aspects.

3) In order to grasp the whole movement of people, which is the basic source of traffic plan, person trip survey should be conducted at an earliest stage.

4) Introduction of electric bus car should be considered in the BRT project taking carbon dioxide reduction into consideration.

**(4) Traffic Management Improvement**

The Study Team recommends the following three development programs:

- Introduce development and enhancement programs for both administrative and engineering capacities for effective traffic management, including traffic demand management.
- Systematic and earliest installation of traffic signals on major junctions based on traffic volume, safety and site condition.
- Change from current stand-alone signals to an area and line controlled signalization system corresponding to increase of traffic signals in the future.

# CHAPTER 1 INTRODUCTION

## 1.1 BACKGROUND

The population of Uganda is 30.7 million and its real Gross Domestic Product (GDP) is UShs 19,426 billion at 2009 market prices. Uganda is a landlocked country and its transport system mostly relies on roads since railways have not functioned well in the past. The road transport system accounts for 96.5% of freight cargo and 95% of the passenger traffic.

The total area of Greater Kampala Metropolitan Area (GKMA) is 970 $km^2$ and its total population was estimated at 2.5 million in 2008. It is projected to reach 4.5 million in 2023 (9.1% share in the whole country). As a combined result of the rapid urban population increase, the national economic growth and rapid traffic increase, traffic congestion at major junctions and trunk roads in the GKMA became really serious. This is one of the key issues to be addressed for sustainability of national and regional economic development.

Under these circumstances, the Government of Uganda (GOU) requested the Government of Japan (GOJ) to extend technical assistance to conduct "The Study on Greater Kampala Road Network and Transport Improvement" (the Study). Accordingly, the Japan International Cooperation Agency (JICA) has decided to jointly undertake the Study with the concerned authorities of the GOU in accordance with the Scope of Works signed by the Ministry of Works and Transport (MoWT) and JICA in March 2007.

MoWT finalized the National Transport Master Plan including a Transport Master Plan for the Greater Kampala Metropolitan Area (NTMP/GKMA) in May 2009. After the implementation of the third revision of the Poverty Eradication Action Plan (PEAP) covering the 2004/05-2007/08 period, GOU determined that the country should move from PEAP to National Development Plan (NDP), whose theme is "Growth, Employment and Socio-Economic Transformation for Prosperity". The NDP 2010/11-2014/15 which is the first of six five-year national development plans for 30 years was launched in April 2010. The NDP has incorporated the essence of NTMP/GKMA in it as one of the core projects. Hence, the Study shall be conducted within the framework of NTMP/GKMA to support the NDP and other development goals.

## 1.2 OBJECTIVES OF THE STUDY

The objectives of the Study are as follows:

1) To conduct a pre-feasibility study (Pre-FS) of prioritized projects,
2) To formulate a public transport plan,
3) To formulate a road safety improvement plan, and
4) To transfer relevant skills and technologies to personnel concerned with the Study.

## 1.3 SCOPE OF THE STUDY AND THE STUDY AREA

In accordance with the scope of work for the Study agreed by the GOU, MoWT and GOJ in March 1, 2007, the Study is conducted under the principle of the framework of NTMP/GKMA.

Through the site survey conducted, the Study Team realized that the road traffic was not managed appropriately especially in the central area of Kampala city and the traffic management was one of the key issues to solve the traffic problems such as congestion, accidents and so on. Accordingly, the Study Team proposed to the GOU to include the study item of the traffic management into the scope of works in addition to the road network improvement in terms of

road facility enhancement, the public transport plan, and the road safety improvement plan. After discussions with GOU, it was concluded that the Study should include the study item of the traffic management and the traffic management plan should be described in an independent chapter (Chapter 10) apart from preliminary design for the Pre-FS projects or traffic safety plan. The result of technical assistance for operation and maintenance of traffic signals in Kampala City was also described in Chapter 10.

### (1) Scope of the Study

The scope of work for the Study is as follows:

1) Collection and analysis of existing data (previous investigation, socio-economic condition, natural condition, related study reports, etc.),
2) Review of the final report of NTMP/GKMA,
3) Selection of projects for Pre-FS related to the road improvement plan,
4) Undertaking the Pre-FS for the selected projects,
5) Formulation of a public transport plan,
6) Formulation of the road safety improvement plan,
7) Formulation of the traffic management plan, and
8) Technology Transfer.

### (2) Study Area

The study area shall cover the GKMA which is a geographical zone encompassed by a circle of approximately 20 km radius from the Kampala City Center, and extended to nearly 30 km in the direction of Entebbe. GKMA includes territories administrated by the following local government authorities:

- Kampala City Council,
- Entebbe Municipal Council,
- Mukono Town Council and Part of Mukono District,
- Wakiso Town Council and Part of Wakiso District,
- Kira Town Council, and
- Nansana Town Council.

## 1.4 OVERALL SCHEDULE AND PROGRESS OF THE STUDY

The entire work period of the Study is approximately 11 months beginning with the preparatory work at the end of October 2009. The submission of the final report will be at the end of September 2010, as shown below.

The Study constitutes the following three components:

(1) To conduct a Pre-FS for prioritized projects,
(2) To formulate a public transport plan in the medium and long terms,
(3) To formulate a road safety improvement plan in the medium and long terms.

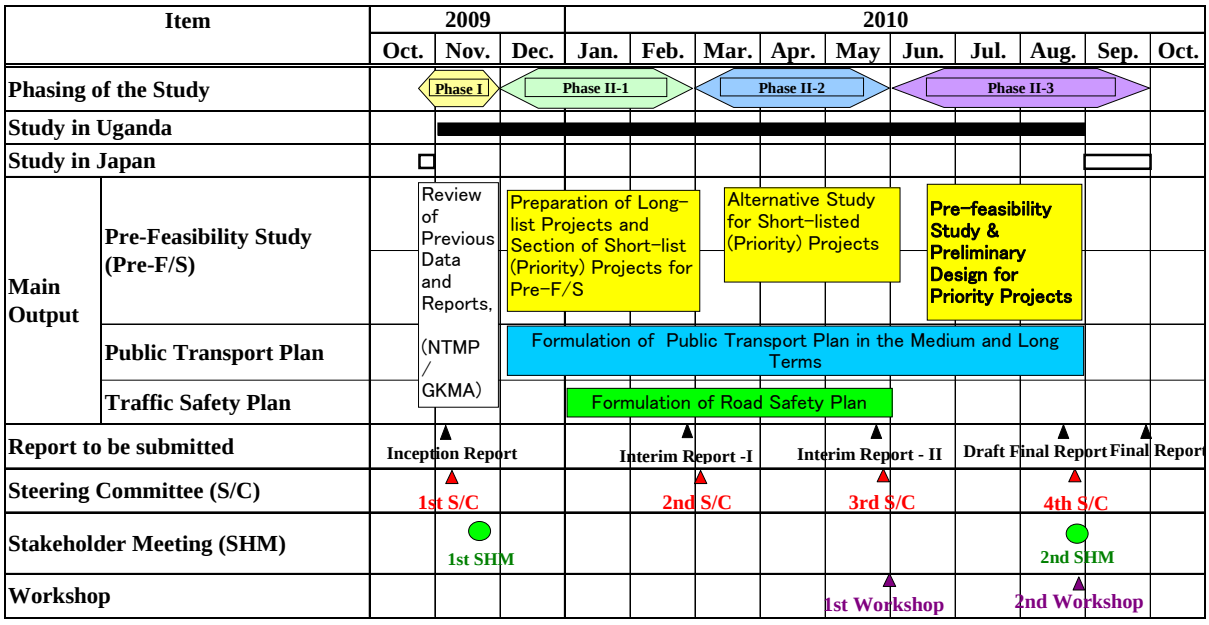
**[Prioritized Projects for Pre-FS]**

A pre-feasibility study of the Bus Rapid Transit (BRT) has been conducted in parallel with the JICA Study since November 2009. Its final report was submitted in May 2010 and approved by MoWT accordingly. Development of GKMA and implementing the rapid transport system is one of the national core projects in the National Development Plan (NDP). The World Bank will financially and technically cooperate for the study and implementation of the BRT project. Hence, introduction of BRT is a given condition for the JICA Study (Pre-FS) and it is required to plan the JICA Pre-FS projects with well coordination with the BRT plan.

However, it was learned that the introduction of BRT might drastically change the current traffic flows in the Kampala City Center since the Kampala/Entebbe Roads Junction is closed to general traffic according to the draft final report of the BRT pre-feasibility study. The feasibility study (FS) and detailed design (DD) of the BRT pilot project is to be commenced in early 2011 for about a period of 12 months. The basic concepts of BRT Pre-FS may change during the BRT FS and DD stage based on technical and financial reviews or through public consultations.

The GOJ has decided to conduct the Pre-FS with preliminary design for three final short-listed projects: Flyover Projects, Mukwano Road Widening and Shoprite / Clock Tower Traffic Safety Improvement which would rather support introduction of BRT by addressing to new traffic flow bottlenecks by BRT, in accordance with the original scope of work signed by both governments on March 1, 2007.

The work schedule of Pre-FS is presented in Figure 1.4.1.




Source: JICA Study Team

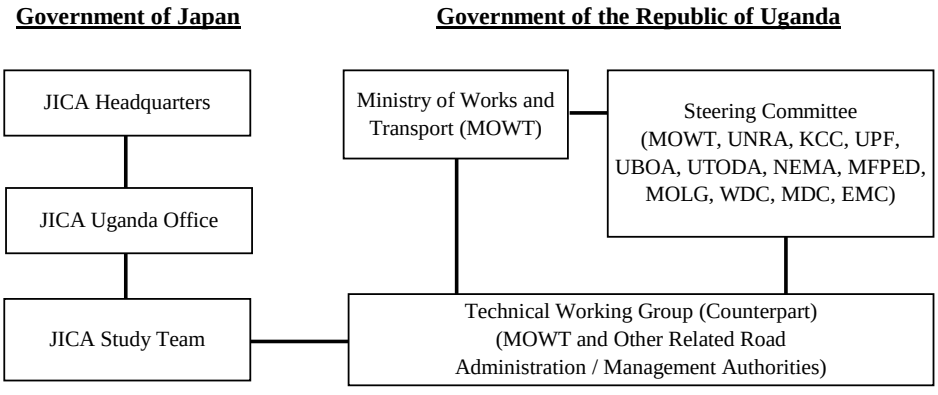
**Figure 1.4.1 Overall Schedule of the Study**

## 1.5 ORGANIZATION OF THE STUDY TEAM AND THE STEERING COMMITTEE

### (1) Organization of the Study

The Study is carried out through close coordination between the Study Team and MoWT counterparts. The Steering Committee, chaired by the representative of MoWT, and the technical working group consisting of designated representatives from MoWT and other related road

administration and management authorities, are organized for the Study. The organizational set-up is shown in Figure 1.5.1.




Source: JICA Study Team

**Figure 1.5.1 Organization of the Study**

### (2) The Steering Committee and Counterpart Agencies

The Steering Committee consists of the following ministries and agencies under the chairmanship of MoWT:

1) Ministry of Works and Transport (MoWT)
2) Uganda National Roads Authority (UNRA)
3) Kampala City Council (KCC)
4) Uganda Police Force (UPF)
5) Wakiso District Council (WDC)
6) Mukono District Council (MDC)
7) Entebbe Municipal Council (EMC)
8) Uganda Taxi Operation and Drivers Association (UTODA)
9) Uganda Bus Operation Association (UBOA)
10) National Environment Management Authority (NEMA)
11) Ministry of Finance, Planning and Economic Development (MFPED)
12) Ministry of Local Government (MoLG)

MoWT is the primary counterpart agency for the Study and has the authority for signing the minutes of meeting which will be prepared during the Study between GOU and the Study Team. UNRA, KCC and UPF are also appointed as the key stakeholders together with MoWT, since these are agencies related to main objectives of the Study.

## 1.6 TECHNOLOGY TRANSFER

The Study Team conducted the following technology transfer during the study period.

(1) Exchange of the opinions once a month with the members of key stakeholder meeting (MoWT, KCC, UNRA and UPF)

(2) In addition, the Study Team held the workshops and stakeholder meetings (twice each) and explained the findings of the Study to the participants in the transportation problems of GKMA. The technology transfer was conducted focusing on the following subjects;

1) Traffic survey and analysis including future traffic demand forecast,
2) Evaluation method on prioritized projects applying Multi Criteria Analysis (MCA),
3) Design method of intersections including flyover,
4) Public transport demand forecast including bus operation planning,
5) Study method of Environmental Impact Assessment (EIA), and
6) Planning method of road traffic safety and traffic management and control measures.

(3) On-the-Job-Training to the persons in charge of traffic control and management of Kampala City Council

(4) JICA Japan training program on the traffic management for the senior officials of UPF (23rd to 31st October, 2010)

## 1.7 COMPOSITION OF THE REPORT

The Final Report is composed of the following:

Executive Summary
Volume I: Main Report
Volume II: Preliminary Design Drawings
Volume III: Annexes
Supplemental: Traffic Signal Operation and Maintenance Manual

The Report consists of the following chapters:

Chapter 1 : Introduction
Chapter 2: Development Plan and Present Condition of the Study Area
Chapter 3: Current Situation of the Transport Sector
Chapter 4: Review of Transport Master Plans
Chapter 5: Traffic Survey and Traffic Demand Forecast
Chapter 6: Long List and Short List of Projects for Pre-Feasibility Study
Chapter 7: Preliminary Design for the Pre-Feasibility Study Projects
Chapter 8: Road Traffic Safety Plan
Chapter 9: Public Transport Plan
Chapter 10: Traffic Management Plan
Chapter 11: Environmental and Social Considerations
Chapter 12: Cost Estimate, Implementation Plan and Project Evaluation
Chapter 13: Conclusions and Recommendations

# CHAPTER 2 DEVELOPMENT PLAN AND PRESENT CONDITION OF THE STUDY AREA

## 2.1 DEVELOPMENT PLANS

### (1) Poverty Eradication Action Plan (PEAP) and the National Development Plan (NDP)

The Government of Uganda is determined to move from the Poverty Eradication Action Plan (PEAP) to the National Development Plan (NDP). The NDP, whose theme is "Growth, Employment and Socio-Economic Transformation for Prosperity", aims to transform the country from peasantry into a modern and prosperous society over the next 30 years. The development approach of the NDP intertwines economic growth and poverty eradication. The private sector remains the engine of growth and development.

The GDP growth rate over the NDP period is projected at an average of 7.2% per annum. At this GDP growth, the nominal per capita income is envisaged to increase from US$506 in 2008/09 to US$850 by 2014/15. The proportion of people living below the poverty line is expected to decline from 31% in 2005/06 to 24.5% in 2014/15, well above the MDG target of 28%.

The development of the GKMA and implementing the rapid transport system (BRT) is one of the core projects of NDP. The total investment cost planned for the NDP period is UShs 54,000 billion (US$27,000 million). The total investment allocated for the above core projects is UShs 17,153 billion (US$8,580 million) and UShs 429 billion (US$215 million) for the Development of Greater Kampala Metropolitan Area and implementing the rapid transport system.

### (2) Millennium Development Goals (MDGs)

The MDGs were defined by the United Nations General Assembly in 2000 and it commits the international community to an expanded vision of development. Uganda supports and subscribes to the United Nation's MDGs. Many of the goals related to impacts in the areas of health, education, poverty eradication and public services provision as described in the MDGs became the target and performance indicators for the NDP and KCC SFR II.

### (3) Vision 2025 and Vision 2035

Vision 2025 in 1999 was a 'National Long-term Perspective Study' designed to set a long-term perspective for Uganda's economic and social development up to the year 2025. Vision 2025 was followed in 2005 by the Working Draft for the successor document Vision 2035, with an updated 30-year perspective. The goal of Vision 2035 is to eliminate poverty by 2035 and is heading for a prosperous future. It emphasized the key role of the transport sector.

### (4) KCC Strategic Framework for Reform II and The Kampala Vision 2015

In 1997, KCC developed a set of reforms which were designed to bring about a change in KCC's approach to service delivery in the city. These reforms were first documented in the Strategic Framework for Reform (SFR) 1997. In 2004, KCC carried out a review of the progress and achievements of its SFR, which developed as the SFR II. The SFR II aims at consolidating KCC's achievements, establishing a vision and the objectives for Kampala for the next ten years (2005-2015). It sets strategies, actions, performance indicators and an implementation plan to ensure that this vision and objectives for the future are achieved.

KCC is committed to implementing city-wide infrastructure and service programs, which include: (a) Drainage System, (b) Traffic and Road Maintenance Management, (c) Solid Waste Management, and (d) Urban Market Infrastructure. The World Bank has committed to finance

these under the Kampala Institutional and Infrastructure Development Project (KIIDP).

### (5) East African Community (EAC)

EAC is the regional intergovernmental organization of the Republics of Kenya, Uganda, Rwanda and Burundi, and the United Republic of Tanzania with its headquarters in Arusha. The EAC aims at widening and deepening co-operation among the partner states in, among others, political, economic and social fields for their mutual benefits.

EAC, as a large regional economic bloc with a combined population of more than 135 million people, land area of 1.82 million $km^2$ and a combined Gross Domestic Product of US$71 billion (2008), bears great strategic and geopolitical significance. The prospect of a renewed and reinvigorated economy is outlined in Table 2.1.1.

**Table 2.1.1 Outline of the Member Countries of EAC**

| Country | Area ($1,000km^2$) | Population (Million) | Population Density (Person/$km^2$) | GDP (US$ Billion) | Per-Capita GDP (US$) |
|---|---|---|---|---|---|
| Uganda | 236 (water 15.4%) | 32.7 | 112 | 14.5 | 443 |
| Tanzania | 945 (water 6.2%) | 43.7 | 39 | 20.7 | 474 |
| Kenya | 583 (water 2.3%) | 39.8 | 55 | 30.2 | 759 |
| Rwanda | 26 (water 5.3%) | 10.0 | 302 | 4.4 | 440 |
| Burundi | 28 | 8.3 | 224 | 1.0 | 120 |
| Total/Average | 1,818 | 134.5 | 74 | 70.8 | 526 |

Note: Data of 2008
Source: IMF (2009)

The EAC Road's Development Partners Consultative Meeting was held in April, 2003 in Arusha, Tanzania. The meeting deliberated on the EAC Road Network Project and it agreed upon strategies to hasten the pace of its implementation. The EAC has identified five main transport corridors within the Community (a total length of about 12,000 km), which constitute a strategic priority and require rehabilitation and upgrading to complete road network in the Community as in Figure 2.1.1.


Source: The EAC Road Network Project, 2009

**Figure 2.1.1 Five Transport Corridors in EAC and Location Map of Trans-African Highway**

## 2.2 NATURAL CONDITION

### (1) Meteorology

Kampala has an average maximum temperature of 27.3℃ and average minimum of 18.1℃. The average annual rainfall from 1974 to 2009 is 1,228 mm/year.

**Table 2.2.1 Average Rainfall (1974-2009) and Temperature (2006-2008)**

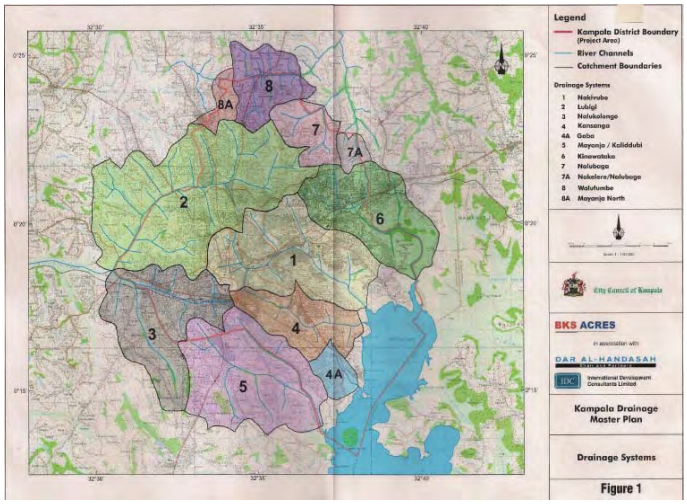
| Month | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|
| Rainfall(mm) | 71.4 | 51.4 | 120.1 | 153.9 | 127.2 | 62.7 |
| Temperature Mean Max. | 28.6 | 28.0 | 28.1 | 27.6 | 27.1 | 26.3 |
| Temperature Mean Min. | 18.9 | 19.1 | 18.5 | 18.1 | 18.5 | 18.1 |
| Month | Jul | Aug | Sep | Oct | Nov | Dec |
| Rainfall(mm) | 57.0 | 95.1 | 116.3 | 132.7 | 142.8 | 94.0 |
| Temperature Mean Max. | 26.1 | 26.8 | 27.4 | 27.4 | 27.1 | 27.1 |
| Temperature Mean Min. | 17.9 | 17.5 | 17.3 | 18.0 | 18.0 | 18.1 |

Source: Department of Meteorology and The Feasibility Study of Improvement of Trunk Road at Kampala Urban Interface Sections

### (2) Topography and Hydrology

Uganda is located at the eastern part of the African continent and its area is 235,000 km$^2$. Lake Victoria, located at the southern part of Uganda, is the biggest lake in Africa. Kampala City is located on the southern part of Uganda with elevation of approximately 1,200 m. The center of the city is hilly (there are over 20 hills in Kampala City) and when rain falls, water gathers at the bottom of the valley and forms swamps.

There are eight main drainage systems in Kampala. Each catchment area of the drainage system is shown in Figure 2.2.1. Each drainage system has one primary channel and several secondary channels. The water of all these channels finally flows to Lake Victoria.




| Drainage System | | Catchment Area (km$^2$) |
|---|---|---|
| No. | Name | |
| 1 | Nakivubo | 37.9 |
| 2 | Lubigi | 65.8 |
| 3 | Nalukolongo | 32.8 |
| 4 | Kansanga | 17.1 |
| 4A | Gaba | 2.1 |
| 5 | Mayanja/Kaliddubi | 41.1 |
| 6 | Kinawataka | 27.5 |
| 7 | Nalubaga | 11.0 |
| 7A | Nakelere/Nalubaga | 2.5 |
| 8 | Walufumbe | 14.1 |
| 8A | Mayanja North | 2.3 |

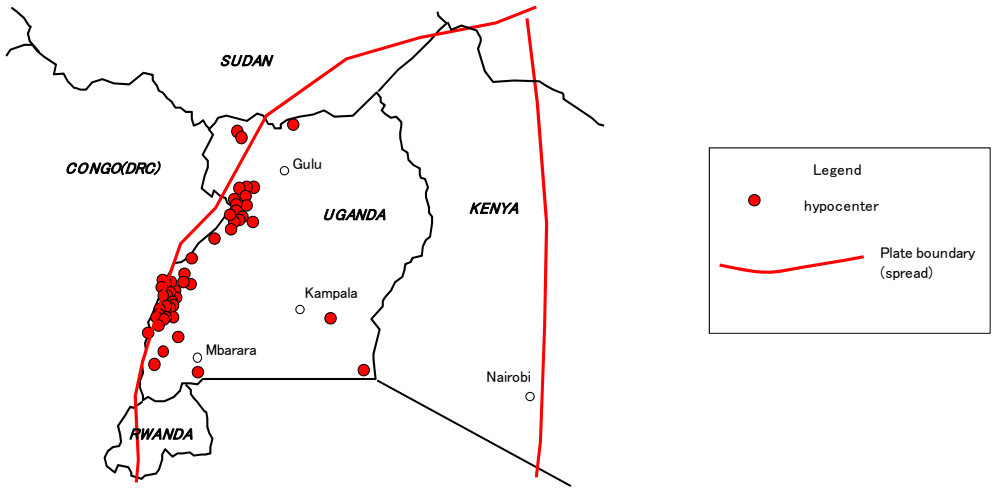
Source: Nakivubo Channel Rehabilitation Project (NCRP)

**Figure 2.2.1 Eight Main Drainage Systems in Kampala City**

### (3) Geology and Earthquakes

Most parts of Uganda consist of basement complex of the Precambrian age. Kampala City is located at the edge of the Congo craton, however this area is also affected by an organic belt in the Precambrian age named Kibaran orogen and by the processes of formation of the Rift Valley. These metamorphisms create the fault and foliation structures in the rock.

Uganda is located between two spreading plate boundaries. Some of the earthquake occurrences are related to the plate boundaries. Most of the locations of earthquakes in Uganda concentrate in the surrounding area of the tectonics plate boundary. In general, the magnitude of earthquake around the convergent plate boundary is stronger than that of the spreading plate boundaries. The hypocenter of the earthquakes which occurred in Uganda between 1966 and 2009 is shown in Figure 2.2.3. These are highly concentrated along the western plate boundary. There was no hypocenter of earthquakes in Kampala City during the above mentioned period.




Source: JICA Study Team based on USGS data

**Figure 2.2.2 Distribution of Earthquakes in Uganda (1966-2009)**

## 2.3 SOCIO-ECONOMIC CONDITIONS

The estimated population of Uganda in the mid-year of 2009 is 30.7 million. The average annual growth rate between two census years (1991 and 2002) was at 3.3% per annum, and then continued and maintained a higher growth rate of 3.5% to 2009. Urbanization in the whole country has proceeded rapidly with a 5.2% growth rate of urban population from 1992 to 2002, and 6.1% from 2002 to 2009.

The census in 2002 reported that the total population of GKMA was 1.96 million with an 8.1% share in the population of the whole country. In 2008, population of GKMA was estimated at 2.5 million and is projected to reach 4.5 million in 2023.

In the fiscal year 2008/09, the real GDP of Uganda at market prices increased by 7.1% compared to 8.7% growth in the previous fiscal year 2007/08. This high growth was realized mainly due to the good performance in the service sector. The average annual growth rate of GDP for the last seven years (from FY 2001/02 to FY 2008/09) also recorded a relatively high rate of 7.8% per annum.

Although the agriculture sector is still an important sector in the economy of Uganda, more than 55% of GDP is borne by the service sector and 27% by the industry sector. On the other hand, the

agriculture sector has been gradually reducing its share in the GDP from 24.7% in 2001/02 to 16.9% in 2008/09.

Over the period 1997 to 2008, a total of US$500 million private capital had been invested in the exploration and production of oil. The GOU has also invested in infrastructure support including upgrading of roads connecting to exploration sites. These efforts had resulted in discovering commercially viable oil deposits in 2006. The reserves are currently estimated at 2 billion barrels of oil equivalent (BOE) as of June 2009, with most of it concentrated in the region of Albertine Graben (near Lake Albert) in an area of about 23,000 $km^2$.

## 2.4 STRUCTURE PLAN AND LAND USE

### (1) Structure Plan

The 1994 Kampala Urban Structure Plan set out the existing and future land uses and development nodes for the area of Kampala City. Although formally adopted, the programs and policies it contains have been implemented only in very limited extent. Since this structure plan still stands in Kampala City after fifteen years from its enactment, the document is in great need of reappraisal and renewal to resolve the current issues on land use. From June 2010, renewal and reinforcement of the land use plan, including the strengthening and improvement of institutions, have commenced through the assistance of World Bank under KIIDP.

### (2) Land Use

In the GKMA, there has been considerable urban sprawl, with many areas outside Kampala City experiencing high population growth rate and increases in density. This has been partly due to the land cost and availabi1ity but also due to lack of comprehensive land use planning and enforcement for GKMA.

The key issues of land use are as follows:

- Concentrated land use at only one city center,
- Development along the radial road corridors,
- Advancement of sprawls into adjacent districts,
- Intermingled land use of low and high density inhabited areas,
- Existence of factories and transport facilities near the city center, and
- Spreading of poverty-stricken areas.

### (3) Business and Industrial Park Development in Kampala

The Uganda Investment Authority (UIA) is the leading government agency for investment promotion and facilitation for establishing business parks projects in Uganda. UIA is currently directly facilitating the following three industrial parks in GKMA:

- Luzira Industrial Park,
- Bweyogerer Industrial Park, and
- Kampala Industrial and Business Park (KIBP) at Namanve.

KIBP is located at the border of Wakiso and Mukono districts at approximately 14 km east of Kampala City Center along Jinja Road. The area of the park is 894 ha. The park is in the process of being allocated to investors. The WB assisted the study for KIBP since 2003.

# CHAPTER 3 CURRENT SITUATION OF THE TRANSPORT SECTOR

## 3.1 OUTLINE OF THE TRANSPORT SECTOR

### (1) Outline of National Transport System

The national transport system of Uganda comprises road, rail, air and inland water transport modes. Over 90% of cargo freight and passengers in Uganda move by road. Road accounts for 96.5% of the freight cargo, whereas rail accounts for only 3.5%. As far as passenger traffic is concerned, road accounts for an average of 95%.

The road network in Uganda is classified into national road, district road, urban road and community access road. MoWT is responsible for national roads, while district Roads and urban roads are the responsibility of MoLG (District Local Government and Urban Council). Currently, Uganda's road network has a total length of 78,100 km. Of the total road network, 20,800 km is categorized as national road in 2010, 17,500 km as district road, 4,800 km as urban road and the rest as community access road (35,000 km). Compared with 1996, the national road length has almost doubled by re-classification of district roads to national roads.

Although formerly over 1,260 km of railways was in operation in Uganda, only 320 km was in operation in 2009, covering the Malaba - Kampala line (250 km), Tororo - Mbale (60 km) line and Port Bell - Kampala (6 km) line. In 2006, long-term concession was leased to the Rift Valley Railways (RVR) to operate the railways for 25 years, i.e., 2006-2032.

### (2) Budget Allocation and Expenditures for the Transport Sector

The transport sector (Ministry of Works and Transport) was allocated the budget amounting to UShs 1,084 billion in FY 2008/09, UShs 1,134 billion in 2009/10 and will be allocated UShs 1,409 billion in FY 2010/11. These amounts represent 18.5%, 16.4% and 18.4% of the total GOU expenditures respectively, the highest percentage share among all the sectors. The road sub-sector will be allocated their budget that is 80% to 90% of the total budget of the transport sector. The budget allocations for the road sub-sector are summarized in the table below.

**Table 3.1.1 Summary of Medium Term Expenditure Framework**

| VOTE | | Total Budget incl. Donor Project (Shs. Billion) | | | | | |
|---|---|---|---|---|---|---|---|
| Road Sub-Sector | | FY 2008/09 | FY 2009/10 | FY 2010/11 | FY 2011/12 | FY 2012/13 | FY 2013/14 |
| 113 | Uganda National Road Authority (UNRA) | 412.97 | 435.96 | 642.49 | 528.25 | 571.93 | 634.81 |
| 113 | Trunk Road Maintenance | 135.39 | 135.39 | 135.39 | 162.47 | 194.97 | 233.96 |
| 501-850 | District Road Maintenance | 55.63 | 88.16 | 88.16 | 106.63 | 130.02 | 160.05 |
| 501-850 | Urban Road Maintenance | 11.55 | 27.00 | 27.00 | 32.48 | 39.15 | 47.33 |
| 113 | Transport Corridor Project | 320.26 | 320.26 | 415.24 | 0.00 | 0.00 | 0.00 |
| | **Total of Road Sub-Sector** | **935.80** | **1,006.77** | **1,308.28** | **829.83** | **936.07** | **1,076.15** |

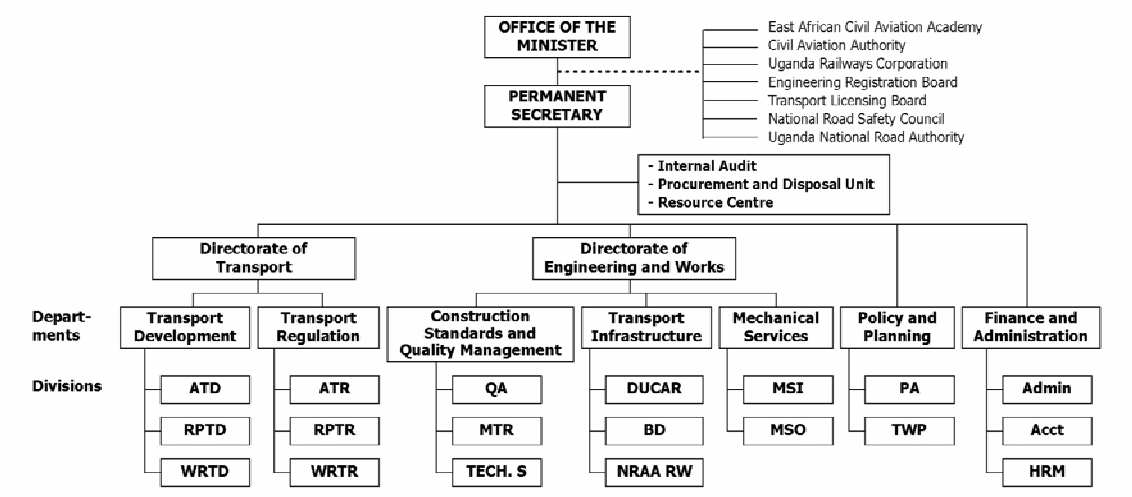
Source: MoWT

Regarding the road sub-sector, the total budget allocation will be increased with 2.8% of annual growth rate from FY 2008 to FY 2013 (15% increase compared to FY 2008) of which the allocation to UNRA will be increased at 9.0% of average annual rate. The Transport Corridor Project is scheduled to be completed in FY 2010. For the maintenance budget, Trunk Roads are planned to be allocated 1.73 times of budget (233.96/135.39) by FY 2013 compared to FY 2008, District roads 2.88 times (160.05/55.63) and Urban Roads 4.1 times of budget (47.33/11.55).

### (3) Organizations for Transport Sector Administration

1) Ministry of Works and Transport (MoWT)

Present organization and mandate of MoWT was established in late 2006 (Figure 3.1.1), when the government ministries and agency were reorganized, and the housing and communication sections were separated from the former organization, Ministry of Works, Housing and Communication (MoWHC).




Key

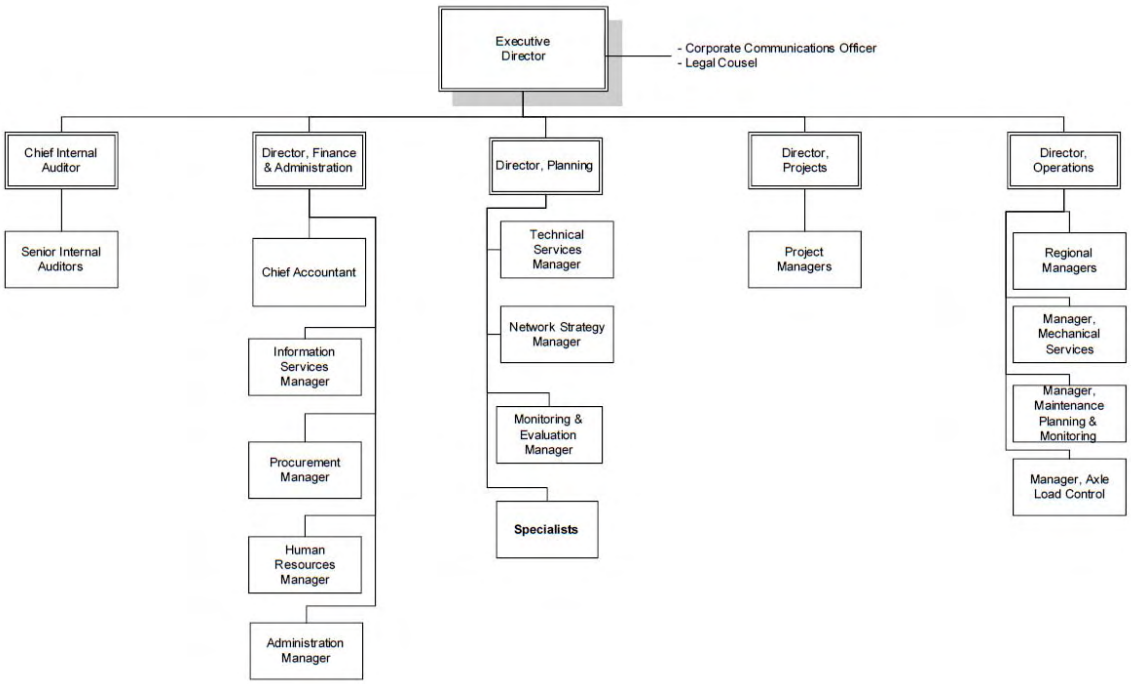
| Transport Development | | Transport Regulations | | Transport Infrastructure | | Policy and Planning | |
|---|---|---|---|---|---|---|---|
| ATD | Air Transport | ATR | Air Transport Regulation | DUCAR | District, Urban & Community Roads | PA | Policy Analysis |
| RPTD | Roads & Pipeline Transport Development | RPTR | Roads & Pipeline Transport Regulation | BD | Bridge & Drainage | TWP | Transport and Works Planning |
| WRTD | Water & Rail Transport Development | WRTD | Water & Rail Transport Regulation | NRAA | National Roads, Airports & Aerodromes | **Finance and Administration** | |
| | | **Construction Standards and Quality Management** | | RW | Rail and Water | Admin | Administration |
| | | QA | Quality Assurance | **Mechanical Services** | | Acct | Accounts |
| | | MTR | Materials Test & Research | MSI | Mechanical Services Inspections | HRM | Human resource Management |
| | | TECH.S | Technical Services | MSO | Mechanical Services Operations | | |

Source: MoWT

**Figure 3.1.1 Organization Chart of MoWT**

2) Uganda National Road Authority (UNRA)

UNRA was established by an Act of Parliament in 2006 as one of the products of the Road Sector Reforms. It was reorganized from its former organization, the Road Agency Formulation Unit (RAFU), and became fully operational on July 1, 2008.

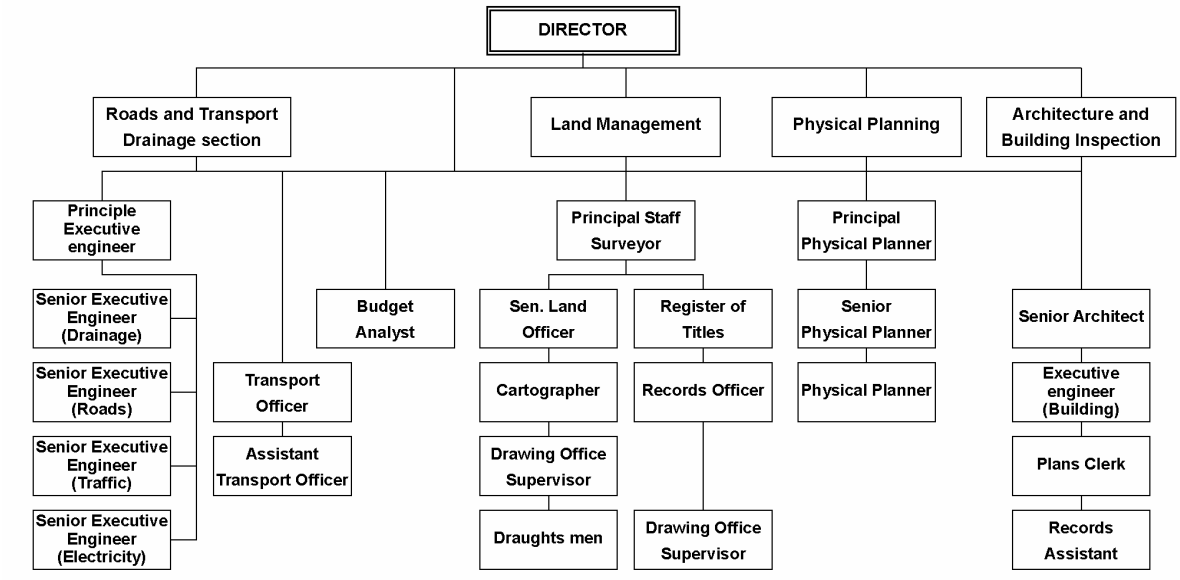



Source: UNRA

**Figure 3.1.2 Organization Chart of UNRA**

3) Kampala City Council (KCC)

KCC is administrating a total area of 195 km$^2$ of which 86.7% is land. Its administrative area is divided into five divisions and 99 parishes. KCC has a total of 1,030 km of roads in its jurisdiction, of which 330 km (32%) are tarmac (paved). The rest, 700 km (68%) are either gravel (unpaved) or earth roads. In addition, there is approximately 75 km of the road network which is under the responsibility of MoWT (or UNRA). The following figure shows the organization chart of the Directorate of Works and Urban Planning of KCC.




Source: KCC

**Figure 3.1.3 Organization Chart of the Directorate of Works and Urban Planning, KCC**

### (4) Development and Maintenance Programs

UNRA has prepared a five-year national road development and maintenance plan for FY 2010/11 to 2014/15 as shown in Table 3.1.2 below:

**Table 3.1.2 Five-Year National Road Development and Maintenance Plan of UNRA**

US$ Million

| Activity Description | | Estimated Expenditure for Road Development and Maintenance | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | Total |
| National Road | Upgrading to Tarmac (paved) Standard | 226.7 | 216.3 | 288.8 | 154.4 | 178.9 | 1065.1 |
| | Reconstruction | 125.1 | 156.6 | 105.3 | 168.8 | 225.0 | 780.8 |
| | Rehabilitation | 89.5 | 2.2 | 3.4 | 0.0 | 0.0 | 95.1 |
| | Bridges | 0.0 | 7.5 | 7.5 | 20.0 | 15.0 | 50.0 |
| | Consultancy services | 16.3 | 26.3 | 16.3 | 31.3 | 41.3 | 131.5 |
| | Land Acquisition | 6.0 | 6.0 | 6.0 | 3.0 | 3.0 | 24.0 |
| District & Urban Roads | Periodic Maintenance | 24.4 | 36.5 | 48.8 | 60.9 | 73.2 | 243.8 |
| | Routine Maintenance | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | 224.5 |
| | Routine Maintenance | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 29.0 |
| | Low Cost Seals | 0.0 | 12.0 | 24.0 | 36.0 | 48.0 | 120.0 |
| | Road Safety | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 25.0 |
| | Bridges | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 25.0 |
| Total | | 548.7 | 524.1 | 560.8 | 535.1 | 645.1 | 2813.8 |

Source: NTMP

The road maintenance function was transferred to UNRA (Director for Operations) in 2009, together with axle load control and other activities. Routine and periodic maintenance activities are carried out by direct labor (force account) and by contractual services of small-scale local contractors that are usually supervised by the regional offices of UNRA.

### (5) Road Fund

The Parliament passed the Uganda Road Fund (URF) Act in June 2008. Its objective is to finance the routine and periodic maintenance of public roads from earmarked road user charges. The sources of the Road Fund consist of road user charges including fuel levies, international transit fees (collected from foreign vehicles entering the country), road license fees, axle load fines, bridge and road tolls, and weight distance charges. The URF is scheduled to be fully operational on July 1, 2010.

The Road Fund, which is estimated at approximately US$100 million per annum, is intended to finance the implementation of the annual road maintenance programs that are carried out by UNRA and the other designated road agencies responsible for district, urban and community access roads.

The characteristics/ features and roles of Road Fund are as follows:

1) Revenues of the Road Fund are incremental and additional to the general budget and no diversion from other sectors.
2) Separated Road Fund administration. The Road Authority (UNRA) is under MoWT, and, Road Fund is under MFPED.
3) Revenues of Road Fund are incremental to the General Budget, coming from charges related to the road use and channeled to directly to the Road Fund bank account. That is independent and neutral from the General Budget.
4) The use of Road Fund is limited to only for road maintenance works for all public roads (and for road safety purpose, as well) including National Roads, and District, Urban & Community Access Roads (DUCA).

5) UNRA's budget covers rehabilitation, upgrading and construction of National Roads and the Road Fund is used for routine and periodic maintenance of all public roads, not only National Roads but also DUCA through allocation to the Districts and Urban councils.

### (6) Registered Vehicles on Roads

Table 3.1.3 shows registered vehicles on roads from 1997 to 2008. The annual growth rate over 11 years was 10.9% per annum for all vehicles. The total number of vehicles, including motorcycles, had approximately tripled from 150,500 in 1997 to 470,500 in 2008. Of these, more than 50% are operated in Kampala. It is noted that over 90% of vehicles are Japanese-made used-cars.

**Table 3.1.3 Registered Vehicles on Roads (1997-2008)**

Unit: Vehicle

| Type | 1997 | 2002 | 2004 | 2005 | 2006 | 2007 | 2008 | Average Annual Growth Rate (1997-2008) | Share (2008) |
|---|---|---|---|---|---|---|---|---|---|
| Truck | 9,900 | 15,700 | 17,530 | 18,684 | 20,496 | 23,323 | 28,501 | 10.1% | 6.1% |
| (Annual Increase) | | 9.7% | 5.7% | 6.6% | 9.7% | 13.8% | 22.2% | | |
| Pick-up Vans & 4WD | 33,100 | 45,500 | 52,685 | 53,203 | 53,137 | 55,950 | 58,317 | 5.3% | 12.4% |
| (Annual Increase) | | 6.6% | 7.6% | 1.0% | -0.1% | 5.3% | 4.2% | | |
| Buses | 600 | 800 | 878 | 868 | 857 | 995 | 1,237 | 6.8% | 0.3% |
| (Annual Increase) | | 5.9% | 4.8% | -1.1% | -1.3% | 16.1% | 24.3% | | |
| Mini Buses | 13,400 | 18,000 | 22,565 | 27,568 | 32,006 | 39,476 | 49,235 | 12.6% | 10.5% |
| (Annual Increase) | | 6.1% | 12.0% | 22.2% | 16.1% | 23.3% | 24.7% | | |
| Cars | 42,000 | 54,200 | 59,786 | 65,471 | 70,652 | 81,320 | 90,856 | 7.3% | 19.3% |
| (Annual Increase) | | 5.2% | 5.0% | 9.5% | 7.9% | 15.1% | 11.7% | | |
| Motor Cycles | 48,000 | 71,200 | 89,212 | 108,207 | 133,985 | 176,516 | 236,452 | 15.6% | 50.3% |
| (Annual Increase) | | 8.2% | 11.9% | 21.3% | 23.8% | 31.7% | 34.0% | | |
| Agric Tractors, etc | 3,500 | 3,800 | 4,389 | 4,593 | 4,769 | 5,193 | 5,890 | 4.8% | 1.3% |
| (Annual Increase) | | 1.7% | 7.5% | 4.6% | 3.8% | 8.9% | 13.4% | | |
| Total without Motor Cycles & Agric Tractors | 99,000 | 134,200 | 153,444 | 165,794 | 177,148 | 201,064 | 228,146 | 7.9% | |
| (Annual Increase) | | 6.3% | 6.9% | 8.0% | 6.8% | 13.5% | 13.5% | | |
| Grand Total | 150,500 | 209,200 | 247,045 | 278,594 | 315,902 | 382,773 | 470,488 | 10.9% | 100.0% |
| (Annual Increase) | | 6.8% | 8.7% | 12.8% | 13.4% | 21.2% | 22.9% | | |

Source : Statiscal Abstract, UBOS（2009）and NTMP/MOWT

## 3.2 CURRENT SITUATION AND KEY ISSUES OF THE ROAD SECTOR IN GKMA

### (1) GKMA and KCC Road Network

The KCC road database in 2009 has an inventory of all the important roads totaling 619 km in length. Minor access roads, the total length of which is estimated at 410 km, are not captured. The KCC road network consists of 290 km of paved and 329 km of unpaved (gravel or earth) roads. All are single carriageway roads except about 25 km, which are of dual carriageway. Table 3.2.1 shows the road surface conditions of paved roads by administrative division.

**Table 3.2.1 KCC Road Conditions by Administrative Division**

| Condition | Road Length (km) in Divisions | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | CEN | KAW | MAK | NAK | RUB | (km) | (%) |
| Very Good | 0.0 | 0.7 | 4.6 | 3.9 | 0.0 | 9.1 | 3% |
| Good | 29.0 | 16.2 | 15.8 | 14.0 | 12.2 | 87.1 | 30% |
| Fair | 45.0 | 11.0 | 15.6 | 31.9 | 20.7 | 124.2 | 43% |
| Poor | 14.6 | 4.7 | 6.2 | 7.9 | 5.6 | 38.9 | 13% |
| Very Poor | 15.9 | 2.1 | 2.0 | 2.0 | 0.0 | 22.1 | 8% |
| N.A. | 0.0 | 0.7 | 0.0 | 8.3 | 0.0 | 9.0 | 3% |
| Total (km) | 104.5 | 35.3 | 44.1 | 68.0 | 38.4 | 290.3 | 100% |

CEN=Central Division; KAW=Kawempe Division; MAK=Makindye Division;

Source: KCC Road Database

Note: Northern Bypass (21km) is not included in the database.

Definitions of classification for road condition are not mentioned in the database, however, it is supposed that they were judged based on the results of visual observation taking number of cracks on pavement surface, ride quality, etc. into account.

The budget of KCC during the 2009/10 financial year is UShs 27.0 billion, excluding the budget from the Road Fund. From that, UShs 5.6 billion (21%) was allocated for the works. The KCC estimated the annual maintenance requirements at about UShs 25.5 billion for the annual maintenance for all types of roads. However, the budget allocation to KCC for road maintenance is far below its requirement provided with UShs 15 billion in each fiscal year 2007/08 and FY 2008/9. The funding gap is therefore UShs 10 billion every year.

### (2) Traffic Congestion

The Study Team conducted a driving speed survey in February 2010 on major arterial roads of Kampala City in the morning and evening peak hours. The Study Team compared the results with the survey conducted in November 2003–April 2004 under NTMP/GKMA (Figure 3.2.1). The major findings are as follows:

- Traffic jams have become worse at all major junctions and on major roads, except at Queen's Way.
- Traffic congestion has spread to outside the City Center, including Bombo Road, Makerere Hill Road, Port Bell Road and Nsambya/Mukwano Roads.
- Traffic jam (0-15 km/hr) is dominant through the day in the CBD (commercial area), including Namirembe St, Ben Kiwanuka St, Luwum St, etc.

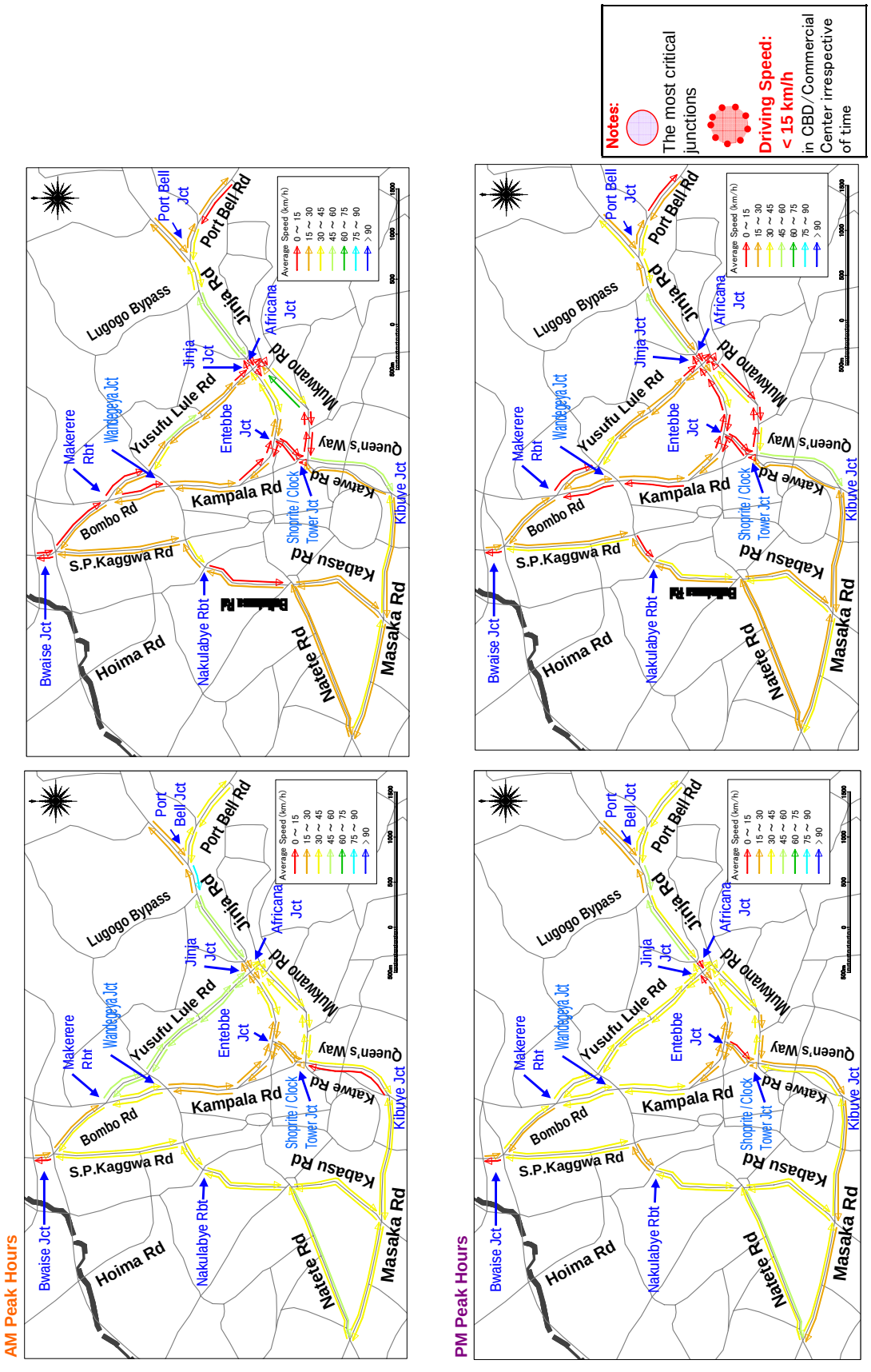
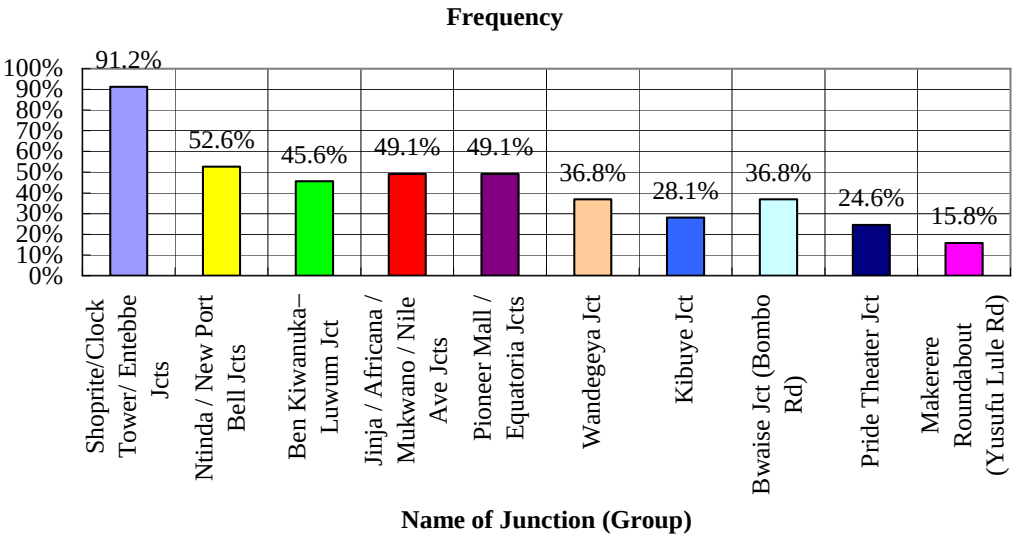



**Figure 3.2.1 Driving Speed and Traffic Jam during Morning / Evening Peak Hours**

NTMP/GKMA 2005 (Survey Period: From Nov 2003 To Apr 2004) The Study Team ( 2nd, 3rd, 4th, 9th, 10th, 11th of Feb, 2010)

Source: JICA Study Team

The Study Team conducted interviews on the worst traffic jam junctions at the Steering Committee/stakeholder meetings and collected 57 replies. Over 90% replied that the traffic jam at Shoprite/Clock Tower/Entebbe Junction is most serious (Figure 3.2.2).




Source: JICA Study Team

**Figure 3.2.2 Interview Summary on Worst Traffic Jam Junctions**

The following are the major reasons behind the serious traffic congestions/jams:

- Rapid urbanization and population increase;
- High GRDP growth, rapid increase of vehicles and traffic volume;
- Urban structure which concentrates the traffic on the CBD/City Center;
- Weak road network, with poor quality and insufficient traffic capacity;
- Lack of intergraded traffic demand management and inappropriate traffic control, including roadside parking;
- Lack of appropriate public transport system;
- Insufficient capacity of road administration bodies and human resources;
- Insufficient investments on transport infrastructures, inappropriate maintenance of facilities and insufficient capacity of human resources for planning and management; and
- Others (inland depots, industrial areas located near the city center, hilly topography, at-grade railways crossings, flooding, mixture with non-motorized traffic, high accidents, etc.).

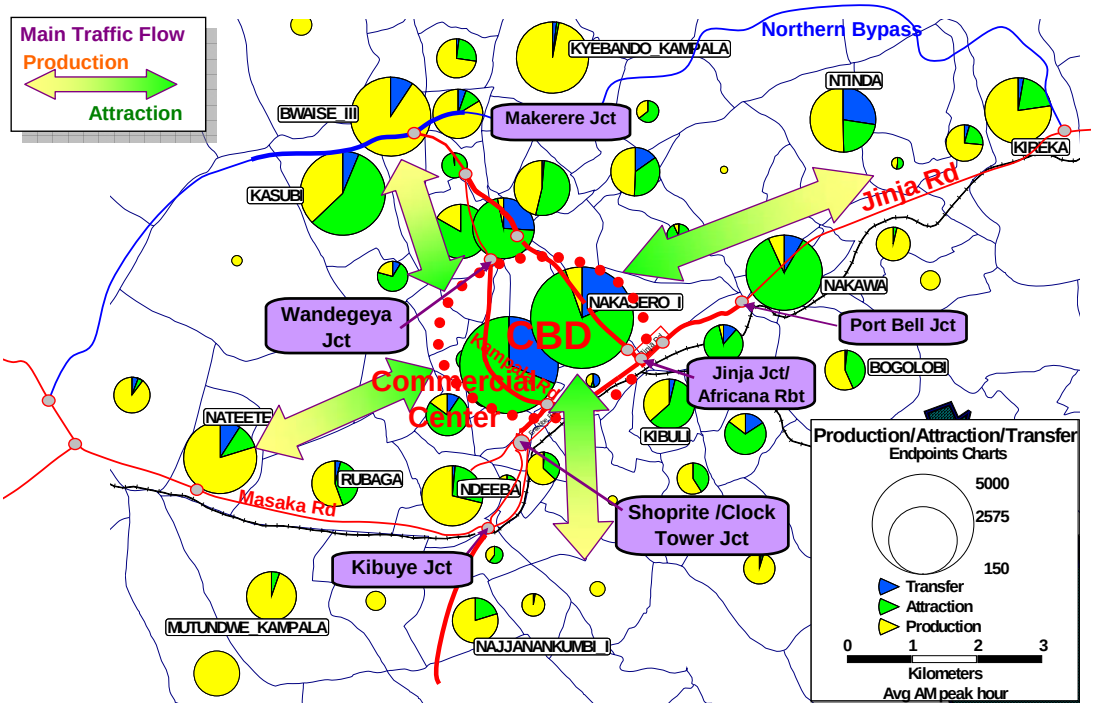
### (3) Key Issues

The key issues to be addressed for the transport sector in GKMA are as follows:

- Serious traffic congestion/jam;
- Population increase and rapid urbanization without an effective GKMA structure plan;
- High GRDP growth, rapid increase of vehicle number and traffic volume;
- Urban structure, which concentrates the traffic on the CBD/commercial center;
- Weak road network, with poor quality and insufficient traffic capacity; and

- Insufficient capacity of road administration bodies and human resources.

Figure 3.2.3 shows the production/attraction/transfer and main flow of traffic during the morning peak hours. The destination of about half of the traffic from the suburbs (as shown in yellow color) is the CBD/City Center (as shown in green color). This is the reason why the junctions of Jinja/Africana (eastern gateways), Shoprite/Clock Tower (southern gateways) and Makerere/ Wandegeya (northern gateways) have faced very serious traffic congestions.




Source: The Study Team based on NTMP/GKMA

**Figure 3.2.3 Production /Attraction / Transfer and Main Flow of Traffic**

## 3.3 CURRENT SITUATION AND KEY ISSUES OF THE PUBLIC TRANSPORT SECTOR IN GKMA

### (1) Taxi/Matatus

Following the nationalization of the privately-owned Uganda Transport Company (UTC), it focused more closely on its long-distance services. As a result, the market for urban transport services in Kampala became open to private operators using small minibus vehicles.

Taxi (Matatus) in the City Center

Old Taxi Part in the City Center

Source: JICA Study Team

New public service vehicles have to be licensed by the Transport Licensing Board (TLB) under the MoWT. There is however no limit imposed on the number of vehicles which can operate on either route and in practice, vehicles seem to switch between urban and inter-urban services. In 1986, the Uganda Taxi Operators and Drivers Association (UTODA) won a contract from KCC to manage the two main minibus parks (old and new taxi parks) in the Kampala City Center. They have retained this contract since 1986 and now have parks and offices in 27 districts.

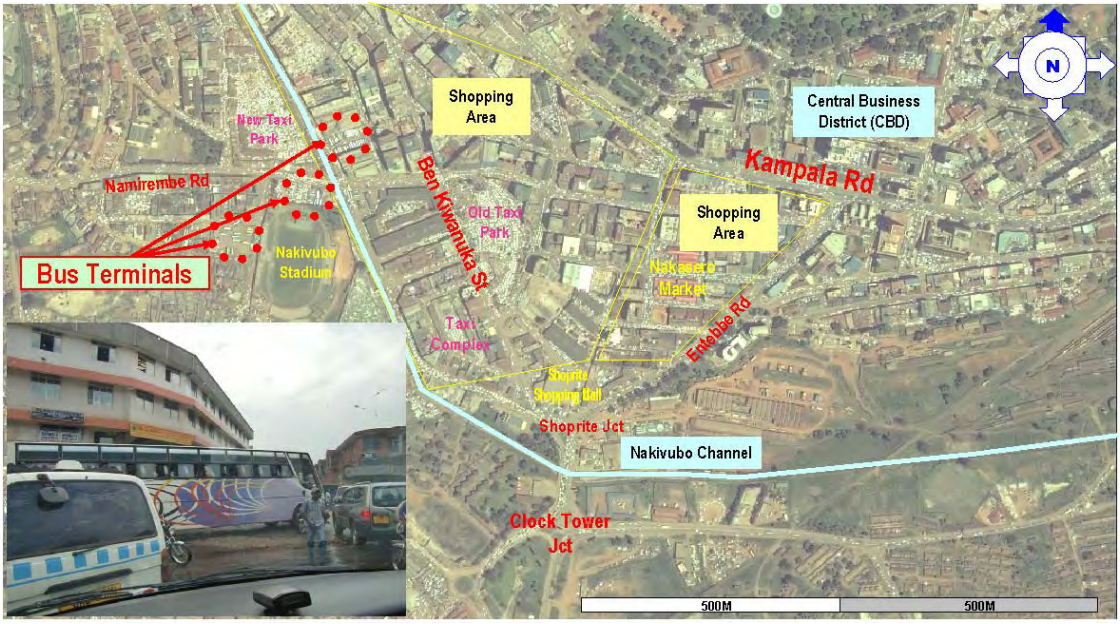
Public transport passengers in Kampala have very limited choices. Unless they are prepared to use a motorcycle or normal taxis, they have to use the minibus service. It is confirmed that there is considerable dissatisfaction with the services offered as shown below:

- Full loading and start in taxi terminals: This means that passengers who want to board at other stops, which is a little farther from the terminal, often cannot do so because the minibuses are already full.
- Uncertainty as to the level of fare that the passengers have to pay.
- Female passengers were also concerned about harassment.

**(2) Buses**

Buses with a capacity of more than 25 passengers, shared by the capacity of either 62- or 67-passenger seats, with total numbers of about 400, are mainly used for inter-urban and international journeys to neighboring countries. Most of the buses operate from the city center in Kampala to each destination. The official agency of the licensing and regulation is the Transport Licensing Board (TLB).

There are two main associates for the inter-urban bus operation, namely the Uganda Bus Terminal (UBT) and Qualicel Bus Terminal (QBT). These are both operating in the very busy city center in Kampala located near new taxi parks. UBT comprises 13 companies operating with 154 buses of either 62 or 67 passenger capacity and QBT manages 58 companies with 239 numbers of large-size buses. Departure and arrival of these buses at the city center terminals (Please refer to the following figure) worsen traffic congestion in the city center.




Source: JICA Study Team

**Figure 3.3.1 Concentration of Bus Terminals, Minibus Parks and Shops in the City Center**

### (3) Boda Boda

Boda boda mainly provide a passenger taxi service, although they can sometimes be hired to move goods. The boda boda journey has no determined route and one can go to any requested destination. Both bicycle and motorcycle services are often known by the same name of boda boda (Please see photographs below). Both vehicles provide a short distance and low-capacity service.

Boda Boda (Motorcycle)

Boda Boda (Bicycle)

Source: JICA Study Team

The area of operation of a boda boda is called a stage. Each stage has a stage master who is appointed by the associations. In Kampala Central alone, there are 124 stage masters and more than 2,000 operators belonging to the Uganda Association of Motorcycle & Bicycle Operators (UAMBO).

Majority of the boda bodas are operated by motorcycles in Kampala. Major issues indicated by representatives of the association are accidents, thefts, lack of access to micro-finance, poaching of members and their fees, and operation of members in areas outside of the association's jurisdiction.

# CHAPTER 4 REVIEW OF TRANSPORT MASTER PLANS

## 4.1 MASTER PLAN AND FEASIBILTY STUDIES OF IMPROVEMENT OF TRUNK ROAD AT KAMPALA URBAN INTERFACE SECTIONS (BY JICA) IN 1997

JICA conducted a master plan study and feasibility studies for priority roads and junctions improvement in Kampala City in 1997. Technical and economical feasibility studies were conducted for several roads and junctions as summarized in the following table.

**Table 4.1.1 Summary of Priority Projects with Feasibility Study Conducted under JICA in 1997**

| Bottleneck Junction Improvement | | | Road Section Improvement | | |
|---|---|---|---|---|---|
| Name of Junction | Type of Improvement | Implementation by | Name of Road | Length / Number of lanes | Implementation by |
| Natete Jct | Signalized | Grant/GOJ | Natete Road | 3.8 km | Grant/GOJ |
| Makerere Jct | Roundabout | Grant/GOJ | Gaba Road | 9.1 km | Grant/GOJ |
| Kibuye Jct | Roundabout | Grant/GOJ | Port Bell Road | 4.8 km | Financed by others |
| Port Bell / Jinja Rd Jct | Signalized | Grant/GOJ | Gayaza Road | 4.6 km | Financed by others |
| Wandegeya Jct | Signalized | Grant/GOJ | Hoima Road | 8.5 km | Financed by others |
| Jinja Rd Jct | Roundabout (plan) | Grant/GOJ (signalized) | | | |

Source: JICA Study Team

Most of the priority projects with feasibility studies conducted were already implemented with grant aid of the GOJ in 1998-2007. The Shoprite Junction, Clock Tower Junction and Africana Roundabout, which were not covered by the JICA 1998 Master Plan and Feasibility Study but given priority in the Kampala Urban Transport Improvement Project (KUTIP), were also implemented with a grant aid of the GOJ in 2005-2007.

The Study Team conducted interviews on the worst traffic jam junctions at the Steering Committee/stakeholder meetings. Of the worst ten junctions, six junctions were those improved with the grant aid of the Japanese Government in 1998-2007. **This means that conventional method of standalone junction improvement, either by signalization or roundabout, could not cope with the recent rapid traffic growth for the major junctions near/around the city center without substantial capacity increase or an introduction of area-controlled signalization system (Traffic Control Center).** As the traffic at all these junctions has far exceeded the traffic capacity, flyover construction and/or road and junction widening, together with appropriate traffic management, are required to improve the current severe traffic congestion.

## 4.2 KAMPALA URBAN TRANSPORT AND IMPROVEMENT PLAN (KUTIP)

In June 2003, KCC with financial assistance from the World Bank, established KUTIP which included detailed and relatively inexpensive plans to improve the management of traffic in the central area of Kampala City. The improvement proposals based on the problem audit in the study were grouped into the following three major categories:

- Traffic Management Measures, including traffic circulation, regulation and enforcement, traffic demand management, parking management, pedestrian facilities and street furniture.
- Geometric Improvement, including redesign of junctions, signalization of critical intersections and road widening.

- Traffic Safety Education & Awareness Programs
- Road Widening Scheme
  - Mukwano Road with Gaba Road Junction
  - Makerere Hill Road with University, Makerere Road and Sir Apollo Kaggwa Road Junctions

KUTIP proposed the following plans in consideration of the economic internal rate of return (EIRR) for each package and its capital cost investment. Current progress of KUTIP is as follows:

**Table 4.2.1 Current Progress of KUTIP**

| Year | Name of the Project | | Rank | Progress | Remarks |
|---|---|---|---|---|---|
| 1 | Area Traffic Management | Queens' Way – Katwe Road Area | 1 | Completion | 2004 |
| | | Central Area | 2 | Completion | 2004 |
| | Junction Improvement | Jinja Road Roundabout (signalization) | 3 | Completion | 2005/JICA |
| | | Pioneer Mall | 4 | On-going | KIIDP Phase-I |
| 2 | Area Traffic Management | Old Kampala – Namirembe Road | 6 | Completion | 2004 |
| | | Station Area Gyratory | 5 | On-going | KIIDP Phase-I |
| | Junction Improvement | Bakuli (signalization) | 8 | Completion | 2002/JICA |
| | | Pride Theater | 7 | On-going | KIIDP Phase-I |
| | | Bwaise | 9 | On-going | KIIDP Phase-I |
| 3 | Junction Improvement | Clock Tower – Shoprite and Queen's Way (signalization) | 10 | Completion | 2005/JICA |
| | | Hotel Africana Roundabout | 13 | Completion | 2005/JICA |
| | | Nakulabye | 11 | On-going | KIIDP Phase-I |
| 4 | Junction Improvement | Fairway Hotel Roundabout | 12 | Not yet financed | |
| | | Kasubi | 14 | Not yet financed | |
| | | Ntinda Road – Jinja Road | 16 | Not yet financed | |
| | | Mukwano Roundabout | 15 | Not yet financed | Pre-FS Road in this Study |
| 5 | Road Widening | Mukwano Road with Gaba Road Junction | 17 | Not yet financed | Pre-FS Road in this Study |
| | | Makerere Hill Road with University, Makerere Road and Sir Apollo Kaggwa Road Junctions | 18 | Not yet financed | |

Source: JICA Study Team

## 4.3 OUTLINES OF THE NATIONAL TRANSPORT MASTER PLAN, INCLUDING GREATER KAMPALA METROPOLITAN AREA (NTMP/GKMA)

### (1) Outline of the National Transport Master Plan

In May 2009, MoWT has established the National Transport Master Plan, including a Transport Master Plan for the Greater Kampala Metropolitan Area (referred to as "NTMP" which covers the nationwide transport master plan and "NTMP/GKMA" which specifically covers for GKMA in this report). NTMP/GKMA is a comprehensive long-term plan for the transport sector, covering not only investments needs, but also the whole transport framework including policy and strategy, institutions, legal and financial issues, land and environment, stakeholder interests, and capacity building.

NTMP set out a framework for development of the transport sector over the next 15 years (2008-23), in three five-year phases, namely short-term (2008-13), medium-term (2013-2018) and long-term (2018-2023). The Cabinet Memorandum for NTMP/GKMA was submitted to the Cabinet for approval in February 2010 and is awaiting approval. However, as most of the investment plans in NTMP/GKMA were already incorporated in the National Development Plan (2010/11–2014/15), including the development of GKMA and introduction of BRT, it is expected

that this will most likely be approved soon.

The proposed total expenditures over the 15–year plan implementation are US$10,876 million. The road sector investment will account for 81.4% of total expenditure, GKMA (excluding national roads) for 10.9%, the rail sector for 4.2%, the air sector for 2.2%, inland water for 1.2% and institutions for 0.2%.

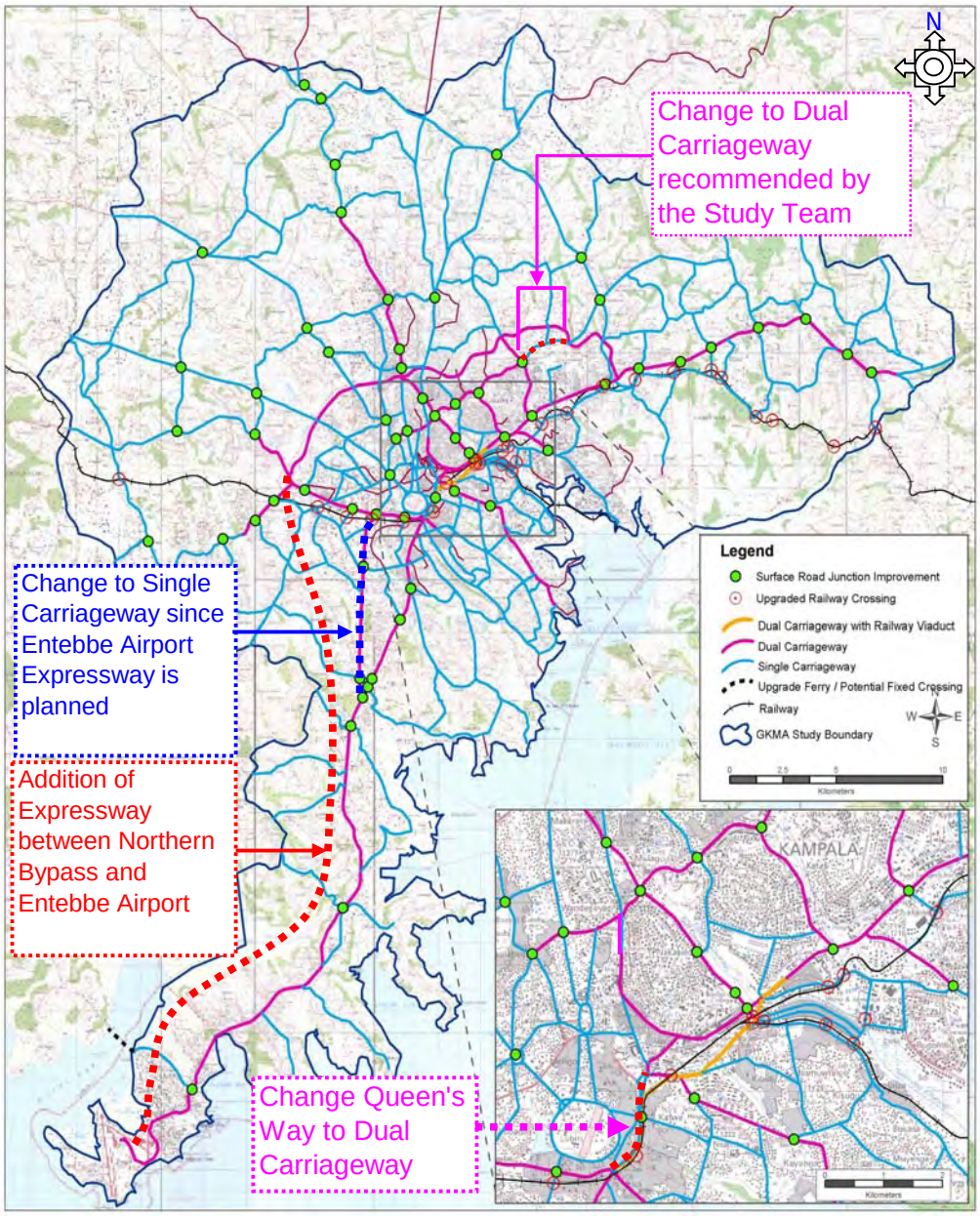
### (2) Outline of the Transport Master Plan for GKMA

The estimated population of GKMA was 2.5 million in 2008 and it will reach 4.5 million in 2023 at an estimated average increase of 4% per annum. To provide transport infrastructures and services required for such rapidly increasing population, economy and traffic, MoWT has established the GKMA Transport Master Plan (NTMP/GKMA). NTMP/GKMA is comprised of the following main components:

- Establishment of a single GKMA transport authority (MATA)
- Adoption of the transit-oriented development (TOD) concept
- Reorganization and restructuring of the public transport services and fleet
- Improvement of the existing road network to improve traffic flow and safety, including NMT facilities

Road development is comprised of three types: dual carriageway with railway viaduct, dual carriageway construction and single carriageway improvement as shown in Figure 4.3.1. The Study Team has included the following plan taking recent developments into account:

- Addition of an expressway between the Northern Bypass and Entebbe International Airport
- Change Queen's Way to Dual Carriageway
- Change to Dual Carriageway between Ntinda and the Northern Bypass




Source: JICA Study Team based on the plan of NTMP/GKMA

**Figure 4.3.1 Roads Development Components in NTMP/GKMA**

The total investment expenditures for NTMP/GKMA were estimated at US$1,380 million over 15 years (2008-2023) as summarized in Table 4.3.1. The items are mostly those identified in the 2005 NTMP/GKMA, except for the Bus Rapid Transit (New Busways and Equipment).

**Table 4.3.1 Recommended GKMA Transport Investment (2008-2023) in US$ Millions**

| No | Investment Type | Length/No of Site | Estimated Investment Cost | Remarks (Unit Cost) |
|---|---|---|---|---|
| | **I. Roads** | | | |
| 1 | Dual Carriageway with Railway Viaduct | 4.74 km | 50.8 | 10.72 |
| 2 | Other Dual Carriageways | 122.85 km | 300.73 | 2.45 |
| 3 | Single Carriageway | 582.93 km | 473.37 | 0.81 |
| | Total( Roads) | 710.52 km | 824.90 | |
| | **II. Safety Improvements** | | | |
| 1 | Junction Improvements | 62 locations | 81.6 | 1.32 |
| 2 | Railway Crossings | 27 locations | 12.65 | 0.47 |
| 3 | Pedestrian Pavements and Crossings | 1,053.00 km | 30.26 | 0.03 |
| | Total ( Traffic Management, Safety) | | 124.51 | |
| | **III. Proposed Busways (BRT)** | | | |
| 1 | New Busways and Equipment | 4 Busways | 431.00 | |
| | Total ( Investment Costs) | | 1,380.41 | |

Source: NTMP/GKMA, MoWT, May 2009

However, these investment costs would not be enough when considering the BRT Pre-FS cost estimate, dual carriageway viaduct and grade separate junction (flyovers) improvement, planned expressway construction between Kampala and Entebbe International Airport and others.

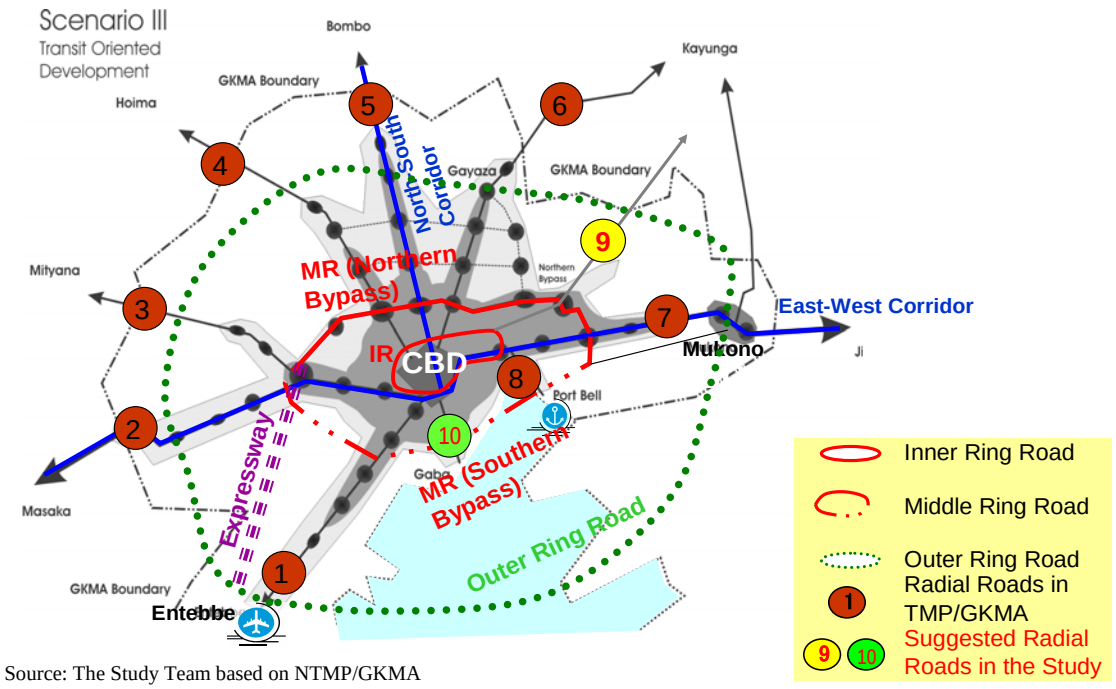
### (3) Review of Road Network Plan in NTMP/GKMA

**The objective of the review of NTMP/GKMA by this Study does not mean the new establishment or revision of the road master plan and organization reforms.** The objective of this Study is to identify the candidate projects or programs which would be to the targets for official development assistance (ODA) of the Government of Japan (GOJ), or for co-financing with other international organizations. The road network improvement in GKMA is expected to support NTMP/GKMA established by MoWT. The Study Team reviewed NTMP/GKMA based on the conducted traffic survey, road network survey and BRT Pre-FS.

1) Trunk Road Network System in Long-Term

The planned macro-road network system for GKMA in 2008-2023 and ahead to 2050 in NTMP/GKMA is comprised of eight radial and three circumferential roads. These are all dual carriageways but would be expanded to 6-lane highways later. It should also be noted that 6-lane roads (two dedicated lanes for BRT and four lanes for the general traffic) are required for the planned BRT routes.

The Study Team suggests that Gaba Road and Kira Road should be included as radial roads taking into consideration the current urban development and population expansion. In addition, the planned expressway (motorway) from Kampala to the Entebbe International Airport should be included in the GKMA urban trunk road network system. Hence, the recommended trunk road network system in year 2023 should be configured as shown in Figure 4.3.1.



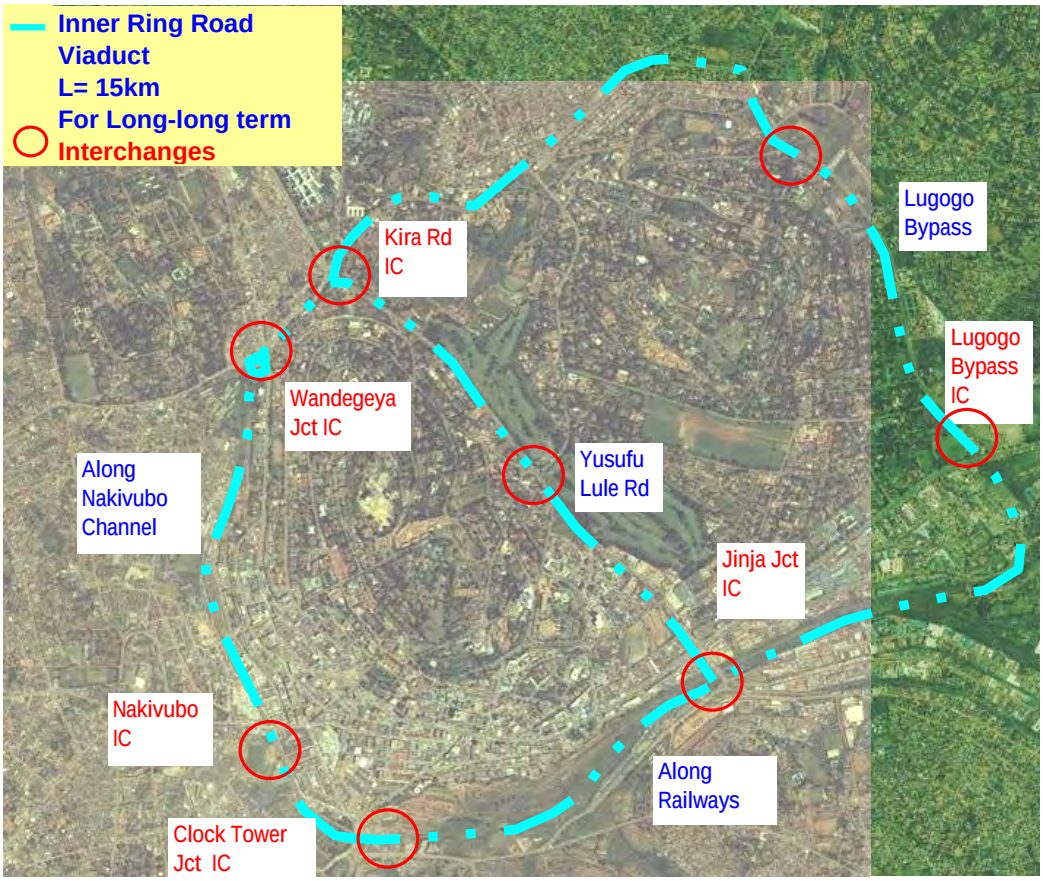

Source: The Study Team based on NTMP/GKMA

**Figure 4.3.2 Trunk Road Network System in GKMA**

Compared to radial roads, ring roads are very weak. It should be noted that the construction of the southern bypass is very important for the future GKMA road network system, and, therefore, a study should be conducted as soon as possible since the routes planned in the previous studies would not be applicable anymore when the required resettlement and recent urban sprawl are considered.

2) Inner Ring Viaduct Plan for Urban Expressway Transport Network in the Long-Long Term

At the stage when the population of GKMA reaches 4.5 million in 2023 and approximately 9-10 million in 2040, flyovers at all major junctions would become necessary. Moreover, an elevated motorway (viaduct) system would be the only solution, despite the introduction of BRT as one of the principal road infrastructures of GKMA. The Study Team suggests that a full viaduct inner ring road network (toll) should be planned for the long-long term (target year 2035 - 2040) as routed in Figure 4.3.3. The Study Team recommends that the inner ring viaduct plan be incorporated in the new GKMA structure plan, which will be established under KIIDP. Hence, construction of toll buildings on this route and interchanges must be avoided.




Source: JICA Study Team

**Figure 4.3.3 Inner Ring Viaduct Plan for Urban Expressway Transport Network in Long-Long Term**

3) Review of Dual Carriageway with Railway Viaduct

NTMP/GKMA planned a dual carriageway with railway viaduct (the **Original Plan**). The viaduct starts just before the Africana Roundabout on Jinja Road and crosses over the MoWT Central Workshop and Railways lines to Jinja and Port Bell. Then, it runs along Mukwano Road, Nsambya Road and Queen's Way and ends before the Kibuye Roundabout. **The objective of the project is to provide relief to the congested city center**. As the viaduct starts at Jinja Road and ends before Kibuye Roundabout on Queen's Way, the through-traffic between Jinja Road and Queen's Way is not much. Its effectiveness would also be limited since it does not take traffic from Yusufu Lule Road, Gaba Road and Mengo Hill Road.

The viaduct plan had not yet considered the influence of BRT, especially at the Jinja and Africana Junctions (BRT Lines A1 and A2) and between Clock Tower and Kibuye Roundabout (BRT Lines B1 and B2), as no BRT concept plan was studied in NTMP/GKMA.

The Study Team considered the repeated requests of MoWT to suggest a plan to overcome the serious traffic congestion on Kibuye Roundabout, which is the only gateway from/to the Entebbe International Airport. Five approach roads, namely Queen's Way (one-way), Katwe Roads Entebbe Airport Road, Masaka Road and Mahindye Road, meet at the Kibuye Roundabout.

The Study Team has planned a modified viaduct plan to overcome the disadvantages in the original plan. The recommended concepts to reduce project costs while keeping better function and coordination with the BRT plan are a combination of flyovers and at-grade sections with appropriate road widening, as follows:

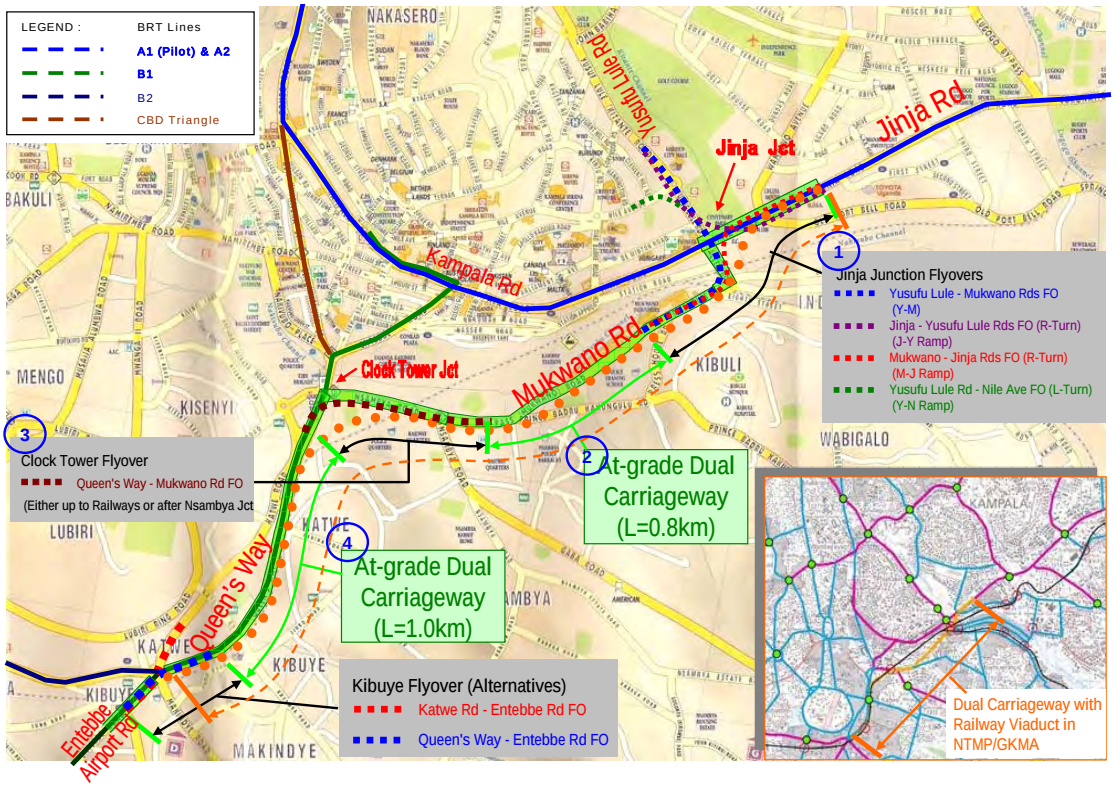
- A combination of flyovers and at-grade sections (refer to Figures 4.3.4 and 4.3.5)

  ① Mukwano Road – Jinja Road Right Turn Ramp Flyover

  ② Mukwano / Kibuli / Nsambya Road Widening at-grade

  ③ Clock Tower Flyover (Queen's Way – Nsambya / Mukwano Roads Right Turn Flyover)

  ④ Widening of Queen's Way (dual carriageway of 6 or 8 lanes)




Source: JICA Study Team

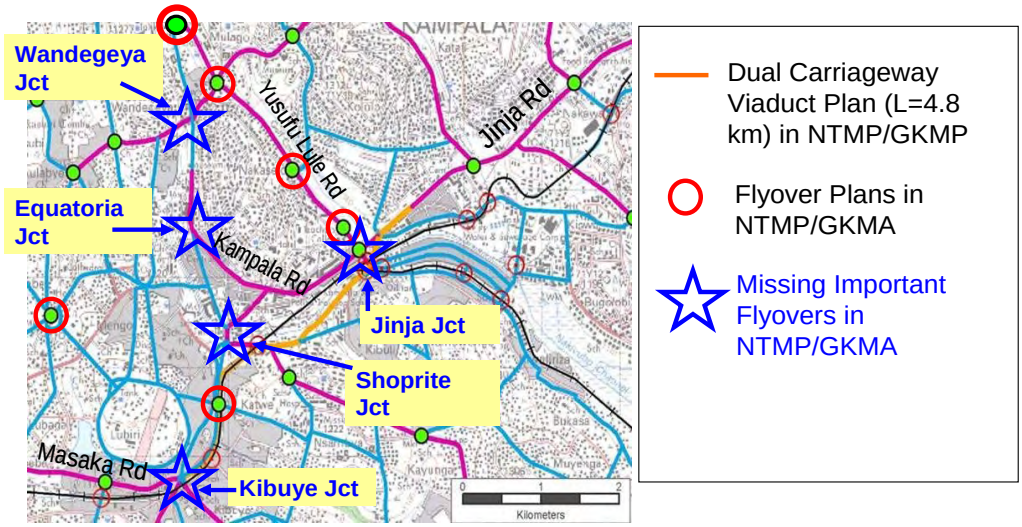
**Figure 4.3.4 Alternative Plan for Dual Carriageway with Railway Viaduct Plan**

- Flyover on Kibuye Roundabout between Queen's Way and Entebbe Road. It should be noted that resettlement requirements are large for the implementation of this plan since it also needs a dedicated line for the BRT B1.

The Study Team suggests that widening of Queen's Way from two lanes to six or eight lanes, including two dedicated lanes for BRT, using the railways ROW. Katwe Road is too narrow to accommodate the BRT.

4) Review of Grade-Separated Junctions in NTMP/GKMA

Sixty-two locations of junction improvements are planned in NTMP/GKMA. Of these, seven junctions were planned as grade-separated crossings. However, the Study Team identified that some important flyovers are missing in NTMP/GKMA, including for Wandegeya Rbt, Jinja Jct, Shoprite Jct, Equatoria Jct and Kibuye Rbt, as indicated in the following figure.




Source: JICA Study Team

**Figure 4.3.5 Grade-Separated Junctions (Flyovers) in NTMP/GKMA and Missing Flyovers Identified by the Study Team**

### (4) Review of Public Transport Plan in NTMP/GKMA

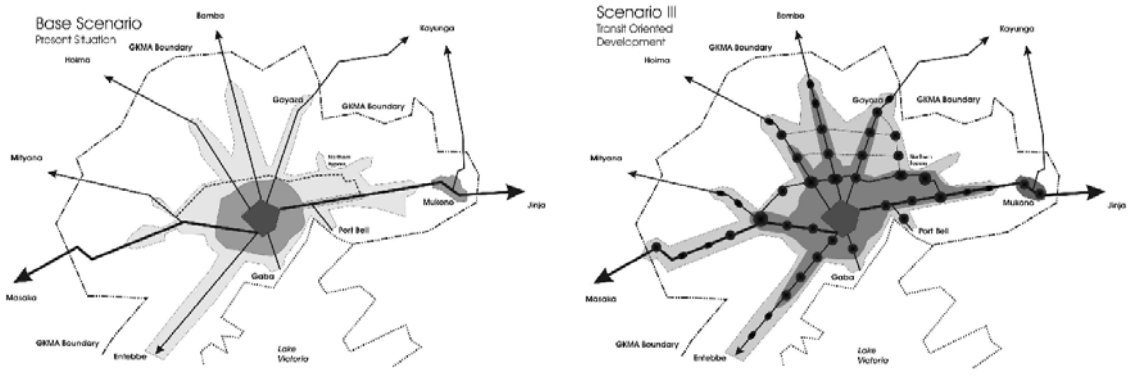
The present land use in GKMA, which is developed along radial road patterns extending outwards from the center, shows considerable urban sprawl. This land use pattern is the base case in envisaging the optimal future land use. NTMP/GKMA assumed three possible development scenarios for the analysis of the coordination of land use and transport.

Scenario I: 'Business as Usual' (BAU)

Scenario II: 'Planned Development' (PD)

Scenario III: 'Transit-Oriented Development' (TOD)

NTMP/GKMA recommended Transit-Oriented Development as the strategy to guide and control land use and transport development. The present and recommended land use patterns for the TOD in NTMP/GKMA are as shown in the following figure.




**Present Land Use Pattern** **Recommended Land Use Pattern (TOD)**

Source: NTMP/GKMA

**Figure 4.3.6 Present and Recommended Land Use Patterns**

The TOD scenario seeks high quality public transport like BRT which can actively promote development of a well-balanced overall land use and transport set-up for the city.

## 4.4 GKMA TRANSPORT SECTOR PROJECTS COOPERATED BY INTERNATIONAL DEVELOPMENT PARTNERS

### (1) Government of Japan (GOJ)

The GOJ extended grant aids for design and implementation of the following projects:

- Kampala Urban Interface Project: US$8.0 million (completed)
- Urban Road Resealing Project: US$2.4 million (completed)

**The GOJ, through JICA, has conducted "The Study on Greater Kampala Road Network and Transport Improvement in the Republic of Uganda" since November 2009 and to be completed in October 2010.**

### (2) European Union (EU)

The EU, World Bank and African Development Bank are the three largest development partners for Uganda.

The recent cooperation of the EU for the GKMA urban road sector is as follows:

- Kampala Northern Bypass: €47.5 million, Construction of 21 km bypass to relieve congestion in Kampala City (completed and opened to the public in October 2009).
- Technical Assistance to RAFU/UNRA: €2.0 million (on-going)

### (3) World Bank (KIIDP and TSDP)

1) Kampala Institutional and Infrastructure Development Project (KIIDP)

KCC, in collaboration with MoLG, developed the KIIDP. KIIDP is estimated to cost US$100 million. The World Bank has extended a credit for the "Kampala Institutional and Infrastructure Development Adaptable Program Loan Project (KIIDP)" in support of the first phase of SFR for the Kampala Urban Development Program. The credit will be extended in three phases as shown in the following table.

**Table 4.4.1 Program Financing Plan for KIIDP**

| APL | Indicative Financing Plan | | | | Estimated Implementation Period (Bank FY) |
|---|---|---|---|---|---|
| | IDA (US$ Mill) | % | GOU (US$ Mill) | Total (US$ Mill) | |
| APL 1 Credit | 33.6 | 37 | 3.5 | 37.1 | 01/01/2008 – 12/31/2010 |
| APL 2 Credit | 40.0 | 44 | 4.0 | 44.0 | 01/01/2011 – 12/31/2014 |
| APL 3 Credit | 17.4 | 19 | 1.5 | 18.9 | 01/01/2015 – 12/31/2017 |
| Total | 91.0 | 100 | 9.0 | 100 | |

Source: Project Appraisal Document of KIIDP, September 2007, World Bank

KIIDP is comprised of three components. Component 1 is institutional development. Component 2 is the city-wide infrastructure and services improvement, including storm water drainage systems, traffic management, road maintenance and upgrading, solid waste management, and urban markets infrastructure. Component 3 covers project implementation support.

2) Transport Sector Development Project (TSDP)

The World Bank has extended a US$190 million International Development Association (IDA)

credit for the TSDP. TSDP is also supported with a US$8 million grant from the United Kingdom's Department for International Development (DFID). These funds will support implementation of NTMP and NTMP/GKMA over a four-year period from 2010/11 to 2013/14.

The project consists of the following five components:

- Component A: Upgrading and Rehabilitation of National Roads
- Component B: Enhanced Road Safety
- Component C: Preparation of the Kampala Urban Transport Project
- Component D: Support to the Ministry of Works and Transport
- Component E: Support to Uganda National Roads Authority

Component C will be implemented by MoWT/UNRA. This will include the preparation of feasibility study, design and bidding documents for the BRT infrastructure for the BRT Pilot Project corridor selected through the BRT Pre-FS. It also includes ***a parking study and a bicycle path master plan***.

### (4) World Bank (BRT)

1) Introduction and Pre-FS of Bus Rapid Transit (BRT)

The BRT might have a good possibility to improve the serious urban traffic congestion in more economical ways than if compared with Mass Rapid Transit (MRT) or Light Rail Transit (LRT). The transport capacity of a well-provided BRT is up to 30,000 passengers/hr-direction.

BRT in Bogota, Colombia BRT in Dar Es Salaam, Tanzania (Plan)

**Figure 4.4.1 BRT in Bogota and Dar Es Salaam**

As a long-term strategy, GOU has envisaged introducing BRT in GKMA with financial cooperation of the WB. Investment of US$431 million was planned in NTMP/GKMA for four BRT routes. Implementation of the Rapid Transport System with BRT is one of the national core projects in the NDP.

WB financed a Pre-FS for the establishment of a BRT system in GKMA. The GOU appointed the Integrated Transport Planning Ltd. in association with IBIS Transport Consultant for the BRT Pre-FS. The study commenced in November 2009 and the consultants submitted the Final Report in May 2010.

2) Outline of the BRT Pre-FS

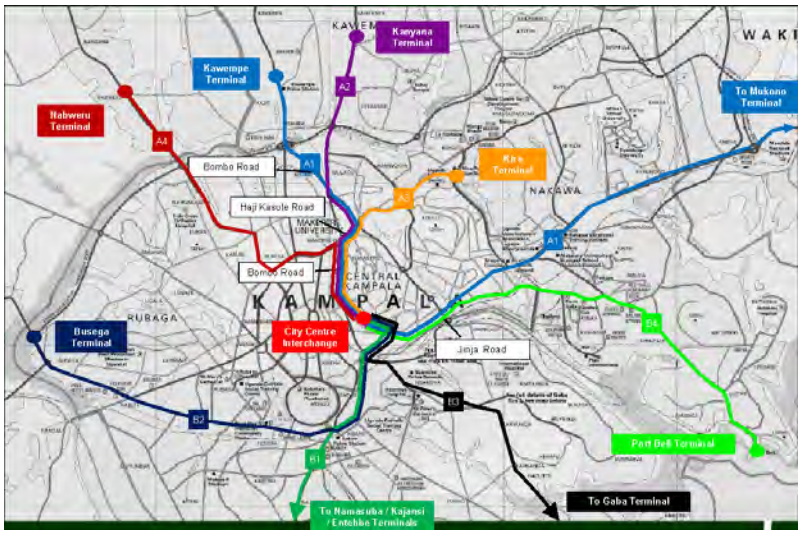
The basic concepts of the BRT plan in the Pre-FS report are as follows:

- Open route (externalized) system and open bus stations with on-board revenue collection
- Median operation

- High capacity and high quality buses
- Existing minibuses will play as feeder to BRT with less direct service to the city center and no operation of boda-boda alongside BRT trunk routes
- Low-technology system for management and passenger information

3) Selected Priority Routes and Pilot BRT Route

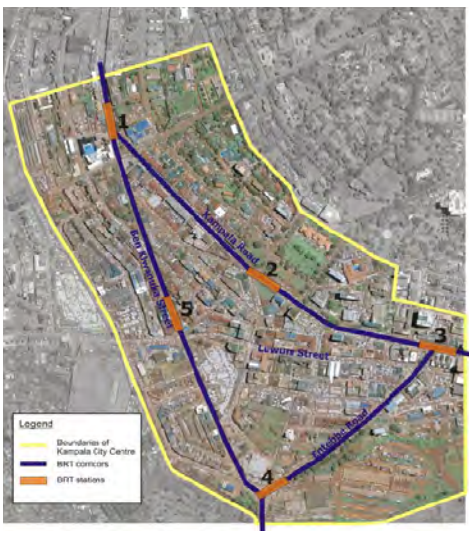
After the estimation of future passenger travel demand as well as the evaluation of alternative routes, the following nine priority BRT routes have been selected based on multi-criteria analysis. Route A1, from the northern bypass on Bombo Road to that on Jinja Road through Kampala Road, was selected as the Pilot BRT Project Route.




Source: BRT Pre-FS

**Figure 4.4.2 BRT Routes Selected in the Pre-FS**

The BRT Pre-FS has proposed the BRT routes and stations in the City Center based on an analysis of the existing situation and destination of passengers. The plan consists of building three BRT routes in the City Center: on Kampala Road, Entebbe Road and Ben Kiwanuka Street. Moreover, five BRT stations are proposed in the City Center. The BRT system in the City Center, especially on the narrow Ben Kiwanuka Street, will only be successful when sufficient mobility management measures will be implemented.




Source: BRT Pre-FS

4) Economic Viability of the Pilot Project

The capital cost and annual operation cost for the BRT Pilot Project were estimated at US$118.4 million and US$21.4 million, respectively. Annual net operation surplus was estimated at US$10.4 million. Per-km construction cost is US$8.5 million and this is almost double compared with the investment plan in NTMP/GKMA.

The economic analysis of the pilot project has been conducted, with the Economic Internal Rate of Return (EIRR) indicated 18% and Net Present Value (NPV) at US$87.5 million.

5) Feasibility Study and Detailed Design for the BRT Pilot Project

Following the Pre-FS of BRT, consultancy services for feasibility study, detailed design and contract preparation for the BRT Pilot Project will be conducted under TSDP. It will also make provision for a spur route towards Entebbe. The feasibility study and detailed design will be commenced in early 2011 and completed within 12–15 months.

## 4.5 STRATEGY FOR THE IMPROVEMENT OF TRAFFIC FLOW IN KAMPALA (2009)

In August 2009, MoWT, in partnership with KCC, UPF, MoLG and UNRA, appointed a joint Task Force comprising of officials from these agencies to prepare short-term and medium-term measures that will address the worsening traffic situation (traffic jam and accidents) in Kampala City. The principal objective of this Task Force is to study selected sections of roads in Kampala, identify critical causes of traffic congestion, and propose measures to mitigate the problem in the short-term (1-2 years) and medium-term (3-5 years).

The Task Force conducted desktop survey, field visits and discussions; identified locations and causes of traffic jam; and recommended both general and specific measures to solve the problems, including required costs in the short and medium-terms. Activity schedules were drawn up by road and junction. These were compiled in a report entitled “Strategy for the Improvement of Traffic Flow in Kampala”, December 2009.

## 4.6 OTHER DEVELOPMENT PLANS RELATED TO ROADS IN GKMA

Other studies and development planning that are on-going or have been conducted for GKMA in the past decade are as follows:

- Road Sector Development Program (RSDP)
- The Road Safety Audit and Improvement Study, 2000 (RSAIS)
- The East African Road Network Project by EAC
- Kampala Structure Plan (Land Use Plan)
- Situational Analysis and Drafting National Urban Policy
- Kampala Drainage Master Plan.