



Transport and Environment

Science Technology Network

Year 1 Final Report 2010



Transport and Environment Research Capacity and Needs In Uganda

Kiggundu Amin Tamale and Sandra Wamono
Makerere University



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List of Acronyms and Abbreviations

GDP	Gross Domestic Product
GKMP	Greater Kampala Metropolitan Master Plan
GoU	Government of Uganda
ICCU	Injury Control Centre Uganda
JICA	Japan International Cooperation Agency
MoWT	Ministry of Works and Transport
NEMA	National Environment Management Authority
NTMP	National Transport Master Plan
PSV	Public Service Vehicle
UNBS	Uganda Bureau of Standards
UNRA	Uganda National Roads Authority
URF	Uganda Road Fund
UTODA	Uganda Taxi Operator and Drivers Association
TLB	Transport Licensing Board
TSDP	Transport Sector Development Project

Summary

This report details the findings of the local TEST research network in Uganda. The TEST Network study in Uganda surveyed the research capacities of various entities with regards to traffic flow management, air pollution and road safety.

Data on the research capacities and activities were collected using an eclectic methodology that involved the key stakeholders in validating the findings and generating new information. Various websites and professional bodies such as the Uganda Institution of Professional Engineers and local universities were also used in undertaking this study and collecting the required information.

Data collected indicates that a few institutions are involved in transportation and environmental research and that there is a clear lack of the required research infrastructure and capacity especially in local universities. Also research activities are being undertaken on ad hoc basis and that there no coordination and collaboration in carrying out research on transport in Uganda. Closely related is that there is no specific degree programme on transport that is taught in Ugandan universities. A further issue relates to the unpublished research carried out by especially the consultants hired by the government to work on specific transport projects.

Research programmes in Uganda have also been adversely affected by the lack of financial resources and a centralised database. Besides, air pollution is one of the research areas that have been neglected in part because of the lack of air pollution standards and guidelines as well as the continued lack of institutional capacity and equipment.

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Our sincere thanks go to all the stakeholders involved in traffic flow management, road safety and air pollution such as the Ministry of Works and Transport, Transport Licensing Board, Uganda Police, UTODA, ArriveAlive, Centre for Urban Studies and Research, Makerere University, NEMA, Kampala City Council (KCC) and Kyambogo University.

Special appreciations go to all others who contributed in one or another to the development of this report.

1 Introduction

1.1 Traffic Flow Management

A cursory look at the 2008 traffic counts in central Uganda indicates that traffic growth since 2001 in areas around Kampala was about 8 percent per annum. This is consistent with growth in the vehicle fleet from 1997 to 2007 at 7.3 percent per annum excluding motorcycles, or at 9.8 percent including motorcycles. Uganda's total motor vehicle fleet (including motorcycles) rose rapidly from 150,500 in 1997 to 382,800 in 2007.

Due to rapid motorisation, many towns in Uganda are today facing an obstinate challenge of traffic jam. Also because of the continued dependence on low capacity public transport systems especially the minibuses (locally called taxis), driving in Kampala city centre especially during the morning and evening hours is virtually impossible. Currently, there are about 100,000 minibuses operating in Kampala, and over 90 percent of these buses offer downtown services. Each day according to a recent research study commuters in Kampala lose more than 23,813 man hours due to traffic congestion. Besides, the road space in many towns is being used for many things including trading.



Fig. 1: The Road Space is being Used for Trade in Kampala near Kampala-Gayaza road

Fig. 2: Traders Selling Foodstuffs



Fig. 3: New Road under Construction in Kampala



Fig. 4: Kampala-Gayaza Road

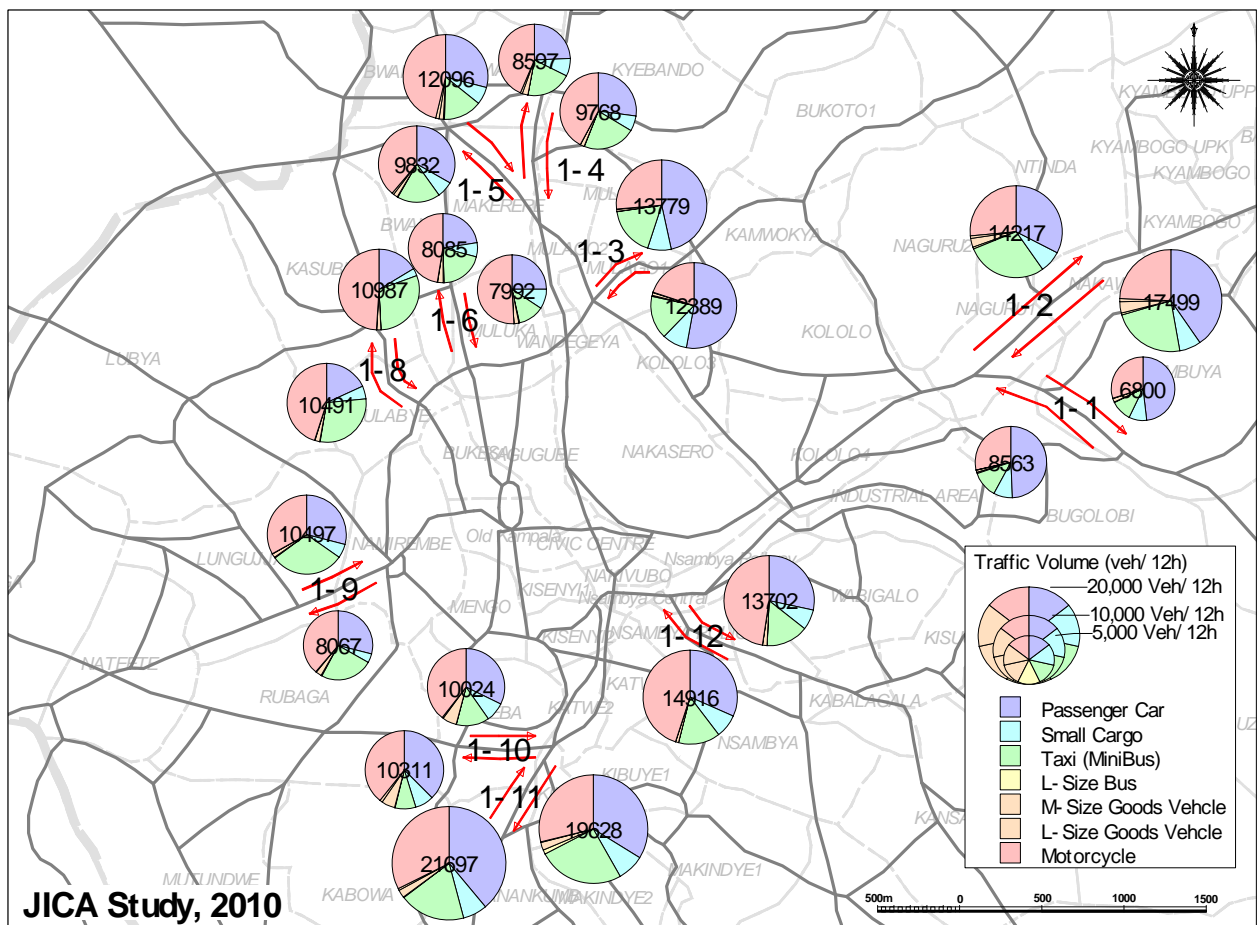


Fig. 5: Results of Vehicle count (Vehicles/12hours) in Kampala (Source: JICA, 2010)

In Kampala, minibuses operate from the outer areas to two large taxi parks (minibus terminals) that are located in the city centre. These parks are franchised by Kampala City Council to the Uganda Taxi Operators and Drivers Association (UTODA),

which has a near monopoly of public transport in the city. The surge in traffic jam has however, compelled the government to initiate a pilot study on the introduction of Bus Rapid Transit (BRT) in Kampala. The BRT study is funded by the World Bank. It is expected that by 2014 the entire BRT system will be operating.



Fig. 6: One of the minibus terminals in Kampala



Fig. 7: Low capacity Minibuses in Kampala : A key cause of traffic jam

Table 1: Numbers of Registered Vehicles in Uganda, 1997 - 2007)(Thousands)

Vehicle Type	1997	2002	2005	2006	2007
Cars and Taxis	42	54.2	65.5	70.7	81.3
Light Goods/4WD	33.1	45.5	53.2	53.2	56
Minibuses	13.4	18	27.6	32	39.5
Buses	0.6	0.8	0.9	0.9	1
Trucks (Rigid/Trailers/Artics)	9.9	15.7	18.7	20.5	23.3
Sub-totals	99	134.2	165.8	177.1	201.1
Motorcycles	48	71.2	108.2	134	176.5
Agricultural Tractors and Others	3.5	3.8	4.6	4.8	5.2
Totals	150.5	209.3	278.6	315.9	382.8

Source: Uganda National Transport Master Plan, 2009

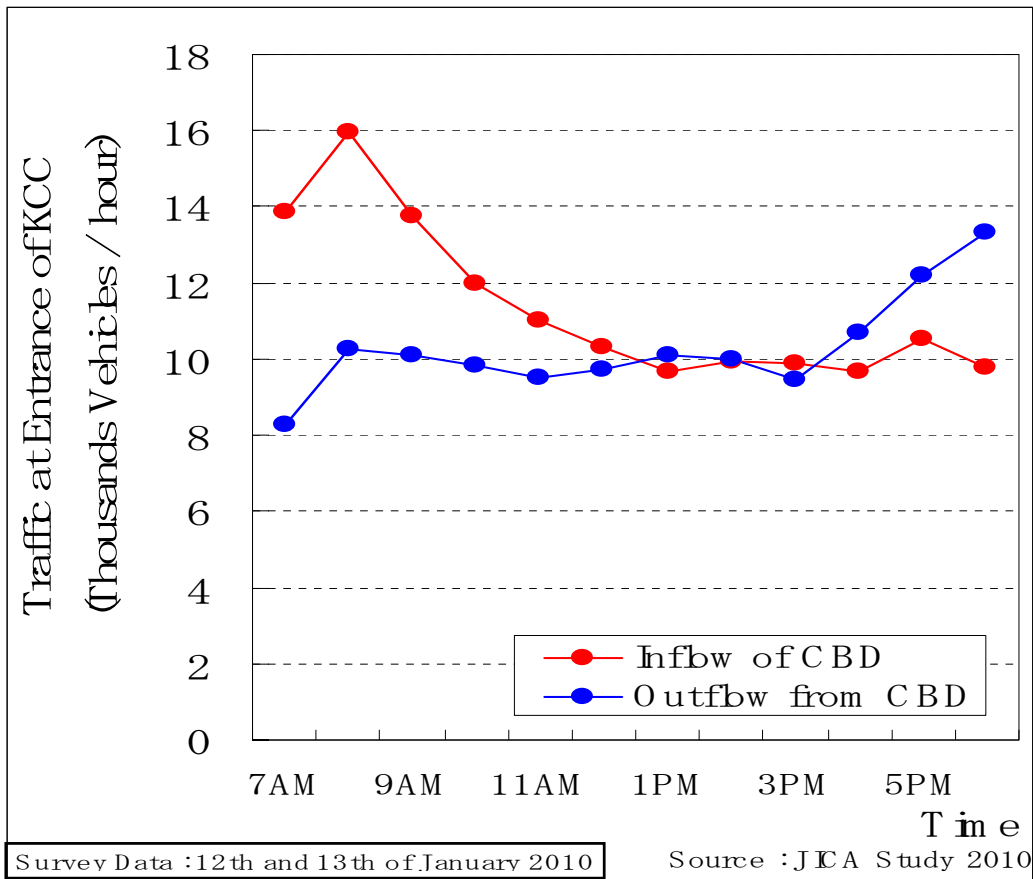


Fig.8: Inflow and Outflow of vehicles in Kampala city centre (Jica, 2010)

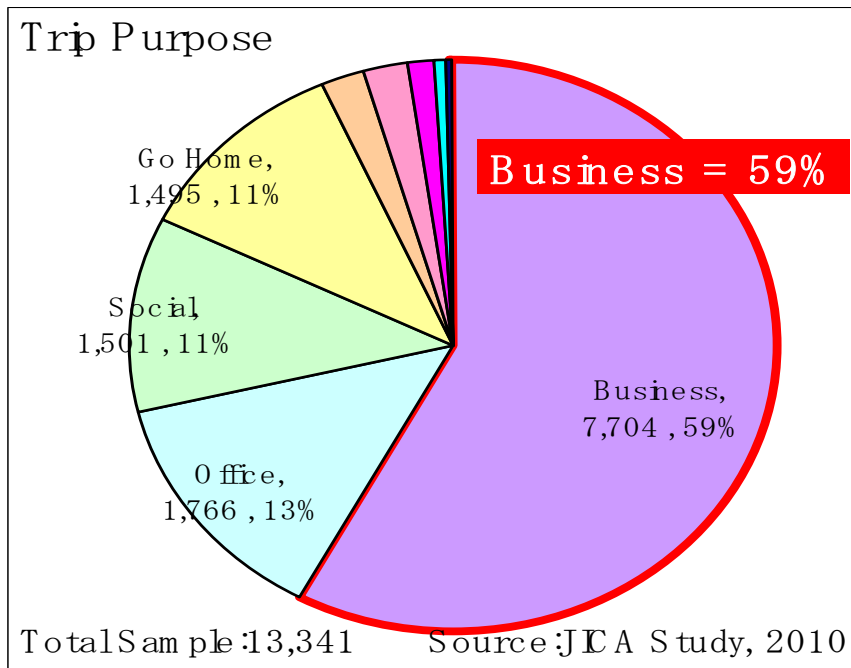


Fig. 9: Purpose of trips made by commuters in Kampala city centre (JICA, 2010)

A recent research study conducted by JICA in Kampala found that 59% of trips made by the commuters and travellers to the city centre are business-related (see figure 9). A possible explanation for this is because of the over concentration of the business activities in the city centre as well as the emergence of the mono-centric urban structure in Kampala. The JICA study also revealed that 13% of trips were made for the journeys to the office and 11% for the journeys back home.

1.2 Road Safety

Road safety has emerged as a major transportation policy issue and a key challenge in many Ugandan cities. In 2007 for example about 2,300 people died in road accidents on various roads across the country. Uganda's current fatality rate of 65 deaths per 10,000 vehicles is also one of the highest in the Sub Saharan Africa (Transport Master Plan, 2009).

Among the major causes of road accidents in Uganda are: increased use of private vehicles (especially motorcycles and cars), the decline of public transport, deterioration of driving standards, inadequate and ineffective law enforcement, inadequate infrastructure for pedestrians as well as the lack of a clear mechanism to inspect vehicles on a regular basis. Over 50 percent of the road accidents in Kampala city are due to the use of motorcycles, which are locally called Boda Bodas (Transport Master Plan, 2009).

To address the challenge of road accidents, the government is planning to establish an independent agency called the National Road Safety Authority (NRSA). NRSA will coordinate road safety action in addition to advocacy, awareness and promotion of roles of road safety. The agency will also engage all stakeholders within the country concerned with road safety. Above all, the new agency will be headed by an executive director and will have regional representatives to promote road safety at the regional levels.

1.3 Air Pollution

Due to the over reliance on second hand vehicles and the absence of an effective strategy to inspect vehicles, air pollution levels in some of the major towns have been increasing. Worse still, there is currently no clear policy in Uganda to promote cleaner fuels and leaded fuels are still being used by motorists, contrary to the 1995 World Health Organization recommendation that the use of lead additives in motor vehicle fuels be phased out. Current standards by the Uganda National Bureau of Standards (UNBS) on leaded fuels are that leaded petrol levels be not more than 0.05 – 0.4g/l. It is also worth noting that Uganda has no clear air quality guidelines and standards and that the lead agency responsible for monitoring air quality lacks technical expertise and equipment to execute its mandate.

Due to the numerous challenges faced by the National Environment Management Authority (NEMA), the urban street air pollution caused by road transport is still not monitored. On average, road transport in Uganda contributes to more than half of the nitrogen oxides emissions. Emissions from motor vehicles have also increased because of the growth in population and the number of vehicles in the urban areas in Kampala. Uganda's current total vehicle fleet is about 500,000 vehicles and more than 70 percent of these vehicles are registered in Kampala.

2 Aim of study

This study aims to determine research capacity and assess activities, in each of the six Sub Saharan Africa countries forming part of the TEST Network, with respect to traffic flow management, road safety and air pollution (including GHG and noise). Each of the six countries was charged with carrying out of this work in their own respective country's using the most appropriate method (s) for this work. A brief background of the key research areas has been presented under the introduction.

It is important to note however that the determination of the research capacity and activities of a country is not an easy task and may require a joint effort and collaboration with key stakeholders.

3 Methodology

To undertake this study, members of the local TEST Network applied an eclectic methodology. The study commenced with an inception meeting which was held in January 2010 at the University of Cape Town in South Africa. All the six partner countries attended this meeting, which was intended to discuss the proposal and review the templates which had been developed by the University of York/SEI. Following this meeting was the establishment of local TEST Networks in the six countries. In Uganda the local TEST Network established a research team comprising of members from various sectors and the two main Universities (Makerere University and Kyambogo University). Members of the local research team were allocated tasks to carry out field research and fill the templates. Several organizations and government agencies were contacted by the Network researchers with the aim of establishing their research capacities. Websites of the various organisations and research institutes were also used. Face to face interviews targeting resource persons in the three research areas were also conducted.

After completing the three templates on air pollution, traffic flow management and road safety, a national stakeholders' workshop was organised. 65 people were invited for the workshop. The workshop was intended to offer a chance to the various stakeholders to validate the information collected and make suggestions where possible basing on their past experience and knowledge about the three issues that were being explored.

4 Transport and Environment Research Capacity

Uganda is currently lacking a well -developed research infrastructure. Research and Development (R& D) in Uganda are also hampered by the lack of resources and continued absence of a research culture. Related to this is that transport is one of the most neglected research area and none of the existing Universities in Uganda offers a specific programme on transport.

4.1 Transport Research Capacity

In Uganda, transport research is being carried out on ad-hoc basis and in an uncoordinated way. Except for a diploma in transport and logistics, which does not cover much (this diploma programme is currently being taught at the Makerere University Business School), there is currently no specific degree programme on transport that is taught in local universities and this explains why transport continues to be a neglected research area in Uganda. Related, in Uganda, University education has for long focused on teaching and not generating new knowledge and this has negatively affected efforts to promote research in key areas like transport.

Research outputs based on individual efforts and interest have however been presented at various international conferences and seminars. At the government level, research activities are currently being undertaken by consultants hired to work on specific transport projects and producing reports that are used to formulate policies and develop programmes in the transport sector.

4.2 Research Entities

4.2.1 Makerere University

There is currently no coordinated way of conducting research on transport at Makerere University. The university has no specific degree programme on transport that is taught. Also the university lack the capacity to carry out research on

transport. Existing research outputs at the university are a result of uncoordinated individual effort and from a few lecturers who studied in foreign universities. However, there is a plan to establish a transportation research centre at the faculty of technology under the proposed university administrative structure based on Colleges. Also under the proposed administrative structure the transportation research centre will be affiliated to the College of Engineering and Design. It is hoped that the centre will help promote and popularise transportation research and develop degree programmes on key areas of transport.

Table 2: Research Capacity at Makerere University

Focus Areas	Researcher	Department	Recent Project	E-mail address
Transport Modelling & Road Construction Materials	Associate Prof. Dr. Kelari Anthony	Construction Economics & Management	(i)Use of Pozolanic Materials in Road Construction, (ii) Traffic Flow Management in Kampala, (iii) High Way design in Uganda	akerali@tech.mak.ac.ug
Transportation Planning	Dr. Kiggundu Amin	Architecture	(i)Informal Transport Systems in Kampala (ii) Public Transport Financing in Kuala Lumpur, Malaysia (iii) Transport Governance in Uganda (iv) Rapid Motorisation	akiggundu@tech.mak.ac.ug
Transport Policy &	Ms Sandra Wamono	Construction Economics &	Transport Planning in United	swamono@tech.mak.ac.ug

Planning		Management	Kingdom	
Traffic Flow Management and Road Construction Materials	Dr. Bagampadd e Umar	Civil Engineering	(i)Use of Pozolanic Materials in Road Construction in Uganda (ii) Traffic Flow Management in Uganda	civil@tech.mak.ac.ug
Road Safety and Traffic Flow Management	Mwesige Godfrey	Construction Economics & Management	(i)Road Safety in Uganda (ii)Transport Systems	gmwesige@tech.mak.ac.ug
Transport Planning	Paul Isolo	Geography	Reducing Greenhouse Gas Emissions in Kampala City	mukwaya@arts.mak.ac.ug

4.2.2 Other Stakeholders

4.2.2.1 Road Safety & Traffic Flow Management

Besides Makerere University, there are other organisations working to address traffic flow and road safety challenges in Uganda. Some are consultancy firms while others are non governmental organisations. In terms of research, the impact of these organisations on road safety and traffic flow management inn Uganda is still very small.

Table 3: Universities, Government Agencies Consultant Firms & NGOs

Organisation	Contact Person	Research Focus	Email address/Telephone
Kyambogo	Dr. Nabalegwa	Transport and	nabalegwa@yahoo.com

University	Muhamud	Climate Change	
Uganda National Road Authority	Mr. Jeremy Agoma	National Transport Master Plan	jaguma@rafu.co.ug
Technology Consultants	CEO	Traffic Flow and Road Design	techcons@teco.co.ug
Ministry of Works & Transport	Rosemary Tibiwa	Transportation Policy, Planning & Regulation	rtibiwa@works.go.ug
Injury Control Centre Uganda	Dr. Catherine Nansamba	Road Safety/Road Accidents	icccu@infocom.co.ug
Uganda Institution of Professional Engineers	President	Road Safety and Road Design	uipe@ugandaengineers.org
Transport Forum Group (Consultancy Firm)	Paul Kwamusi	Traffic Flow and Road Design	Paulkwamusi@yahoo.com
Centre for Urban Studies & Research (NGO)	Dr. Kiggundu Amin	Transport Policy & Planning	akiggundu@tech.mak.ac.ug www.cfusrug.org
Arrivealive (NGO)	Barbara Mwanje	Road Safety	feedback@arrivealive.or.ug

4.3 Environmental Research

The lead agencies in Uganda with regards to environmental research are the National Environment Management Authority (NEMA) and Uganda Bureau of Statistics (UBoS). Due to institutional fragility as well as the continued lack of resources, the two institutions have not been able to execute their mandate of monitoring air pollution and furnishing accurate information on the problem to the

public. Also there are very few local NGOs working to address the air pollution challenge and undertaking research in the same area.

5 National Stakeholders Workshop

The national stakeholders' workshop was held on 14th December 2010 at Hotel Sojovalo in Kampala. Out of the 65 people invited only 31 attended the workshop. This was due to the fact that December is usually a busy month with many workshops and seminars organised by various organisations and government agencies before the Christmas holidays and end of year. Besides, many that attended the workshop left before the closing time in order to attend other functions. Contact details of the stakeholders were got from the Uganda Institution of Professional Engineers, internet and National NGO Registration Board. A full list of the stakeholders and the attendees of the workshop as well as the Agenda has been attached.

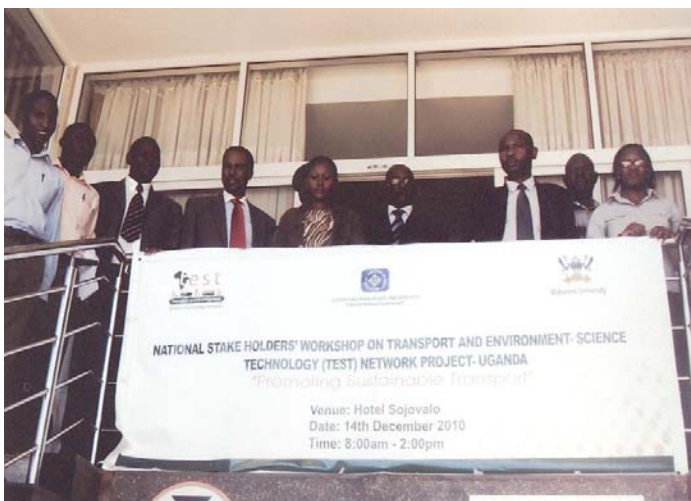


Fig. 10: Some of the of the Participants at the Stakeholders Workshop on 14th December, 2010

Fig 11: Some of the Local Test Network members - Uganda

Participants in the workshop were mainly professionals from the local professional bodies like Uganda Institution of Professional Engineers, civil society organisations, NGOs, Government and consultants. The workshop was opened by the local TEST

Network team. The first presentation by the local TEST Network manager focused on the details of the project including the purpose, aims and objectives. This was followed by a question and answer session. Presentations focusing on the local research capacities and research findings in the three areas---that is, air pollution, road safety and traffic flow management--- were later made by members of the local TEST research team.

Discussion on the research activities and research capacities in Uganda were held. Comments from individual participants about the gaps in the research findings were also received. After the discussion, participants were divided into three groups basing on their field of expertise. The three filled templates were distributed to the participants and requested to further validate the contents and where possible make suggestions especially on future training and research needs. The results and conclusions of the workshop are reported in section 6 of this report.

6 Transport and Environment Research Needs

6.1 Road safety

Road safety, as stated before, has become a key policy issue and a serious problem in Uganda. The main causes of this problem are: rapid motorisation (especially the increased use of commercial motorcycle Boda Bodas / paratrasit), poor transport governance and rapid urban growth especially in Kampala. Also, poor road condition is a key cause of road accidents in Uganda.

Road safety is an issue that has not been adequately investigated or explored in Uganda. On ad-hoc basis however, some research on road safety has been undertaken by individual students in Universities and by consultants hired by the government. A study conducted by Consia Consultants (2010) revealed that ‘there is no research capacity in the area of road safety in Uganda. The public

universities in the country have no capacity in carrying out road safety research nor do they teach road safety as a course’.

6.1.1 Research Needs

Discussions held at the national stakeholders’ workshop on road safety confirmed the continued lack of research capacity on road safety in Uganda. Data gaps in the database sheets were identified and addressed by the stakeholders. Gaps were also identified in training and research needs. Examples of the identified research needs on road safety include:

- Research on drug and alcohol related crashes;
- Collection of crash data in general
- Safety rating related research
- Evaluation of safety interventions
- Research on special needs people
- Research on crashes caused by unlicensed drivers and learners
- Pre-crash and post crash risk assessments
- Use of helmets among commercial motorcycle operators/Boda Bodas
- Passenger safety and Security

6.1.2 Suggested Training and Education Needs

Several training and education needs were proposed. Among them are:

- Traffic police officers in Uganda should be trained on how to fill in accident report forms
- Training on Road safety auditing
- Training traffic police officers on Interpreting of data collected.
- Driver training (review of learners license, professional permits)
- Introduction of a course on road safety in both public and private universities.

6.2 Traffic Flow Management

There is currently no coordination in the way research is being undertaken on traffic flow management in Uganda. This is mainly due to the lack of a specific programme on transport that is taught in both public and private universities. Also because of the uncoordinated approach towards research, research reports on traffic flow management in Uganda are scattered and inaccessible. Research reports produced by the consultants hired by the government are also inaccessible because of the lack of a centralised database.

6.2.1 Research Needs

The research needs in Uganda were identified as:

- Research on issues related to travel behaviour like increased use and ownership of private cars in Uganda
- Intelligent transport systems like electronic road pricing
- Establishment of an efficient public transport system
- Research on informal transport systems especially commercial motorcycle Boda Bodas
- Transportation governance and regulation
- Determination of trip generation
- Expenditures on various travel modes transport
- Land use and transport planning
- Non-motorised transport such as walking and cycling
- Transport Demand Management (road pricing, traffic calming etc)
- Modal split

6.2.2 Suggested Training and Education Needs

Among the identified training and education needs are:

- Training of traffic police officers to fill in accident report forms

- Policymakers should be educated on the importance of undertaking transportation research.
- Introduction of a course on transport in both public and private universities
- Carry -out public awareness campaigns to promote public transport
- Carry -out public awareness campaigns to promote non-motorised transport
- Driver behaviour campaigns
- Promotion of transportation research in local universities
- Introduction of a course on transport modelling at university

6.3 *Air Pollution*

6.3.1 Research Needs

- Currently, Uganda has no specific standards and guidelines on air pollution and urban air pollution is still unmonitored.
- There is no accurate data on the contribution of transport especially in the urban areas to air pollution in Uganda
- There is lack of institutional capacity and equipment to undertake research on urban air pollution in Uganda
- Public universities lack the capacity to undertake research on air pollution

6.3.2 Suggested Training and Capacity Building

Opportunities

- The Faculty of Technology, Makerere University, has established a Centre for Research in Energy and Energy Conservation, which is undertaking research on renewable energy but no serious research has been carried out on ethanol and other cleaner fuels that could serve as auto fuel.

- Research on the sustainable transport interventions such as carbon tax and road pricing in reducing emissions and discouraging the use of private vehicles
- Research on cleaner fuels such as ethanol and liquefied petroleum gas should be undertaken
- Introduction of mandatory vehicle inspection in Uganda and setting a limit on the age of vehicles to be imported in Uganda
- Phasing out of leaded fuels
- Seeking technical assistance from developed countries in capacity building and man power training on air quality monitoring
- Enhancement of the capacity of the Uganda National Environment Management Authority and National Bureau of Statistics to monitor air pollution
- Developing air quality standards and guidelines

7 Transport and Environment Recommended Practice

In Uganda, there are not many examples of the best practices in the areas of transport and the environment. However, under the new national transport master plan, several projects have been proposed which is likely to affect traffic flow management, road safety and air pollution especially in the major towns like Kampala. Examples of the proposed projects include:

Recommended Practice in Traffic Flow Management – Bus Rapid Transit (BRT), Uganda Road Fund & Road Projects

Due to the deficiencies in performance of the minibus-based public transport as well as the surge in traffic jam in Kampala city, the government under its new national transport master plan has decided to introduce bus rapid transit (BRT). The BRT project is to be implemented with assistance from the World Bank. Under this

project, four busways will be constructed over the period 2012 – 2023 with each busway taking three years to construct and operationalize at a cost of US\$107million per busway. A pre-feasibility study also funded by World Bank commenced in 2009 and real project work is expected to start in 2011 and end in 2014. It is expected that the project will reduce traffic jam and improve traffic flow in Kampala city.

A new fund, the Uganda Road Fund (URF), has also been established to serve as a source of funding for road maintenance in the country. URF was established by an Act of Parliament in 2009 to finance routine and periodic maintenance of public roads, which had become an intractable challenge and a key cause of traffic jam in the major towns in Uganda. URF is also intended to commercialise the road sub-sector by transferring the burden of maintaining roads from the general taxpayer to the road user. Among its sources of revenue is the fuel tax which is charged from all motorists. The Fund Management Board has members drawn from the public and private sectors with the majority representing private sector road users, to enhance oversight and ownership.

Also under the new traffic flow management strategy especially in Kampala, many road projects have been proposed and some are already under construction. A case in point is the northern bypass road project. This project is intended to establish a ring road and reduce traffic jam in Kampala city.

Best practice in Road Safety

As stated before, in Uganda, road safety is still a major challenge faced by the government. Besides, statistics show that the total costs of road accidents in 2007 in Uganda were Shs558billion or 2.7 percent of the gross domestic product (GDP). Such a cost is obviously too high for a developing country like Uganda. However, Government has introduced some programmes and measures to solve the problem. Among these measures is the establishment of the National Road Safety Council whose mandate is to promote the road safety agenda and develop programmes to address the challenge of road accidents. The problem with this measure however, is

that the Council is grossly understaffed, under-funded and unable in any effective way to implement and sustain widespread initiatives in road safety awareness.

In order to build the capacity needed to address road safety issues, Government plans to establish the National Road Safety Authority as a semi-autonomous statutory body responsible for implementing and enforcing road safety measures that can address and reduce the escalating rate of road accidents.

Several programmes have also been implemented to enhance the capacity of the private driving schools with the aim of producing drivers that are competent and able to use the road responsibly. Besides, there is a plan to introduce mandatory vehicle inspection for at least twice a year. This will definitely benefit the environment and enhance air quality.

Best practice in Air Pollution –

In the absence of air quality standards and guidelines as well as the lack of a clear mechanism to monitor urban air pollution, it becomes extremely hard to talk about best practices in the area of air pollution in Uganda. However, new policy proposals such as the introduction of mandatory vehicle inspection for at least twice a year, the implementation of road projects within Kampala city to reduce traffic jam as well as programmes to monitor the quality of auto fuel could be a positive step towards addressing the challenge of urban air pollution in Uganda. Also important are efforts to establish a bus rapid transit system in Kampala and the phasing out of the minibus-based public transport. Mukwaya (2004) for example state that on average one minibus in Kampala produces 18,536Kg of carbon annually while one big bus produces 61,847Kg of carbon each year. Besides, NEMA (Uganda National Environment Management Authority) is currently developing air quality standards and building the necessary capacity to execute its mandate. More importantly, under the Kampala Metropolitan Master Plan it is proposed that non-motorised transport

such as walking and cycling be promoted especially in areas around the Kampala city centre.

8 Discussion

8.1 Road safety

The road safety situation in Uganda is poor and it has deteriorated rapidly over the last years, mainly due to the growing vehicle population and the lack of appropriate road safety interventions. Available statistics show that each year Uganda is losing about Shs558billion or 2.7 percent of the gross domestic product (GDP) due to road accidents. The number of fatalities in Uganda is high compared to other Sub Saharan Countries. The current fatality rate per 10,000 vehicles is about 65 deaths. The high number of road accidents in large towns like Kampala is also due to the rapid increase in the use of commercial motorcycle Boda Bodas. According to the Uganda Police over 50 percent of the road accidents in Kampala are due to the use of motorcycles. Additionally, over 90 percent of the vehicles imported in Uganda are second hand and there is no clear mechanism to inspect vehicles on a regular basis.

A further issue relates to the existing transport regulatory regime that has failed to regulate informal transport systems especially commercial motorcycle boda bodas (paratransit). Currently, the power to regulate the transport sector in Kampala is located in five agencies----that is, Kampala City Council, Face Technologies, Uganda Revenue Authority, Transport Licensing Board and Uganda Police. These agencies are fragile, under-funded and coordination among them is lacking. Besides, there is duplication in function among these regulatory agencies.



Fig. 12: Informal transport has become a key challenge for transport regulators in Kampala

Fig. 13: Bicycle boda bodas (para-transit) in Kampala

To tackle the problem, Government is planning to establish a single quasi-autonomous agency called the National Road Safety Authority with clear the mandate to promote the road safety agenda. Besides, Government has identified driver training standards as one area that needs immediate intervention. In 2004, a new driver curriculum was developed. Further, regulations in regard to driver training and testing were developed by Government. A new programme to retrain traffic police has also been implemented.

The problem however is that the capacity to carry out research on road safety both at university and government levels is still lacking and there is currently no specific degree course on road safety taught in local universities.

8.2 Traffic Flow Management

Due to rapid motorisation and astonishing urban growth as well as the deficiencies in performance of a minibus-based public transport system, large towns like Kampala continue to face traffic jam. Traffic jam has also affected the urban economy

and escalated air pollution. In Kampala for example, each day 23,813 man hours are lost by commuters due to traffic jam. Also poor road maintenance has adversely affected the smooth flow of traffic in large towns and cities.

New policies such as the establishment of the Uganda Road Fund as well as the implementation of several road projects such as the northern bypass may however help to improve the flow of traffic and reduce traffic jam especially in Kampala. Besides, there is a plan to introduce high capacity transit systems such as Bus Rapid Transit (BRT) and phase out minibuses by 2014. A pre-feasibility study to introduce BRT has already been completed and work on the project is expected to start in 2011. Related, the BRT project will be funded by the World Bank.

Research outputs on traffic flow management in Uganda are basically a result of individual efforts and there is lack of coordination and collaboration among the research institutions including universities. Worse still, there is currently no specific degree programme on transport as well as traffic flow management in local universities and universities lack the capacity and the required infrastructure to undertake research on traffic flow. Under the proposed management structure of Makerere University, a transportation research centre will be established and it is hoped that the Centre will help address the research challenges faced by Uganda.

8.3 Air Pollution

The transport sector in Uganda accounts for about 75 percent of the Greenhouse Gas (GHG) emissions and as the demand for transport and energy continues to surge, GHG emissions will also increase especially in the major towns and cities. Rapid motorisation as well as the consumption of petroleum products, coupled with the rapid growth of urban populations will also adversely impact on human health especially in large towns.

Worse still, the National Environment Management Authority (NEMA), the lead agency mandated to monitor air pollution and carry experiment on air quality on regular basis lacks the capacity to execute its mandate. Related, currently, Uganda has no air quality standards and guidelines. Besides, the local universities lack the capacity to undertake research on air pollution and research in this area is still lacking.

Continued dependence on the second hand imported vehicles as well as the failure by the government to promote cleaner fuels such as ethanol and liquefied petroleum gas (LPG) has adversely affected efforts to address the challenge of air pollution in Uganda.

New policy strategies and proposals such as the establishment of Bus Rapid Transit (BRT) in Kampala, the phasing out of leaded fuels, the construction of new roads to reduce traffic jam and improve traffic flow as well as the introduction of mandatory vehicle inspection for at least twice a year may however serve as a positive step towards combating air pollution in Uganda.

9 Conclusion and Recommendations

From the survey carried out on local research capacities as well as the discussions held at the stakeholders' workshop, it is clear that there is no coordination and collaboration among the research institutions in the way research is being carried out on road safety, traffic flow management and air pollution in Uganda. Besides, the capacity to carry out research in the three areas at university level is still lacking. Most research outputs are a result of individual effort by the lecturers teaching in

various local universities and government hired consultants. Research efforts have also been adversely affected by the lack of a specific degree programme on transport that is taught in local universities.

More importantly perhaps is that the research efforts in Uganda are hampered by the lack of financial resources as well as a common database. With regards to air pollution, it is important to note that Uganda currently lacks air pollution standards and guidelines and urban air pollution is still unmonitored. The capacity to carry out research on air pollution in local universities is also lacking. More crucially, there is currently no mandatory inspection of vehicles and over 90 percent of vehicles imported are second hand.

Research programmes on cleaner fuels such as liquefied petroleum gas (LPG) as well as ethanol have not been developed and leaded fuels are still being used by motorists. Road safety is also a neglected research area in Uganda but as more Ugandans begin to own and use private vehicles, the road safety situation is likely to deteriorate further.

In short, there is need to develop Uganda's research capacity in the three areas of road safety, air pollution and traffic flow management. Besides, most research outputs in the country are in form of unpublished reports written by the consultants hired by the government and there is lack of a centralised database that could be used to manage research outputs. The proposed workshop on publishing and dissemination of information in the second year of the project will go along way in addressing the above challenges.

The survey on local research capacities and training needs has exposed many critical issues that need to be addressed in the three areas of road safety, air pollution and traffic flow management and proposals to develop training modules for stakeholders

and evaluation seminars in the second year of the project will go a long way in addressing the above challenges.

Annex I: Summary of Research Needs and Capacity Tables

Research Capacities related to road safety

A. Governmental agencies involved with a Road Safety	Division	Acting unit	Name	General Telephone number	Email	WWW
Ministries						
Ministry of Works and Transport (MWOT)	Transport Planning & Regulation	Commissioner Transport Planning	Mr. Godfrey O. Wandera	(+256)414320101	gowandera@gmail.com	www.works.go.ug
Ministry of Works and Transport (MWOT)	Transport Planning & Regulation	Commissioner Transport Regulation	Mr. Patrick Sanya	(+256)414320418/ (+256)712 950710	psanya@works.go.ug	www.works.go.ug
Ministry of Works and Transport (MWOT)	National Road Safety Council (NRSC)	Secretary NRSC	Mr. George Muhenda Rukara	(+256)41320101	rukara3t@hotmail.com	www.works.go.ug
Ministry of Health (MOH)			Ms. Fatuma Nabugolola	(+256)774441895	nabugololafatuma@yahoo.co.uk	www.health.go.ug
Ministry of Education and				(+256)41234451/4		http://www.educ

Sports (MOES)						ation.go.ug
Agencies						
National Road Safety Council (NRSC)		Chairman	Tumushabe Nathan	(+256)772502017	nnythan@yahoo.com	www.works.go.ug
Uganda National Roads Authority (UNRA)		Transport Economist	Mr. Jeremy B. Aguma	(+256)772614076/ (+256)312233215	jaguma@rafu.or.ug	www.unra.go.ug
Transport Licensing Board (TLB)		Sec. Transport Licensing Board	Mr. Winstone Katushabe	(+256)772403782	katushabew@yahoo.com	www.works.go.ug
Uganda Police	Traffic & Road Safety	Commissioner	Ms. Sarah Kibwika	(+256)414234921/ (+256)772372772		www.upf.go.ug
Uganda National Bureau of Standards (UNBS)			Dr. Terry Kahuma	(+256)414505995/ (+256)414222367	info@unbs.go.ug	www.unbs.go.ug
Kampala City Council (KCC)	Physical Planning		Mr. Peter Katebalirwe	(+256)772434852	katebapeter@yahoo.com	www.citycouncilofkampala.go.ug
B. Universities/Research Institutes involved with road safety	Department	Acting unit	Name	Telephone number	Email	WWW
Makerere University	Department of Architecture		Dr. Kigunddu Tamale Amin	(+256)773291251	akiggundu@tech.mak.ac.ug	http://tech.mak.ac.ug
Makerere University	Department of Civil Engineering	Head of Department	Dr. Bagampadda U.	(+256)772605495	civil@tech.mak.ac.ug	http://tech.mak.ac.ug

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Research Capacities related to air pollution

A. Governmental agencies involved with air pollution (including noise and GHGs)	Division	Acting unit	Name	General Telephone number/ Address	Email	WWW
Ministries						
Ministry of Works and Transport (MWOT)	Transport Policy and Planning	Assitant Commissioner	Mr. Benon Kajuna M.	(+256)772418993/ (+256)414320101/ (+256)414321364	kajuna@yahoo.co.uk	http://www.works.go.ug
Ministry of Energy and Mineral Development (MEMD)		Permanent Secretary	Mr. Fred Kabagambe – Kaliisa	(+256)414311111	psmemd@energy.go.ug / memd@energy.go.ug / mubiru@energy.go.ug	www.energyandminerals.go.ug
Ministry of Energy and Mineral Development (MEMD)		Director Energy and Mineral Development	Eng. Paul Mubiru	(+256)414349010	demd@energy.go.ug	www.energyandminerals.go.ug
Ministry of Water and Environment (MWE)	Department of Meteorology	Commissioner for Meteorology	Mr. Stephen A.K. Magezi	(+256)772878322/ (+256)772441844/ (+256)414259128	stephen.magezi@meteo-uganda.net / meteoug@infocom.c	www.mwe.go.ug / www.meteo-uganda.net

	gy				o.ug	
Ministry of Water and Environment (MWE)	Department of Meteorology	Senior Research Meteorologist	Mr. James B. Magezi-Akiiki	(+256)0772413311 / (+256)414251798/ (+256)414255609/ (+256)414233559	mageziakiiki@yahoo.com	www.mwe.go.ug / www.meteo-uganda.net
Agencies	-					
National Planning Authority	Senior Planner		Mr. Wilson Kayom	(+256)414250214	npa@npa.ug	www.npa.ug
National Environment Management Authority (NEMA)		Director Environment Monitoring and Compliance	Mr. Arnold Waiswa Ayazika	(+256)41251064/ (+256)41251065/ (+256)41251068	wayazika@nemaug.org	www.nemaug.org
National Environment Management Authority (NEMA)		Senior Environment Inspector	Mr. Herbert Oule	(+256)772620044	houle@nemaug.org	www.nemaug.org
Uganda National Bureau of Standards		Executive Director	Dr. Terry Kahuma	(+256)414505995	info@unbs.go.ug	www.unbs.go.ug
Uganda Bureau of Statistics		Chairman	Dr. E. S.K. Muwanga Zake	(+256)414706000	ubos@ubos.org	www.ubos.org

B. Universities/Research Institutes involved with air pollution (including noise and GHGs)	Department	Acting unit	Name	Telephone number	Email	WWW
Makerere University	Dept. of Geography		Mr. Paul Isolo Mukwaya	(+256)712345103/ (+255)786751820	mukwaya@arts.mak.ac.ug	http://arts.mak.ac.ug
Makerere University	Dept. of Geography	Head of Department of Geography/ Coordinator Meteorology Unit	Assoc. Prof CPK Basalirwa	(+256)712848049	cbasalirwa@arts.mak.ac.ug	http://arts.mak.ac.ug
Kyambogo University	Department of Geography		Dr. Wambede M. Nabalegwa	(+256)772388801	nabalegwa@yahoo.com	http://www.kyu.ac.ug
C. Industries involved with air pollution	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW

(including noise and GHGs))					
Automobile Association of Uganda (AAU)				(+256)414255917	aauganda@aau.co.ug	http://www.aau.co.ug
Uganda Drivers Standards Agency (UDSA)		Chairman	Capt. Roy Ziwa	(+256)312103915	Info@udsaonline.org	www.udsaonline.org
Uganda Taxi Operators and Drivers Association (UTODA)		National Chairman	Mr. John Ndyomugenyi	(+256)4142325692	utodataxi@gmail.com	http://utodakla.com
Uganda Taxi Operators and Drivers Association (UTODA)		Chairman	Hajji Katongole Musa	(+256)4142325693	utodataxi@gmail.com	http://utodakla.com
Uganda Association of Motorcycle and Bicycle Operators (UAMBO)						
Uganda Bus Operators Association (UBOA)			Haji Asumani Junju	(+256)41341719/ (+256)752690290/ (+256)712869930	uboail@utlonline.com	

Investments Ltd.						
D. Commercial incl. SMEs involved with air pollution (including noise and GHGs)	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Mukwano Industries		Executive Director	Mr. Sakander Mohammed	(+256)414313313	admin@mukwano.com	www.mukwano.com
Tororo Cement Industry		Executive Director	Mr. B. M. Gagrani	(+256)414344578	tcl@tororocement.com	www.tororocement.com
Uganda Meat Industries						
Bugolobi Sewage Treatment Tanks						
E. Consultants involved with air pollution (including noise and GHGs), including internationally acting consultants	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW

AWE (Air, Water & Earth) Environmental Engineers		President & CEO	Eng. Lammeck Kajubi	(+256)712403357/ (+256)414268466/ (+256)782580480	mail@awe-engineers.com/ l.kajubi@awe-engineers.com	www.awe-engineers.com
AWE (Air, Water & Earth) Environmental Engineers			Mr. Isa Kabenge	(+256)772377172	i.kabenge@awe-engineers.com	www.awe-engineers.com
AWE (Air, Water & Earth) Environmental Engineers			Mr. Herbert Kalibbala	(+256)772496451	h.kalibbala@awe-engineers.com	www.awe-engineers.com
NB Consultants Ltd.		Managing Director	Ms. Bukirwa Faridah	(+256)752351455	nbfarida@gmail.com	www.nbconsultants.com / www.pciaonline.org
F. NGOs involved with air pollution (including noise and GHGs)	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Centre for Urban Studies & Research		Executive Director	Dr. Kiggundu Tamale Amin	(+256)773291251	aminkig@hotmail.com	www.cfusrug.org

G. Others involved with air pollution (including noise and GHGs)	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW

Research Capacities related to traffic flow management

A. Governmental agencies involved with traffic flow management	Division	Acting unit	Name	General Telephone number	Email	WWW
Ministries						
Ministry of Works and Transport (MWOT)	Transport Policy and Planning	Assitant Commissioner	Mr. Kajuna Benon. M.	(+256)772418993/ (+256)414320101/ (+256)414321364	kajunab@yahoo.co.uk	www.works.go.ug
Ministry of Works and Transport (MWOT)	Transport Policy and Planning	Principal Transport Economist	Ms. Rosemary Tibiwa	(+256)772482247/ (+256)414320101/ (+256)414321364	rtibiwa@works.go.ug	www.works.go.ug
Ministry of Finance Planning and Economic Development (MoFPED)	Infrastructure and Social Services	Transport Economist	Mr. Chris Ntegakarija	(+256)772592073/ (+256)414707000	chrisbntega@yahoo.com/ chris.ntegakarija@finance.go.ug	www.finance.go.ug
Ministry of Internal Affairs (MIA)	Uganda Police Force	Commissioner Traffic and Road Safety	Ms. Sarah Kibwika	(+256)800199399/ (+256)772372772		www.upf.go.ug
Agencies						

Transport Licensing Board (TLB)		Sec. Transport Licensing Board	Mr. Winstone Katushabe	(+256)772403782	katushabew@yahoo.com	www.works.go.ug
National Planning Authority		Senior Planner	Mr. Wilson Kayom	(+256)414250214	npa@npa.ug	www.npa.ug
National Environment Management Authority (NEMA)		Director Environment Monitoring and Compliance	Mr. Arnold Waiswa Ayazika	(+256)41251064/ (+256)41251065/ (+256)41251068	wayazika@nemaug.org	www.nemaug.org
Kampala City Council (KCC)		Programme Engineer KCC	Mr. Bonnie Nsambu	(+256)772200353	bonnie.nsambu@kcc.go.ug	www.citycouncilofkampala.go.ug
B. Universities/Research Institutes involved with traffic flow management	Department	Acting unit	Name	Telephone number	Email	WWW
Makerere University	Department of Architecture		Dr. Kigunddu Tamale Amin	(+256)773291251	akiggundu@tech.mak.ac.ug	http://tech.mak.ac.ug

Makerere University	Department of Civil Engineering		Eng. Godfrey Mwesige	(+256)712961855	gmwesige@tech.mak.ac.ug	http://tech.mak.ac.ug
Makerere University	Department of Construction Economics and Management		Ms. Sandra Wamono	(+256)782731159	swamono@tech.mak.ac.ug	http://tech.mak.ac.ug
Makerere University	Department of Economic Policy and Planning	Head of Department	Dr. Eseza Katerega	(+256)41530115	faculty@fema.mak.ac.ug / dean@fema.mak.ac.ug	www.fema.mak.ac.ug
Makerere University Business School	Department of Procurement & Logistics	Head of Department	Mrs Eyaa Sarah Bulaamu	(+256)414338120	seyaa@mubs.ac.ug / hodprocurement@mubs.ac.ug	www.mubs.ac.ug
Kyambogo University	Department of Geography		Dr. Wambede M. Nabalegwa	(+256)772388801	nabalegwa@yahoo.com	http://www.kyu.ac.ug

Kyambogo University	Department of Land and Architectural Studies	Head of Department	Mr. John Rutabajuka	(+256)414285394	las@kyu.ac.ug	www.kyu.ac.ug
C. Industries involved with traffic flow management	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Automobile Association of Uganda (AAU)				(+256)414255917	aauganda@aau.co.ug	www.aau.co.ug
Uganda Drivers Standards Agency (UDSA)		Chairman	Capt. Roy Ziwa	(+256)312103915	Info@udsaonline.org	www.udsaonline.org
Uganda Taxi Operators and Drivers Association (UTODA)		National Chairman	Mr. John Ndyomugenyi	(+256)4142325692	utodataxi@gmail.com	http://utodakla.com
Uganda Taxi Operators and Drivers Association (UTODA)		Chairman	Hajji Katongole Musa	(+256)4142325693	utodataxi@gmail.com	http://utodakla.com
Uganda Association of						

Motorcycle and Bicycle Operators (UAMBO)						
Uganda Bus Operators Association (UBOA) Investments Ltd.			Haji Asumani Junju	(+256)41341719/ (+256)752690290		
D. Commercial incl. SMEs involved with traffic flow management	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Multiplex Limited	Street Parking	Operations Manager	Mr. Stephen Gagaya	(+256)312360100	multiplexparking@infocom.co.ug	http://multiplexug.com
Uganda Taxi Operators and Drivers Association (UTODA)	Public Transport	National Chairman	Mr. John Ndyomugenyi	(+256)4142325692	utodataxi@gmail.com	http://utodakla.com
E. Consultants involved with traffic flow management	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Uganda Institution of		President		(+256)41287292	uipe@ugandaengineers.org	www.ugandaengineer.org

Professional Engineers (UIPE)						
Zzimwe Construction Ltd.				(+256)41267474/ (+256)41267376/ (+256)772408918		
Tahal		Vice President	Mr. Joseph Haim Harosh	(+972)36924377	asaf@tahal.com	www.tahal.com
Technology Consults Ltd. (TECO)			Dr. Kariko-Buhwezi Bernard (C.E.O)	(+256)0414540618	techcons@teco.co.ug	http://teco.co.ug
Kagga and Partners		Managing Director	Dr. Peter Magambo	(+256)712837060	kagga@imul.com	www.kaggapartners.com
Kagga and Partners		Chairman	Eng. Abdu Kagga	(+256)772221296	kagga@imul.com	www.kaggapartners.com
F. NGOs involved with traffic flow management	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW
Centre for Urban Studies & Research		Executive Director	Dr. Kiggundu Tamale Amin	(+256)773291251	info@cfusr.org	www.cfusr.org
Arrive Alive Uganda		Executive Director	Ms. Barbara Mwanje	(+256)414231129	feedback@arrivealive.or.ug	www.arrivealive.or.ug
G. Others involved with	Division (if applicable)	Acting unit	Name	Telephone number	Email	WWW

traffic flow management (CSOs)						
Transport Forum Group			Mr. Paul Kwamusi	(+256)772405503	paulkwamusi@yahoo.com	
Transport Forum Group			Mr. Timothy Mitala	(+256)772369794	timmitala@yahoo.com	
Transport Forum Group			Mr. Charles Kaira	(+256)414288312	ckkaira@africaonline.ke	
Centre for Urban Studies and Research (CfUSR)		Executive Director	Dr.Kigunddu Tamale Amin	(+256)773291251	mosezi55@yahoo.com	www.cfurs.co.ug
Arrive Alive		Executive Director	Ms. Barbara Mwanje	(+256)414231129	feedback@arrivealive.or.ug	www.arrivealive.or.ug
Injury Control Center- Uganda		Executive Director	Dr.Catherine Nansamba	(+256)414543438/ (+256)772453672	iccu@infocom.co.ug / catnansamba@yahoo.com	www.iccu.or.ug
Injury Control Center Uganda	Research	Senior Scientist Research	Dr. Bonnie Wandera	(+256)414543438	iccu@infocom.co.ug	www.iccu.or.ug
First African Bicycle information Organization (FABIO)		Programme Director	Mr. Patrick Kayemba	(+256)772469156	kapaga2006@yahoo.com	www.fabio.or.ug

GTZ		Traffic and Transport Consultant	Mr. Meriano Tibabiganya	(+256)772513743	gtz-uganda@gtz.de	www.gtz.de
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Annex II: National Stakeholders Workshop Agenda

TEST Stakeholders Workshop held on Tuesday 14th December, 201 at Sojovalo hotel, Kampala, Uganda

TIME	ACTIVITY	FACILITATOR
8:00-8:30 am	Registration	Mr. Herbert Ajune
8:30-8:45 am	Opening Remarks by TEST project coordinator	Dr. Kiggundu Tamale
8:45-9:15 am	Overview of the TEST Project	Dr. Kiggundu Tamale
9:15-9:30 am	Reactions to the overview	
9:30-9:45 am	Road safety research	Mr. Mwesige Godfrey
9:45-10:00 am	Traffic Flow Management	Mr. Semanda Julius
10:00-10:30 am	Tea Break	
10:30-10:45 am	Air pollution research	Dr. Wambedde Muhamad
10:45-11:15 am	General Discussion	Dr. Kiggundu Tamale Amin
11:15-12:00 pm	Formation of Groups & group Discussions to develop action points for the respective (3) themes	Sandra Wamono
12:00-12:30 pm	Group Presentations	Mr. Mwesige Godfrey
12:30-12:45 pm	Reaction to Group Presentations	Mr. Mwesige Godfrey
12:45-1:00 pm	Closing Remarks	Dr. Kiggundu Tamale

1:00-2:00 pm	Lunch	
2:00pm	Departure	

Annex III: List of National Stakeholders' Workshop Participants

No.	Title	Surname	Name	Affiliation	Email	Telephone No.
1	Mr	Anguzo	Silas	Centre for Urban Studies & Research	silaskampala@yahoo.com	(+256)772452221
2	Mr	Mugisha	Asaph	Uganda Institute of Professional Engineer	asaphmugisha@yhoo.com	(+256)703411011
3	Ms	Wamono	Sandra	Makerere University/TEST	sdneboshi@yahoo.com	(+256)782731159
4	Mr	Semanda	Julius	MUK/TEST	juliussemanda@yahoo.com	(+256)782057458
5	Mr	Tumushabe	Nathan	NRSC	nnythan@yahoo.com	(+256)772502017
6	Dr	Kiggundu	Tamale Amin	Makerere University/TEST	aminkig@hotmail.com	(+256)7732911251
7	Ms	Lanyero	Flavia	Daily Monitor	flanyero@ug.nationmedia.com	(+256)752745021
8	Mr	Katushabe	Winstone	Ministry of Works and Transport	katushabew@yahoo.com	(+256)772403782
9	Mr	Mwesige	Godfrey	Makerere	gmwesige@tech.mak.ac.ug	(+256)712961855

				University/TEST		
10	Mr	Jaramogi	Patrick	Newvision	pjaramogi@gmail.com	(+256)702426211
11	Mr	Kugonza	F.	Uganda Police	kuuka@mail2engineer.com	(+256)712831057
12	Mr	Odikor	C.	Uganda Police	codikor@yahoo.co.uk	(+256)777861008
13	Mr	Epiaka	William	National Planning Authourity	wepiaka@npa.ug	(+256)775232352
14	Mr	Lwanga	Zaid	National Planning Authority	kabuga@myway.com	(+256)701574727
15	Mr	Busomoke	Peter	Newvision Newspaper	pbusomoke@newvision.co.ug	(+256)772445763
16	Ms	Mudoola	Petride	Visionvoice	pmudoola@newvision.co.ug	(+256)752692590
17	Mr	Balagadde	Samuel	Media	sbalagadde@yahoo.co.uk	(+256)772448345
18	Mr	Mbayo	Samuel	Makerere University	s.mbayo@yahoo.com	(+256)772664043
19	Mr	Ssebugwao	Abdusalaiman	Makerere University	Mosezi55@yahoo.com	(+256)772521445
20	Mr	Kirabira	Francis	Ministry of Works and Transport	-	(+256)701652435
21	Mr	Ajune	Herbert	Makerere University	ajunehab@yahoo.com	(+256)772312048
	Mrs					

22		Barbara	Mwanje	ArriveAlive	feedback@arrivealive.or.ug	(+256)0414245643
23	Dr.	Wambedde	Muhamad	Kyambogo University	nabalegwa@yahoo.com	(+256)772388801
24	Mr.	John	Ndyomugenyi	UTODA	utodataxi@gmail.com	(+256)04142325692
25	Mr	Walusimbi	Moses	Technology Consultant	techcons@teco.co.ug	(+256)774128686
26	Mr.	Hamim	Kitezara	UTODA	utodataxi@gmail.com	(+256)04142325692
27	Dr.	Teera	Mayanja	Makerere University	mayanjat@yahoo.com	(+256)0414256789
28	Mr.	Namanya	Johnson	Kampala City Council	namanyajs@yahoo.com	(+256)077432621
29	Dr.	Aggrey	Niringiye	Makerere University	Aggrey1970@yahoo.com	(+256)712224545
30	Mr.	Eriaku	Moses	Makerere University	weriaku@yahoo.com	(+256)772365032
31	Ms	Nabugolola	Fatuma	Ministry of Health	nabugololafatuma@yahoo.co.uk	(+256)781441895

Annex IV: List of References

- Consia Consultants (2010) Road Safety Management Capacity Review in Uganda – Final Draft Report, Contract Number 7152943.
- JICA (2010) “A Study On Greater Kampala Road Network and Transport Improvement, Uganda’ Kampala: JICA.
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- Nema-Uganda (2005) Proposed Environmental Air Quality Standards and Guidelines for Uganda, Kampala: National Environment Management Authority.
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The TEST Network supports Sub-Saharan Africa (SSA) countries - Mozambique, South Africa, Tanzania, Uganda, Zambia and Zimbabwe - in formulating and implementing sustainable transport policies which contribute to poverty reduction and sustainable economic development. The initiative aims to strengthen networking in SSA Partner countries, enhance capacity of stakeholders to assess scientific and technological research needs on transport issues and to facilitate and formulate the implementation of research policies and to better capitalise and disseminate research results.

TEST was established in 2010 and focuses on traffic congestion, air pollution (including greenhouse gases), noise and road safety. It capitalises on research results by greater communication and dissemination and improving the quality of research as well as by linking to on-going policy processes in the region.

The European – African partnership is funded by the EC African, Caribbean and Pacific Group of States Science and Technology Programme. The TEST network involves universities and research institutes from the UK and Germany and from the six Africa countries as well as UN-Habitat, and the International Forum for Rural Transport and Development.

The TEST Network

Manager: Dr Dieter Schwela

Co-ordinator: Dr Gary Haq

Uganda Network Administrator:

Sandra Wamono
sdneboshi@yahoo.com

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