

SAMSET brief on Public Transport

This briefing note has been designed for use by city officials and planners working in sub-Saharan Africa. It is a practical guide, which identifies easy to achieve energy interventions that will save money (for cities, businesses and households), promote local economic development, and enhance the sustainable profile of a city. This note is specifically aimed as a support tool to achieve the implementation of key interventions within municipalities across sub-Saharan Africa.

African municipalities need to be prepared to deal with an explosion in demand for services from burgeoning populations caused by two factors – high population growth in Africa as a whole, and rapid urbanisation. An interesting feature of population growth in sub-Saharan Africa is that it is expected to take place mostly in small and medium sized cities, rather than capitals (UN-Habitat, 2010). These changes are taking place at a time when many countries are devolving administrative powers to local governments, yet municipal authorities lack the skills and expertise to address challenges, to manage resources, and to implement and enforce policies.

Energy is only one of many services that municipalities need to address in the face of increasing urbanisation, but it is crucial to any form of urban development – planned or otherwise. People need ener-

gy as part of their every-day lives. The supply of energy is closely linked to economic development, health and individual wellbeing, as well as to local and global environmental sustainability.

Recognising the emerging role of municipalities, with limited capacity, in addressing energy provision in urban centres, the “Supporting African Municipalities in Sustainable Energy Transitions” (SAMSET) project seeks to build capacity and develop a practical and effective knowledge exchange framework for supporting actors involved with municipal energy planning. This note is an output of the SAMSET project.

The purpose of the note is to give planners an idea of the range of energy interventions that it is possible for them to implement at the municipality level. It provides enough information to give a basic understanding of different energy technologies – enough to start making enquiries and engage in discussion. More detailed technical expertise will, however, be needed in order to design a bankable project.

Full guide can be found at africancityenergy.org/uploads/resource_101.pdf

More info can be found at africancityenergy.org/

More project info can be found at samsetproject.net

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Overview

While public transport is a huge field and can't possibly be covered in a few pages, the benefits for cities of a move towards improved public transport are so significant that the sector must be addressed. This booklet provides an overview of the key issues and hopefully strengthens the case for prioritizing public transport in sub-Saharan Africa.

According to the UNEP (2013), Africa's vehicle fleets have grown between 5% (Southern Africa) and 67% (Western Africa) from 2007-2010. As a result, CITAC Africa Ltd. has forecast a 57-60% increase in energy consumption by 2020, mostly due to transport fleet growth. Emissions from the transport sector have already grown more than 50% since 1990, making Africa the 2nd fastest growing source of emissions in the world after Asia. Road traffic accidents and air pollution-related illnesses were reported to be among the top 10 leading causes of death throughout sub-Saharan Africa in 2014.

In Ghana over 80% of citizens rely on public transport to commute to and from work. A survey of users of public transport found that 20% of passengers use public transport for school, whilst 12% use it recreationally. 40% were using it for business and 28% also used public transport for other purposes such as social visits and funeral ceremonies.

However, urban cities in Ghana are increas-

ingly facing problems caused by road transport externalities. There is an increasing trend in road traffic accidents, traffic congestion and emissions of carbon dioxide. This impacts on the economy as workers experience long commutes, delays and pollution related illnesses. The rising number of low occupancy commercial and privately owned vehicles in the cities is a major contributing factor to these issues. One would assume that with the improvement and expansion of public transport within Ghana's cities, figures regarding road traffic accidents and CO2 emissions will reduce.

The focus of this paper is how to achieve a transport modal shift. Modal shift should be viewed from two perspectives:

- a shift from private to public or non-motorised transport of daily commuters.
- optimizing the use of public transport.



This set of photographs demonstrates how the use of public transport or private motorbikes over the use of private cars can reduce congestion in a city. Each option will transport the same amount of passengers.

The Case

Economic development means more cars. The choice of transport mode in South Africa is generally based on income, with the poor dependent on non-motorised transport and public transport and the rich having access to private vehicles.

Even if smaller cities do not yet have traffic problems like those in capital cities of Africa, it is only a question of time. Increasing traffic is an inevitable consequence of economic development.

Economic

An increased use of public transport will result in financial savings for the commuter with regard to fuel and maintenance. In addition, reduced traffic volumes will lead to a reduction in road maintenance costs for cities and provinces.

Case study:

The Dakar-Diamniadio Toll Highway (Senegal)

In Senegal, the Dakar-Diamniadio Toll Highway has already provided significant benefits to the Dakar metropolitan area. Travel times between Dakar and Diamniadio decreased from 90 minutes in 2009 to 30 minutes in 2013, cutting the cost of congestion which is estimated at 4.6% of Senegal's GDP (2014). The first toll road of its kind outside South Africa, the Dakar-Diamniadio project was financed by the IDA, IFC, AfDB and the French Agency for Development as well as the private sector in a public-private partnerships. The project demonstrates potential for replication elsewhere in the region.

Rather than utilising locally produced oil to meet their needs, much of sub-Saharan Africa relies on imports of refined petroleum products from overseas. As a result vehicle users are vulnerable to fluctuations in the price of oil. As infrastructure continues to develop and sub-Saharan Africa's transportation sector grows, demand for fossil fuels is expected to increase. Therefore, improving the sustainability and distribution of public transport systems across countries such as Uganda and Ghana could result in significant savings for the economy.

Environmental

A modal shift in transport will mean less traffic on our roads, and a substantial reduction in fuel being used. This leads to significantly less CO₂ emissions and local air pollution within cities. Public transport also reduces the amount of green space that must be paved over for new roads and parking lots. It makes cities cleaner, quieter, safer and more convenient for getting around.

About 75% of air pollution in Uganda is a result of transport-related activities. A 2011 study found that 95% of the 40 minibus taxi operators interviewed in Kampala were not aware of the environmental damage their poorly maintained vehicles were causing. Increasing the availability and efficiency of public transport systems alongside appropriate laws and regulations should help mitigate the environmental damage caused by poorly maintained vehicles in Uganda and elsewhere in sub-Saharan Africa.

Social

In 2011, pedestrians constituted 42% of Ghana's traffic accident fatalities, with children accounting for one third. Estimates suggest that deaths from road accidents reduce the country's GDP by at least 1.6%. Transport services play a crucial role in increasing access to education and health care services and improving food security over the medium and long term. This helps secure an educated and healthy workforce and enhances wider community well-being which is essential for poverty alleviation and economic growth. Regular, reliable transport services not only enable access to services for the rural residents who need them, but also encourage key service providers, such as teachers and health workers, to access rural areas on a daily basis, thus providing regular services to the most vulnerable.

There is strong evidence that providing basic road connectivity to rural villages can generate significant social and economic benefits (UN-HABITAT, 2014). Evidence from Ethiopia, Ghana and Uganda demonstrates that upgrading footpaths to basic motor-able roads rather than improving existing roads provides greater benefits to local populations.

Rural transport infrastructure is vital in overcoming the potentially fatal 'three delays' in health care (particularly perinatal care) – the decision to seek health care, the travel to reach care and the treatment within the healthcare system (including referrals) all depend on access to transport (UN-HABITAT, 2014). A survey of how pregnant

women in Uganda and Zambia travel to health care facilities found that 91% of Ugandan women employed motorized forms of transportation, while only 57% of women in Zambia did. Travel times varied considerably across the various modes of transportation. In Uganda, women reported taking between 37 min (bicycles) and 123 min (public transportation) to arrive at the facility, and in Zambia the travel times ranged from 43 min (taxis) to 108 min (public transportation). This shows that public transport is currently inefficient in both Uganda and Zambia and as a result alternative forms of transport are used which are faster but may be more dangerous both physically and environmentally.

Potential for Rollout

Uganda's National Transport Development Plan

The government of Uganda has developed a national transport-development master plan which calls for major projects in road, water, rail, air and public transport. The plan creates significant opportunities for investors and includes the 10-year Greater Kampala Metropolitan Area Development Plan, calls for revamping the capital's infrastructure, developing satellite cities around the city centre, and building three ring roads. The new urban areas at the city's edge are aimed at coping with Kampala's rapid population growth.

Rift Valley Railways has recently unveiled a five-year, €226.9 million development plan which calls for restoring 1,100 km of Uganda's track, upgrading rolling stock, and boosting annual rail cargo from the current 1.5 million tonnes to 8 million tonnes.

These plans demonstrate that the transport sector is already a high priority for the government of Uganda and with appropriate investment the country has the potential to pave the way in sustainable transport whilst providing new growth prospects for the country's construction industry.

Ghana's Public Transport

In Ghana, a survey found that the majority of passengers (63.2%) rated the service quality of public transport to be good, 20.8% rated it to be moderate, 15% rated it to be excellent leaving only 1% of the passengers to rate it as poor. The results show that, in general, a higher proportion of the passengers are satisfied with the overall service quality of public bus transport. As such a high percentage of recipients are satisfied with the level of service they currently receive, this should encourage Ghana's government to expand the public transport industry.

The survey established that passenger satisfaction with public transport service is highly influenced by bus traffic safety record. Thus, to retain existing customers and attract new users, policies relating to passenger safety and comfort as well as fare and control of crime rate at the bus station should be top priority.

'Kayoola' Solar Bus

Kiira Motors Corporation (KMC) is a Presidential Initiative for Automotive Manufacturing in Uganda. Its 35 seater Solar-Powered Bus was introduced in 2016 and is the first of its kind in Africa. The prototype 'Kayoola' is outfitted with 12 solar panels with a total output of 1,320 watts. The bus also contains two 384 V, 90 AH, 35 kWh lithium ion battery banks, each containing 120 cells.

The prototype Kayoola costs about \$142,000 to produce

Image © Eiffage Senegal



but KMC believe the price would be significantly lower if they are produced en masse. The Kayoola Solar Bus therefore highlights the potential of a green, clean and noise-free future transport solution for busy cities such as Kampala. (At the time of writing, this bus does not seem to be operational – but it's an interesting idea).

Cashless Payment Systems

A number of cashless payment systems are emerging across sub-Saharan Africa, particularly in Kenya. In 2014, the government through the Ministry of Transport gave a directive to the public transport sector requiring the implementation of electronic payment systems in all public vehicles.

Examples of cashless payment systems include the KCB 'Pepea Prepaid Mastercard' a 'tap-and-go' payment card which boasts benefits such as no joining fees and mobile phone activation. The card can be used for online transactions and is safe and secure as it is not linked to an individual's personal account. It is also available to those who are not customers of Kenya Commercial Bank making it accessible to all. Similarly, Tangaza Pesa, a mobile money provider has launched a service where travellers will pay bus fares using plastic cards. The Tangaza Pesa PSV card pays for travel by tapping on a mobile phone or mPOS.

The implementation of cashless systems in the public transport sector such as these will also help reduce theft in public vehicles by eliminating the need for Kenyans to carry around cash thus making transport safer and more reliable.

Transport Software

In addition to cashless payment systems, transport software is increasing in popularity.

For example, Uber, an online transportation network, launched in Africa in 2012. The service began in Johannesburg before expanded to Cape Town and Durban. It was later followed by a launch in Lagos, Nigeria, in 2014 and now operates in Nairobi with plans for further development in Africa in the near future.

According to Uber, the company's role in Africa is not only to improve the transportation ecosystem, but also support economic growth – particularly that of small businesses – by empowering drivers. Their mission is to provide a safe and reliable transport option to passengers and greater economic opportunity to drivers.

In Kigali, SafeMotos attempts to replicate the work of Uber with a focus on motorcycle taxis. Their drivers carry smartphones which send data on how they drive. With more than 500,000 kilometres tracked, the system can tell the difference between a safe driver and an unsafe driver, allowing the company to only connect customers to drivers who meet their high standards.

A number of transport location services have also developed, particularly in South Africa. WhereIsMyTransport is a system that connects data from existing modes of transport and collates it into a single platform to centralise a city's transport network. Service information is then made widely available and updated in real time for the general public.

According to WhereIsMyTransport (2016), by making it easy for riders to access information when they need it, convenience, communication, and clarity make

public transport an attractive option for everyone. Accessible public transport therefore unlocks the potential of people and cities and is the key to an inclusive, sustainable society.

Another case study is that of GoMetro, the first non-GPS Traffic Alerts app for South Africa which claims to send real-time traffic alerts straight to your mobile without requiring GPS or affecting battery life. The software alerts customers to incidents and traffic reports along your route thus helping commuters to plan ahead and avoid delays.

These examples demonstrate the high potential of mobile phone apps dedicated to public transport in sub-Saharan Africa.

Barriers to Implementation

Management of public transport services is highly fragmented, which leads to competition rather than cooperation, making it difficult to manage coordination.

- Perception that public transport is unsafe.
- Lack of information or awareness on best practice.
- Need of political and top level awareness and backing.
- Need for capacity building and support (technology, financial, knowledge).
- Institutional complexities.
- Lack of room for participation of non-governmental organisation.
- Poor facilitation of public-private partnerships.
- Predominantly urban focus of transport interventions in SSA.
- Limited funding available to implement practices.
- High levels of poorly maintained and inefficient vehicles.

Implementation

Fuel Efficiency Initiative (FEI) Uganda

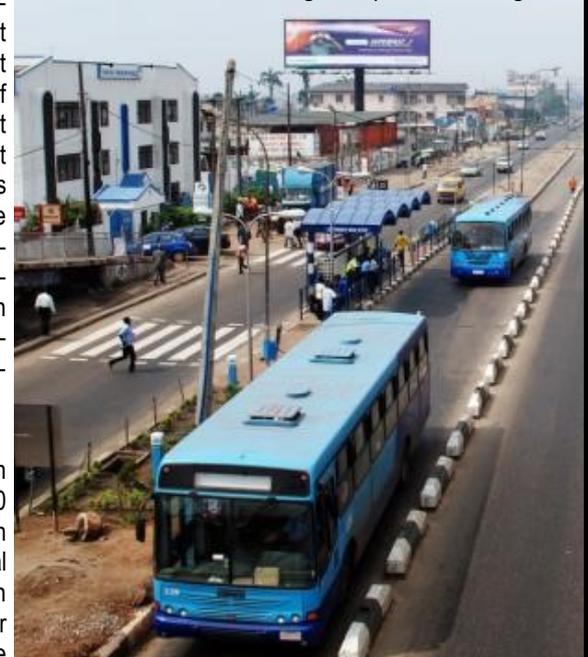
Uganda has implemented a Fuel Efficiency Initiative (FEI) to promote sustainable development in the energy sector. It includes the development of policies and regulations that will promote the adoption of cleaner and more fuel efficient vehicle strategies. The project aims to reduce greenhouse gas emissions and at the same time help to address the government's goal of meeting the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner.

EASI Conceptual Framework Africa Transport Policy Program (SSATP) is a partnership of 40 countries across Africa (North and sub-Saharan), 8 regional economic communities, African institutions, the private sector and development partners. The

Case Study: Lagos Urban Transport Project (Nigeria)

In Nigeria, the IBRD-funded Lagos Urban Transport Project implemented a comprehensive and integrated approach to improving public transport through the support of a bus rapid transport (BRT) system, the first of its kind in sub-Saharan Africa. More than 200,000 commuters now use the system each day. In addition to safe, clean, and reliable transport, passengers have also benefitted from a 30% decrease in average fares despite a 100% rise in fuel costs. Transit times and waiting times have also reduced by 40% and 35% respectively. Money spent on travel by those in poor households decreased from Naira 150 in 2003, to Naira 100 by June 2009.

Image © My financial Intelligence



development objective of the program is for African countries to have developed sound strategies and policies for an efficient, safe and sustainable transport sector. SSATP provides a critical contribution to the knowledge agenda of the World Bank. For example, in 2013 it provided a framework for improving railway sector performance in Africa, guidelines for mainstreaming road safety in regional trade corridors, as well as transport governance indicators for sub-Saharan Africa.

SSATP recently undertook a comprehensive multi-country review of the performance of transport policies for several modes of transport in Africa. The review assessed the performance in the road, rail, and port sectors, as well as the performance of transport corridors in six countries, Benin, Burkina Faso, Ethiopia, Gabon, Ghana, and Zambia. The conceptual framework of "Enable, Avoid, Shift and Improve" (EASI) helps policy makers understand and address this complexity. The EASI framework is envisioned as a powerful policy tool for developing sustainable solutions to urban accessibility and mobility in Africa's urban areas. It requires urban transport and land use to be considered in an integrated fashion that recognizes their multiple and complex inter-linkages and mobilizes all stakeholders.

Africa Sustainable Transport Forum (ASTF)

Africa Transport Policy Program (SSATP) established the Africa Sustainable Transport Forum (ASTF) as a platform for dialogue, knowledge sharing, and Africa-specific innovation for sustainable transport. In partnership with the United Nations Environment Programme (UNEP), United Nations Human Settlements Programme (UN-Habitat), the World Bank, and the Government of Kenya, SSATP has provided technical and financial support to the preparation of the Forum, which was launched in Nairobi in October 2014.

Africa Sustainable Transport Forum Objectives:

Provide an Africa-platform for high-level policy dialogue on sustainable transport, both at national and sub-national levels.

Promote a common understanding of "sustainable transport" across Africa, and highlighting African solutions.

Improve knowledge and capacity for developing and implementing sustainable transport policies, programs, and demonstration projects.

Provide a mechanism for sharing best practices, tools, technologies, research, and policy instruments, tailored to the African experience.

Support national and municipal level strategies and innovative approaches, along with common standards and protocols, and implementation monitoring.

Build on and complement existing initiatives underway in Africa.

Facilitate access to funding and investment for sustainable transport infrastructure.

TEST Network and UNEP Share the Road (StR) Policy

Over sixty stakeholders from sub-Saharan Africa attended the 'Transport and Environment Science Technology' (TEST) Network and UNEP Share the Road (StR) Policy Dialogue in Nairobi, 2013. The stakeholders comprised of both policy makers and technical experts from 13 sub-Saharan African countries: Benin, Burundi, Côte d'Ivoire, Ethiopia, Kenya, Rwanda, Senegal, South Africa, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Developed alongside the FIA Foundation for the Automobile and Society Share the Road (StR) is a UNEP initiative which brings together the environment and safety agendas in the context of urban transport in the developing world as this is where the majority, pedestrians and cyclists, are at a disadvantage

In sub-Saharan Africa only a small fraction of the population own or have access to a car. However, the needs of the majority, the pedestrians and cyclists are often ignored in the development of new road infrastructure. The overall goal of the initiative therefore is to encourage governments and donors to create policies that focus investments on pedestrian and cycling road infrastructure.

Impeding the inevitable rise in private car use

The upgrade of a public transport system to a more reliable, convenient and safe system can encourage people to use public transport. Other strategies need to be put in place to deter from using their own cars. Example include:

Park-and-Ride schemes allow people to park their cars at public transport interchanges and continue the journey on public transport. An important aspect here is the need for security at the site, in order to ensure the safety of the commuters as well as making sure that the cars are secure.

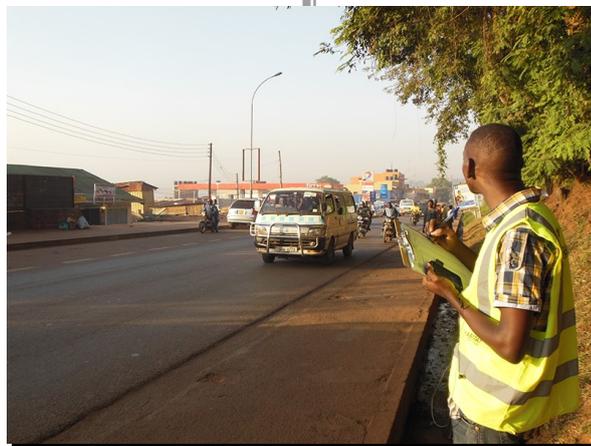
The cost of traveling by private vehicle should also be looked at, including parking charges. An international trend, which has been successful in London, is the implementation of a congestion charge for access into certain areas of the CBD. The money taken from the charge covers the operational costs of the service as well as upgrading aspects of the public transport system.

These travel demand management strategies can only work if there are suitable alternatives put in place for the commuter i.e. adequate public transport is available.

Case Study: The Kampala Mobility Map

The Institute for Transportation and Development Policy (ITDP) Africa is working with a team of local students from Makerere University to build the first map of the city's matatu minibuses routes. Kampala's matatus are notorious for being unreliable and having inconsistent routes which prevents advanced planning. As an informal system, data is hard to come by however the ITDP and Makerere University are mapping Kampala's matatu taxi network and collecting data on passenger volumes and demand. The Kampala Mobility Map will improve navigation in the city, allowing residents and visitors to plan their trips with ease.

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