PUBLIC TRANSPORT IN SUB-SAHARAN AFRICA
Major trends and case studies

8 MAJOR CITIES STUDIED
Acknowledgements

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- Cheikh Oumar Gaye, CETUD, Dakar (SENEGAL)
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- Patrick Analo, Nairobi City Council, Nairobi (KENYA)
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Of course the work continues and there is still much to be done within the framework of statistical harmonisation of data and collection methods in Africa. However these several case studies will provide an overview of best practices in public transport and their impacts that deserve to be encouraged elsewhere.

The Research Team

Important notice:

The views and interpretations herein are those of the authors and should not be attributed to the European Commission or to UITP, to their affiliated organisations, or to any individual acting on their behalf.

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Introduction

For the past few decades, African cities have been experiencing huge population increases. This is mainly due to galloping urbanisation and rural exodus. It is estimated that by 2020 some 55% of the African population will be living in urban areas. Such fast-growing cities face enormous challenges in terms of infrastructure provision and the need to cope with the increasing demand for transport. This is especially acute as much of the existing road infrastructure in African cities is far from being appropriate for the actual transport demand.

In addition, apart from a few remaining companies, almost all publicly owned and managed public transport enterprises in Africa ceased to exist during the 1990s, often as a consequence of structural changes required to comply with aid programmes associated with international agencies. Therefore, the public transport sector has suffered more than 15 years of neglect and this, combined with escalating urban populations, has resulted in chaotic, unsustainable, time- and money-wasting transport systems in most African cities.

Today throughout Africa, public transport is dominated by the operations of the ‘disorganised’ informal sector (by this we mean market-based, unregulated, low-capacity service offers). The dominance of these services hampers economic development and reduces the quality of life for citizens as the large number of vehicles required to meet demand causes congestion and parking issues and, in the main, citizens suffer with high levels of local associated pollution and low levels of security and safety.

Political decision-makers urgently need support to make the right decisions. Precise and relevant statistics are required to give a clear overall view of the issues at stake and to monitor the benefits of implementing efficient public transport systems, which in general are almost inexistent today.

This study highlights the advantages of developing organised public transport compared to the other transport modes. The specific purpose of this study is to provide facts, figures and indicators to support public transport advocacy in Africa. This has been done via two approaches: an analysis of global performance of organised public transport services in the cities studied on the one hand, and on the other, the study looks into the benefits of specific mobility reforms implemented in each of these cities.

Cities were selected to represent East, West, Central and South sub-Saharan Africa and to highlight differences and similarities.

Ousmane Thiam
President of the African Association of Public Transport (UATP)
Vice-President of the International Association of Public Transport (UITP)
## Cities studied

Statistics were collected from the following cities:

<table>
<thead>
<tr>
<th>City</th>
<th>Country</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>Kenya</td>
<td>05</td>
</tr>
<tr>
<td>Douala</td>
<td>Cameroon</td>
<td>06</td>
</tr>
<tr>
<td>Lagos</td>
<td>Nigeria</td>
<td>08</td>
</tr>
<tr>
<td>Dakar</td>
<td>Senegal</td>
<td>10</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>South Africa</td>
<td>12</td>
</tr>
<tr>
<td>Accra</td>
<td>Ghana</td>
<td>13</td>
</tr>
<tr>
<td>Abidjan</td>
<td>Côte d’Ivoire*</td>
<td>15</td>
</tr>
<tr>
<td>Addis Ababa</td>
<td>Ethiopia</td>
<td>18</td>
</tr>
<tr>
<td>Dar es Salaam</td>
<td>Tanzania</td>
<td>-</td>
</tr>
<tr>
<td>Windhoek**</td>
<td>Namibia</td>
<td>-</td>
</tr>
</tbody>
</table>

*Ivory Coast is referred to as Côte d’Ivoire its diplomatic name. **all cities were subject to case studies except Dar es Salaam and Windhoek

Research and information on reorganisation and institutional reform in all the cities were used to develop policy recommendations.
Data collection

Data on the mobility behaviour for motorised and non-motorised trips was collected using 2008 as the reference year with the help of local contributors (organising authorities, operators, and consultancy firms). The reference area for each city is defined as the metropolitan area of the city and data on the public transport service offers (formal and informal) was counted in its entirety where the majority of the service was within the metropolitan area and some specific outer and regional services were also included.

The formal or informal characteristics of public transport in Africa primarily relate to both the regulatory and operating mode of the transport means and its internal management system. In general, the term informal public transport is used to refer to collective passenger transport with little or no control of its operations by an overall regulatory authority, usually characterised by an unplanned and ad-hoc service offer, insufficient or no respect for routes and no published or fixed fare structure.

Formal public transport refers to much of the rest and in the majority of cases it is characterised by the provision of scheduled transport services, offered by a legal company that has to adhere to an authority's regulations, and most of the time operates under a formal contract.

Basically, most minibuses operating within the cities studied are considered to be informal while the larger buses are usually owned by formal entities. As a consequence, and in order to make the comparison between formal and informal transport within the context of this report clearer, the minibus category was used to represent the informal sector and large buses to represent the formal sector. However, in reality, there are some overlaps between the two.

Data was collected on private car ownership, modal share for collective transport, local GDP, investment in road infrastructure, operating costs and revenues and other information to try to achieve a better understanding of the true transport situation. It goes without saying that some estimations were made, especially in respect to the informal sector, as it is quite difficult to obtain substantiated information on vehicle numbers, let alone reliable information on revenues and operating costs. For example, there are no current statistics available on motorcycle-taxi operations in Lagos.

Furthermore, comparisons between formal and informal transport for some indicators are sometimes difficult to establish in the particular case of the African cities. For instance, road accidents caused by informal operations are often not taken up in the official statistics as a large proportion of accidents are settled amicably on site. In this case, the statistics will be significantly lower than the reality.

It was also quite challenging to make comparisons between the modes, as the cities were very different in terms of the offer available. Many Africans still walk, use a bicycle or use informal transport for the majority of their trips. However, as incomes grow, private car ownership also increases. For example, Johannesburg far outstrips other cities with the number of private cars per capita (Johannesburg has some 852,935 private cars). A formal public transport service can be attractive and well patronised as can be seen in Addis Ababa, and the operating and regulatory framework has a strong impact on the balance between the informal and formal offer. Abidjan has a relatively dense bus service and has only 5,000 registered minibuses, compared to Lagos, which has little in the way of a traditional formal offer apart from a rather new short BRT service (that already carries 200,000 passengers daily) but the rest of the city is served by some 80,000 minibuses.
1. MAIN TRANSPORT MODES IN AFRICA AND SAFETY ISSUES

Africans either use non-motorised transport (walking and cycling) or informal transport for most of their trips. It is well known that pedestrians and cyclists are the most vulnerable and more of them are injured or killed in traffic incidents. Safety is less of a concern to many informal operators and can be compromised in the quest for commercial benefits.
Kenya has a high rate of urbanisation. Nairobi, its main city, has grown significantly over the past few decades and now faces huge transport challenges. Mobility in Nairobi is characterised by the majority of the population having limited access to public transport and most are forced to walk, in particular those who live in the slum areas in or around Nairobi city. An unfortunate consequence of this is that around 300 persons die each year in traffic accidents, some 10 times more than the national average. In response to this, in 2003, the Ministry of Transport introduced new safety rules, in particular designed to address this issue in the informal sector. The rules introduced:

- compulsory seat belts for each seating position in a passenger vehicle;
- speed restrictions for any public transport vehicle limiting the maximum speed to 80 km/h;
- display of the route number at the front of each vehicle in order to combat the common practice of commercial vehicles dropping the passengers ‘en route’ and changing the route.

Several improvements were noted following the implementation of the new regulation. A passenger survey indicated that 99% of all persons questioned had seen a positive change in the system and 70% of them noted a significant enhancement of the level of comfort and safety inside and outside public transport vehicles. Clearly, the new safety regulations brought improvements in comfort levels (from less overcrowding) and, of course, in passenger safety.

Nevertheless, such measures must be enforced in a sustainable way and need strong political support. A ‘champion’ is helpful to fight against any bribery and corruption that can hinder the widespread application of the measures, especially within the informal sector.

Changing a walking or bicycle trip to a motorised collective transport trip is a first choice wherever this latter is provided at an affordable cost for the population.

As in much of the rest of the developing world, it is clear that informal collective transport is the main means of motorised transport across the whole of the African continent and accounts for around 35-40% of most urban transport trips. Non-motorised transport (walking and cycling) is the second most important group with a modal share of 30-35% (with walking being the most dominant). As a consequence, the modal shares of these two groups are inversely correlated.
One can thus deduce that if more high-quality public transport was available the African population would have a better chance to actively participate in the economic life of their cities and would be able to go about their daily activities with considerable time gains.

2. ADEQUATE INFRASTRUCTURE PROVISION FOR SUSTAINABLE TRANSPORT

Private car ownership tends to increase in line with the wealth of the country or of the population. This trend can only be stemmed with traffic demand policies to direct the natural human preferences for travelling privately towards more sustainable mobility choices such as public transport. The number of private cars also grows in line with road network growth. Consequently, as more roads are built, more private cars will be acquired to use them. Experience in the developed world shows that no road infrastructures are able to cope with the private car demand in the long term, undermining the outmoded traditional approach to transport planning and infrastructure construction of ‘predict and provide’.

In Africa, more than elsewhere, the road network suffers from a lack of regular, planned expansion and from a lack of long-term maintenance plans. It is therefore even more critical to provide mobility options other than just encouraging the use of the private car.

**DOUALA CAMEROON**

*An example of a successful public-private partnership in public transport*

Douala is the economic capital of Cameroon with a population estimated at 2.5 million inhabitants, growing at a rate of 5% per year and with a motorisation rate of around 40 veh/1,000 inhabitants.

Douala’s main roads are generally in an extremely poor condition. This was a major cause of bus breakdowns for SOCATUR, one of the private operators of Douala’s public transport. Successive programmes of primary road rehabilitation were implemented by the Urban Community of Douala (CUD), with the support of international backers.
The CUD was empowered to manage urban public transport by new legislation, and a CUD/SOCATUR partnership was signed in December 2007, in line with the Prime Minister’s wish to “develop a formal offer of transport: modern, economically viable, socially accessible and environmentally friendly.”

This partnership meant that CUD took a 33% shareholding in SOCATUR, which would become the central core of Douala transport system and around which all other modes would be developed.

This willingness on the part of political leaders illustrates their strong dedication to developing sustainable urban transport and to limiting the activity of informal transporters.

This partnership then fostered CUD’s commitment to prioritising the rehabilitation of the roads used by SOCATUR and establishing the necessary regulations to establish formal public transport as a dominant mode of transport in Douala. This somewhat protects SOCATUR’s operations, for instance, from unfair competition (e.g. from the often dangerous activity of the illegal motorcycle-taxis).

In the near future, this joint venture and renewed structure should also be able to benefit from banking, financial, fiscal or technical facilities which are normally available to any public company.

As a consequence of this partnership, a regular, albeit slow, reduction was seen in the number of breakdowns of SOCATUR buses between January 2008 and July 2009. It is likely that this was due to the public/private partnership and the improvement of road infrastructures with the acquisition of new second-hand vehicles. From one year to the next the number of breakdowns fell by around 50%.

Evolution of breakdown rate
(per vehicle from January 2008 to July 2009)

Private car ownership in Africa is still relatively low due to the low purchasing power of most people. Developing only private car-based infrastructures will not meet the needs of most African populations.

The implementation of affordable, cost-efficient public transport systems addresses social exclusion and helps bring economic prosperity to the vast majority of people. This is in line with the objectives of the United Nations Millennium Development Goals and the global support for alleviating poverty worldwide. To reach these targets, the implementation of dedicated public transport infrastructures should be at the core of African governments’ mobility policies.
In 2003, LAMATA, the Lagos Metropolitan Area Transport Authority, was established to provide consistent planning and efficient implementation of the policies and to address some of the issues previously mentioned. The Lagos State government, with the support of international backers, created LAMATA as the executive agency of the Lagos Urban Transport Project (LUTP). LAMATA has the overall coordinating role for transport policies, programmes and the actions of all transport-related agencies and for implementing and managing public transport services in the Lagos metropolitan area.

Implementation of an appropriate regulatory framework: In 2007, the necessary regulation was passed by the Lagos State House of Representatives to improve transportation in metropolitan Lagos and empower LAMATA with the tendering of exclusive operating rights for specific transport services on defined routes or within geographical areas.

The franchise arrangement for the construction and implementation of the BRT corridor stipulated that it was the Lagos Government’s responsibility to provide the operating infrastructure (corridors, terminals and shelters) in good condition, while each operator was responsible for the purchase of his own vehicles and for the profitability of their operation. LAMATA was also committed to cover some areas of public transport management, such as regulation, route planning and operational methodology.

Synergy with all local stakeholders: LAMATA organised study tours to Latin America for the operators to see best practice examples of BRT and regular meetings were held to exchange and share the vision of the reform.

Massive use of all media to communicate on BRT operations: one of the methods used was TV/radio talk shows and discussion programmes promoting BRT (“the BRT hour”). In this weekly programme, senior officials from LAMATA discuss key issues pertaining to the operation of the BRT scheme. Appropriate jingles and television commercials for campaigns on agreed corporate and thematic subjects were also developed.

The indicators used to assess the impact of this new policy demonstrated a significant improvement in mobility along this corridor compared to the previous system, notably:

- congestion was significantly reduced, as 35% fewer buses were needed to carry the same number of passengers;
- significant improvement in the service, namely:
  - fares were made 30% cheaper than previously;
  - travel time was reduced by 35%;
  - waiting time at bus stops fell by 55% on average and by 73% during peak hours.
formalisation and integration in the project of the informal operators;
- improved safety and reliability of the new system;
- reduction of externalities: fuel consumption fell by 32% for vehicles used along the corridor, demonstrating the undeniable advantage of formal public transport. This resulted in 25,000 tonnes of CO2 per year being avoided due to the implementation of the BRT services (20 times less CO2 emitted per passenger transported compared to private car).
- 40% of the companies admitted that the introduction of the BRT system was beneficial to their businesses and, among them, 35% saw their profits increase.

Lagos records the best performance of the sample in terms of energy consumption per passenger transported with regards to formal transport operations versus the informal operations. This is actually an outcome of the BRT system implemented in the city, as it almost totally removes the effect of congestion, as it runs on dedicated lanes.

3. PROFESSIONALISING THE INFORMAL SECTOR

As previously mentioned, collective transport accounts for a large part of daily trips in African cities, but it is dominated by the operations of informal rather than formal collective transport with small vehicles ranging from four to 30 seats maximum, creating many dysfunctions in the transport system.

The graph below shows the increasing number of informal low-capacity units.

The sheer numbers required to meet demand within a particular area tend to affect the proper functioning of the transport system by reducing its fluidity, and thus commercial speed.

Density of low capacity transport means on roads vs average speed on the road network

$R^2 = 0.72981$ ($R^2$: coefficient of correlation)
As in much of the rest of Africa, public transport in Dakar is dominated by the informal operations of minibuses locally known as ‘Cars Rapides’ and ‘Ndiaga Ndiaye’. The exact number operating is unknown and their ageing fleet is usually in poor condition and, despite relatively low fares, services are erratic and quality poor. The operators usually manage to cover their operating costs but they are unable to finance the renewal of their fleet, and therefore safety and quality are often compromised as the vehicles age.

The city of Dakar (Senegal) has pioneered specific policy packages to professionalise the informal transport sector with the introduction of a fleet renewal programme for the private operators, supported by public funding. This policy aims to remove many dysfunctions of the transport system, which can be summarised by the following:

- Lack of information and statistics on the exact number of collective transport vehicles (a past survey ‘estimated’ that the informal operators numbered around 2,500 in Dakar, with each operator/owner having around one vehicle).
- Old, highly polluting vehicles (average age of over 15 years) and a lack of road safety.
- Little or no revenue stability encouraging fraudulent behaviour and sudden price hikes with little regard for regular business practices of revenue management, personnel training, maintenance and operating costs.
- Inefficient operations with no clear fare policy, and often violating safety standards, fuelled by the intense competition between operators.
- Little or no regard for any level of quality or comfort for the passengers.

Under this policy the following steps were taken:

- Establishment of a regulatory body: CETUD, an Executive Council of Urban Transport in the Dakar region, responsible for the organisation and regulation of urban public transport in Dakar.
- Creation of viable entities: the operators were invited to regroup into formal and viable entities called Groupements d’intérêt économique (economic gatherings of operators) or ‘GIEs’.
- Renewal of the fleet: the vehicles to be used in the new operations were technically specified and locally built. Some loans were granted to the GIEs for their fleet renewal and the members of the GIEs were collectively responsible for the repayment of the loans.
- Formal concession of the operations through contracts signed with the public authority, including strict compliance with the basic rules of public transport operation and management. In particular, the operators were obliged to respect the routes, bus stops and fares set by the authority.
- Capacity building: the staff members of the operating companies were trained and technically assisted in operational and financial management of the companies.

Among the number of significant achievements attained through this policy, the following are worth noting:

- The clustering of a multitude of operators into 13 ‘GIEs’.
- Enhancement of the service for the users: including doubling the commercial speed, decreasing travel time, increasing the regularity of the services and increasing the fleet availability by 30-40% (which rose from 60-65% to 85-90%).
- Improving the attractiveness of public transport and customer satisfaction.
- Operations shifting from a simple licence to contractual route franchises signed with the public authority, including the respect of formal bus stops.
- Creation/consolidation of 2,000 direct stable jobs with formal contracts and insurance coverage.
- Better follow-up of the operating revenues and costs: improving the profit margin for all routes.
- Increased transport environment: with the construction of safe terminal facilities and bus stations.
- Clear and transparent accountability of operators with effective payment of various required taxes.
- Secured incomes: improvement of turnover. All the minibus lines that were renewed show significant positive profit margins.
Various studies conducted in West Africa indicate that the costs of dysfunctions in the transport system due to ‘informal’ operations can amount to a significant part of national and local economic performance. The following table gathers some of these results:

<table>
<thead>
<tr>
<th>EXTERNALITIES GENERATED BY URBAN TRANSPORT</th>
<th>CITY</th>
<th>ANNUAL COST (millions EUR)</th>
<th>PERCENTAGE OF COUNTRY’S GDP</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution</td>
<td>Cotonou</td>
<td>31</td>
<td>1.2%</td>
<td>2003</td>
</tr>
<tr>
<td>Pollution</td>
<td>Ouagadougou</td>
<td>140</td>
<td>1.6%</td>
<td>1999</td>
</tr>
<tr>
<td>Pollution, congestion, road accidents</td>
<td>Dakar</td>
<td>170</td>
<td>4.6%</td>
<td>2000</td>
</tr>
<tr>
<td>Pollution, congestion, road accidents</td>
<td>Abidjan</td>
<td>180-210</td>
<td>4.9%</td>
<td>2002</td>
</tr>
</tbody>
</table>

Source: TransAfrica from several other studies

4. EFFICIENCY OF WELL ORGANISED AND MANAGED PUBLIC TRANSPORT

Organised or regulated public transport is more efficient in many aspects such as the numbers of passengers transported, number of vehicles required and energy used when compared to informal collective transport. The following tables show the number of passengers transported by formal public transport operations.

<table>
<thead>
<tr>
<th>PASSENGERS TRANSPORTED PER KM</th>
<th>ABIDJAN</th>
<th>ACCRA</th>
<th>ADDIS ABABA</th>
<th>DAKAR</th>
<th>DOUALA</th>
<th>JOHANNESBURG</th>
<th>LAGOS</th>
<th>NAIROBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger/km organised PT</td>
<td>4.8</td>
<td>3.9</td>
<td>6.4</td>
<td>3.0</td>
<td>2.2</td>
<td>0.2</td>
<td>4.1</td>
<td>47.8</td>
</tr>
<tr>
<td>Passenger/km informal transport</td>
<td>1.2</td>
<td>0.4</td>
<td>1.0</td>
<td>2.6</td>
<td>1.1</td>
<td>2.0</td>
<td>0.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Ratio Passenger per km organised/informal</td>
<td>4.0</td>
<td>9.8</td>
<td>6.5</td>
<td>1.2</td>
<td>2.0</td>
<td>0.1</td>
<td>9.9</td>
<td>12.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PASSENGERS TRANSPORTED PER VEHICLE</th>
<th>ABIDJAN</th>
<th>ACCRA</th>
<th>ADDIS ABABA</th>
<th>DAKAR</th>
<th>DOUALA</th>
<th>JOHANNESBURG</th>
<th>LAGOS</th>
<th>NAIROBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual passengers PT/veh</td>
<td>290,865</td>
<td>116,235</td>
<td>343,249</td>
<td>138,801</td>
<td>87,530</td>
<td>5,786</td>
<td>300,000</td>
<td>716,423</td>
</tr>
<tr>
<td>Annual passengers minibuses/veh</td>
<td>105,948</td>
<td>31,779</td>
<td>56,210</td>
<td>149,770</td>
<td>54,904</td>
<td>128,256</td>
<td>29,571</td>
<td>69,975</td>
</tr>
<tr>
<td>Ratio annual passenger per veh organised/informal</td>
<td>2.7</td>
<td>3.7</td>
<td>6.1</td>
<td>0.9</td>
<td>1.6</td>
<td>0.05</td>
<td>10.1</td>
<td>10.2</td>
</tr>
</tbody>
</table>

In a certain respect, the indicator of the number of passengers transported per km may be taken as a performance indicator of public transport. Through this indicator, the formal public transport sector shows higher efficiency when compared to the informal sector by an average ratio of 5.7 within the cities studied. The highest figures are obtained for Nairobi, Lagos and Accra. Both in Nairobi and Accra, formal public transport is close to interurban operations. In the case of Lagos, the BRT alone is responsible for the significant performance of formal public transport in comparison to the informal sector within an important but restricted area of the city.

However, it is important to point out that this indicator does not reflect either the comfort or safety of the passengers transported, especially in the case of informal transport. Even in cases where the number of passengers transported per km is equal both for organised and informal transport, commuters using organised transport often cite a considerable difference in terms of comfort and customer care between the two modes.

As far as our study sample is concerned, 4.5 times fewer vehicles are needed if formal transport is used compared with informal to carry the same number of passengers.

Both in terms of passengers per km and passengers per vehicle, the gap between organised and informal transport is considerable. This was clearly demonstrated in the case of Lagos.
Public transport in Johannesburg is still influenced by the legacy of the past. Historically, the city-owned public bus services catered mainly for the needs of the white population with subsidies from the city government. Subsidised buses also served the black population but mainly for work trip purposes. However, following their deregulation in the late 1980s, minibuses (vehicles with around 14 seats) grew substantially, eventually to the extent that their market share surpassed that of buses and trains.

Today, the minibus-taxi industry covers the relatively long commuting distance between townships and urban centres. There is also considerable mistrust between stakeholders, especially between the minibus taxi operators and the South Africa government.

In order to enhance the quality level of all public transport the government has increased spending (following the introduction of a BRT system Rea Vaya) and introduced reforms, such as:

- The recapitalisation of the old fleet of minibus taxis.
- A legal framework that asserts that operating a public transport vehicle is not a right.
- The integration of public transport and land use and the implementation of transport policy through Integrated Transport Plans.
- Improvement of transport infrastructure and operations with the construction of minibus taxi rank facilities and other dedicated public transport facilities.
- Governance with the important aspect of formalisation and democratisation of minibus taxi operations.
- Legalisation of the relationships and interactions between operators and the government.

These interventions had a significant role in improving the professionalism of the minibus taxi industry. Impacts included:

- Improved working conditions for minibus taxi drivers, who currently earn more than 89% of the total population and more than 20% of people who earn a salary.
- As a result of limiting the number of operators per route, the profitability of individual minibus taxi operators on a lucrative route can be as much as 20%.

Furthermore, the government increased its role in the design and monitoring of the public transport network and its operations, in order to be in line with the Integrated Transport Plans.

It has also brought benefits across other parts of the transport sector.

For train services:
- Customer satisfaction rates now stand at over 70%.
- Crime incidents were reduced to 0.332 serious crime incidents per 100,000 passenger trips.
- Train punctuality now stands at 88%.

For city/urban buses:
- The competitive tendering system requirements have increased the number of entrepreneurs who operate subsidised bus services.
- The corporatisation of the City of Johannesburg Metrobus company has made the operational costs and revenue more transparent, making it easier to plan for cost-reduction measures.

For BRT (introduced in 2009):
- The introduction of a 25km corridor of Euro IV BRT buses in the City of Johannesburg removed the need for at least 1,100 minibus-taxi vehicle journeys in the corridor, and also reduced the pollution associated with these vehicles and the roadway congestion in some parts of the network.

(NB: Many disenfranchised minibus-taxi operators were offered the opportunity to become shareholders in the new BRT organisation.)
5. FOSSIL FUEL DEPENDENCE AND ENERGY CONSUMPTION

Not all cities communicated figures on fuel consumption; however the data on passengers transported by both organised and informal transport modes are summarised in the table below.

<table>
<thead>
<tr>
<th>EUR/PASSENGER</th>
<th>ABIDJAN</th>
<th>ACCRA</th>
<th>ADDIS ABABA</th>
<th>JOHANNESBURG</th>
<th>LAGOS</th>
<th>NAIROBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel consumption per passenger of organised PT</td>
<td>68.8</td>
<td>108.3</td>
<td>33.4</td>
<td>298.5</td>
<td>37.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Fuel consumption per passenger of informal transport</td>
<td>101.6</td>
<td>148.8</td>
<td>65.7</td>
<td>157.4</td>
<td>180.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Ratio fuel consumption organised PT/ informal</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
<td>1.9</td>
<td>0.2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

In these cities, with the exception of Johannesburg, organised public transport uses about half the fuel per passenger transported compared to informal transport operations. In Johannesburg, the minibus sector no longer really matches the definition of informal transport, as it is subject to minimum requirements in terms of safety, efficiency and service quality and operates more along the lines of formal public transport. In addition, the patronage of organised public transport with large buses, at present, is not very high.

In summary, the difference in fuel consumption between informal and formal public transport ranges from 1/3 to 4/5 respectively in a normal situation when operating in mixed traffic with other vehicles and significant extra savings are made if it operates on dedicated lanes (in a BRT or BRT Lite situation) segregated from the other traffic.

The problems associated with the Ghanaian public transport system, particularly in Accra, the capital, and other large cities, are no different from those observed in the other large African capital cities. Public transport is dominated by informal minibus operations and characterised by unreliable, and in some cases unsafe, uncomfortable rides.

As an increasing number of small-capacity minibuses and taxis are put into use, Accra’s roads have become increasingly congested, hampering the country’s economic and social development. The high levels of emissions from these aged vehicles are a growing environmental hazard, and deaths from careless driving are on the increase, with pedestrians being the most vulnerable.

In 2001, the former President of Ghana John Kufuor stressed the need to reintroduce mass urban transport systems in the large cities and towns to reduce congestion and make urban transport costs more affordable. This was also motivated by the desire to mitigate the impact of rising petroleum prices on the family budget of the working population and reduce Ghana’s use of imported fuel.

Since then, the Ghanaian Government has actively promoted mass transportation in an attempt to improve the economy of Accra (and Ghana in general) by enabling the people to move around more efficiently. However, given the unaffordably high costs of new large buses for private transport operators, the government obtained concessionary foreign bilateral loans and credits to acquire the new buses and was able to pass on favourable repayment terms to the operator.
In March 2003, the Metro Mass Transit Company Limited (MMT) was incorporated as a Limited Liability Company, with the Government of Ghana as main shareholder (45%) and six private companies (55%). The State committed to provide MMT with new buses thanks to loans from the bilateral cooperation.

One unique aspect of MMT's operation is the mixed offer of urban and intercity transport. This is actually a consequence of Accra’s expansion beyond the original city boundaries to the fringes of the Greater Accra Metropolitan Area, and in some parts even outside of this and into areas in the Central Region of Ghana. These areas have a population which commutes daily and regularly to the city for employment and for other purposes.

The combination of interregional (within the Greater Accra Region) and intercity operations has helped the company maintain a financial equilibrium in which the longer distance interregional/interurban operations show a reasonable profit and internally compensate other loss-making services. MMT now deploys around 107 buses in Accra (2008).

The following table summarises the situation for the existing public transport means in Accra:

<table>
<thead>
<tr>
<th>Load factor</th>
<th>LARGE BUSES (MMT)</th>
<th>TAXIS</th>
<th>MINIBUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger capacity</td>
<td>90%</td>
<td>160%</td>
<td>150%</td>
</tr>
<tr>
<td>Fuel Consumption - km / l</td>
<td>75</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Passenger / km / l</td>
<td>2.5-3</td>
<td>6.4</td>
<td>5.3</td>
</tr>
<tr>
<td>Differential / Savings</td>
<td>0.0444</td>
<td>1.00</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Fuel consumption for minibuses and taxis is much higher per passenger/km than for larger city buses, even with the overcrowding. The results of the study suggest that it would require 22.5 times more fuel for a taxi to carry the same number of passengers than for a large bus over the same distance, and 6.6 times more for a minibus. In 2008, 107 MMT buses used 1.3 million litres of diesel to carry about 12.5 million people. Therefore, 400 minibus or 900 taxis would be required to carry the same number of people over the same distance, and they would respectively use about 8.5 million and 28.8 million litres of diesel, more than doubling the fuel required.

Fuel consumption for public transport means in Accra

As a consequence, the 107 MMT buses ‘saved’ around EUR 27 million annually to transport the same number of passengers when compared to taxis and around EUR 7 million if compared to minibuses. This also represents considerable CO2 emission savings.
6. STRICT MANAGEMENT OPTIMISES OPERATIONS

Organised transport spends more on its operation than the informal sector. Typically these costs are 2-2.3 times higher than the informal sector for administration, salaries, facilities and depots etc. Overhead costs of informal operators are almost inexistent and in any case are hardly ever recorded. However Lagos, Addis Ababa and Nairobi appear to be exceptions. Lagos in particular stands out with very low operating costs for formal transport but there is a rather high operating cost for the informal sector, resulting from the chaotic condition of the informal sector (some 80,000 minibuses are registered to be in operation) and the age of the vehicles.

The results of the review of operating costs make it difficult to draw clear conclusions:

<table>
<thead>
<tr>
<th>PASSENGERS TRANSPORTED PER KM</th>
<th>ABIDJAN</th>
<th>ACCRA</th>
<th>ADDIS ABABA</th>
<th>DAKAR</th>
<th>JOHANNESBURG</th>
<th>LAGOS</th>
<th>NAIROBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating cost/passenger</td>
<td>553.6</td>
<td>402.9</td>
<td>93.2</td>
<td>267.0</td>
<td>1485.9</td>
<td>88.4</td>
<td>5.3</td>
</tr>
<tr>
<td>of organised PT</td>
<td>293.5</td>
<td>87.9</td>
<td>148.1</td>
<td>100.1</td>
<td>110.1</td>
<td>562.0</td>
<td>23.6</td>
</tr>
<tr>
<td>Operating cost/passenger</td>
<td>1.9</td>
<td>4.6</td>
<td>0.6</td>
<td>2.7</td>
<td>13.5</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>of informal PT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

However it is clear that with stricter controls and rigorous management processes operating costs can be mitigated.

**Abidjan**

**CÔTE D’IVOIRE**

*Investing in new rolling stocks reduces operational costs in the long run*

SOTRA (Abidjan Bus Transport Company), established in 1960, is the only organised and formal public transport company serving the city of Abidjan (Côte d’Ivoire) with a fleet of around 500 large buses dispatched daily. It operates under a concession agreement signed with the State of Côte d’Ivoire.

SOTRA has recently undertaken a vast fleet renewal operation to address the problem of its insufficient service offer: 308 second-hand vehicles were bought between 1994 and 1998 to increase the bus fleet to 662. The average age of the vehicles was then 15 years.

By the following year, the number of buses available for daily service had dropped to 583. It was also increasingly clear that it was becoming more and more difficult to respond to daily operational requirements due to the regular vehicle breakdowns from engines overheating when the buses were stuck in traffic jams and other difficulties, such as passing over even quite small ramps with passenger loads.

A new policy was put in place between 2000 and 2005 to gradually and regularly replace the old vehicles. In this process, SOTRA received the support of the State of Côte d’Ivoire, which assisted by serving as a guarantor of some State-to-State loans.
With the purchase of Indian and Iranian branded new vehicles, the average age of SOTRA’s fleet dropped significantly, falling from around 16 years old between 1998 to 2005 to the current average age of five years old.

The analysis of the impact of this policy showed that the investment in new rolling stock was globally more advantageous for the company than maintaining operations with a majority of second-hand vehicles.

Indeed, by comparing the operational and technical costs of the two groups (new and second-hand vehicles), the study has been able to show that buying second-hand vehicles was more expensive over the long term. The technical costs included:

- fuel consumption;
- spare parts use;
- costs of immobilisation, both through the cost of the maintenance staff working on repairing the vehicles and the loss of revenue, during the immobilisation time.

Added to these technical costs and in order to balance the analysis, the average purchasing cost of each category of vehicle through its annual depreciation was also considered.

The following table summarises the different cost comparisons:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New vehicles</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>238</td>
<td>419</td>
</tr>
<tr>
<td>Number %</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>54%</td>
<td>78%</td>
</tr>
<tr>
<td>Second-hand</td>
<td>653</td>
<td>586</td>
<td>532</td>
<td>611</td>
<td>545</td>
<td>542</td>
<td>470</td>
<td>378</td>
<td>201</td>
<td>120</td>
</tr>
<tr>
<td>vehicles Number %</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>46%</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>653</td>
<td>586</td>
<td>532</td>
<td>611</td>
<td>545</td>
<td>542</td>
<td>470</td>
<td>378</td>
<td>439</td>
<td>539</td>
</tr>
</tbody>
</table>

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The analysis of the impact of this policy showed that the investment in new rolling stock was globally more advantageous for the company than maintaining operations with a majority of second-hand vehicles.

Indeed, by comparing the operational and technical costs of the two groups (new and second-hand vehicles), the study has been able to show that buying second-hand vehicles was more expensive over the long term. The technical costs included:

- fuel consumption;
- spare parts use;
- costs of immobilisation, both through the cost of the maintenance staff working on repairing the vehicles and the loss of revenue, during the immobilisation time.

Added to these technical costs and in order to balance the analysis, the average purchasing cost of each category of vehicle through its annual depreciation was also considered.

The following table summarises the different cost comparisons:

<table>
<thead>
<tr>
<th>(in €)</th>
<th>NEW VEHICLE</th>
<th>SECOND-HAND VEHICLE</th>
<th>RATIO SEC. HAND VEH / NEW VEH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual depreciation</td>
<td>7,318.5</td>
<td>5,438.1</td>
<td>0.74</td>
</tr>
<tr>
<td>Loss of revenue (*)</td>
<td>4,129.3</td>
<td>17,265.1</td>
<td>4.17</td>
</tr>
<tr>
<td>Maintenance working staff cost (direct staff)</td>
<td>1,150.9</td>
<td>4,804.3</td>
<td>4.17</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>16,573.2</td>
<td>26,730.9</td>
<td>1.61</td>
</tr>
<tr>
<td>Spare parts</td>
<td>1,800.8</td>
<td>4,912.3</td>
<td>2.70</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30,972.6</td>
<td>59,150.7</td>
<td>1.92</td>
</tr>
</tbody>
</table>

(*) the loss of revenue is presented as a cost in order to be included in the table.
The table above shows that, with all technical costs considered, the second-hand vehicles cost the company annually almost twice as much as new vehicles. By purchasing a new vehicle instead of a second-hand one, the company annually saves a significant amount of money during the operational life of the vehicle. In the particular case of SOTRA, the additional cost of purchasing a new vehicle instead of a second-hand one could be theoretically redeemed within two years from the savings made from increased reliability, lower fuel consumption and maintenance costs. Obviously, this calculation depends on the price of the new vehicles.

The term new and second-hand vehicles refers to the condition of the vehicle on the date of purchase. For example, in our particular case, it has been assumed that over a three to four-year period the operating cost of each vehicle in this category does not evolve. Flat operating costs were then considered for both categories. In practice, this flat cost is the average operating cost of all vehicles included in the same group.

The table below evaluates the annual savings generated by the operation of a new vehicle in order to find out how long it takes to recuperate the additional purchase cost compared to a second-hand vehicle. At SOTRA, new vehicles are depreciated over seven years whereas for second-hand vehicles it is over three years. Despite this our study only takes a period of up to four years into consideration.

### Yearly savings of one new vehicle

<table>
<thead>
<tr>
<th>(in €)</th>
<th>YEAR 0</th>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
<th>YEAR 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>New vehicle technical costs</td>
<td></td>
<td>30,972.6</td>
<td>30,972.6</td>
<td>30,972.6</td>
<td>30,972.6</td>
</tr>
<tr>
<td>Second-hand vehicle technical costs</td>
<td></td>
<td>59,150.7</td>
<td>59,150.7</td>
<td>59,150.7</td>
<td>53,712.6</td>
</tr>
<tr>
<td>Savings</td>
<td>-34,195.0</td>
<td>28,178.1</td>
<td>28,178.1</td>
<td>28,178.1</td>
<td>22,740.0</td>
</tr>
<tr>
<td>Cumulated savings</td>
<td>-34,195.0</td>
<td>-6,736.9</td>
<td>21,441.2</td>
<td>49,619.2</td>
<td>72,359.2</td>
</tr>
</tbody>
</table>

The negative savings of the year 0 reflect the average additional cost required to buy a new bus compared to a second-hand one. The break-even point is theoretically reached already during the second year of operation, proving that, with the savings made due to the efficient operation of a new vehicle, the additional cost of its purchase can be recovered within two years of operation.

This simulation proves therefore that investing in affordable new buses instead of running erratic second-hand fleets (with high technical costs and revenue loss) is both economically sound and operationally efficient.

### 7. INVESTMENT IN PUBLIC TRANSPORT INFRASTRUCTURES AND OPERATIONS

The following graphics show the investment in roads and public transport. Not all cities were able to provide the data but from what was collected it is clear that annual investments in public transport only represented a very small percentage of road infrastructure and maintenance investments. It should be noted that by its very nature public transport caters for transporting the masses not the few, so the wider benefits of public transport investment such as social inclusion need to be put into this context.

<table>
<thead>
<tr>
<th>(in €)</th>
<th>ABIDJAN</th>
<th>ACCRA</th>
<th>ADDIS ABABA</th>
<th>DAKAR</th>
<th>DAR ES SALAAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual investment</td>
<td>38,109,756</td>
<td>20,220,690</td>
<td>20,308,641</td>
<td>11,973,357</td>
<td>1,562,921</td>
</tr>
<tr>
<td>in Public Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual amount in</td>
<td>125,421,429</td>
<td>5,725,833</td>
<td>157,460,000</td>
<td>4,848,279</td>
<td></td>
</tr>
<tr>
<td>road investment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Addis Ababa, the capital of Ethiopia, like most other African cities, has been experiencing huge population increases. Addis Ababa's population is about three million (2008) and is expected to increase by 3% every year.

Anbessa city bus services company, established in 1943, is the largest and only formal public transport company operating in Addis Ababa. Since then it has survived many changes in its legal status and structure over the years.

Today, it operates 93 routes with an average daily dispatch of 312 standard 12m buses out of a possible total of 535. The company has three large depots, four bus terminals located in the centre of the city, 16 terminals from which services are generated and over 1,400 bus stops throughout the city. Anbessa’s buses are able to accommodate 30 passengers seated and a further 70 standing and operate with an average commercial speed of 18 km/hr. Its fares are set by the public authority.

Several advantages of formal public transport are demonstrated by Anbessa such as:

- **Passengers transported:** Anbessa carries 7.2 times more passengers per km than a minibus.
- **Fuel consumption:** 1.8 times more fuel is needed to carry the same number of passengers by minibus compared to an Anbessa bus.
- **Transport cost for the users:** Anbessa city bus services are affordable for the majority of the population and Anbessa’s fares are lower than other motorised offers for similar trips.
- **Congestion:** Loading capacity per Anbessa city bus is nine times that of minibuses, 25 times that of private taxis and 2.7 times that of collective taxis. This means that a single Anbessa bus can transport the same number of people as nine minibuses, 25 private taxis or 2.7 collective taxis. In addition, each trip made by bus reduces congestion and the total number of vehicles in the street.
- **Maintenance costs:** the cost of maintenance per passenger transported also shows the advantage of formal public transport over the other modes: 0.01 EUR/passenger for Anbessa, compared to 0.29 for minibuses or 0.70 for private cars.
- **Air pollution:** Anbessa’s vehicles have a larger capacity and thus transport the same number of passengers with fewer vehicles, and thus also reduce local pollution and fuel consumption.

<table>
<thead>
<tr>
<th></th>
<th>DOUALA</th>
<th>JOHANNESBURG</th>
<th>LAGOS*</th>
<th>NAIROBI</th>
<th>WINDHOEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual investment in Public Transport</td>
<td>0</td>
<td>4,949,159</td>
<td>209,740,816</td>
<td>0</td>
<td>61,773,014</td>
</tr>
<tr>
<td>Annual amount in road investment and maintenance</td>
<td>37,500,000</td>
<td>45,684,451</td>
<td>5,916,084</td>
<td>41,406,500</td>
<td>39,216,143</td>
</tr>
</tbody>
</table>

*include capital costs and infrastructure of the BRT system

Whilst making public transport affordable is misplaced for sustainable communities, keeping fares artificially low and expecting fare box revenue to cover all operating and capital costs is misplaced. The most profitable public transport companies worldwide are able to collect revenues from transporting the public but also from other services (sometimes these are not transport related). The end result is effective and efficient public transport services at affordable prices both for the cities and for the citizens. Land use and development play a large role in this and African governments should take particular note of this and how it could be made to work for them.

Formal public transport with a good feeder system is the optimal collective transport mode, allowing the transportation of the highest number of people at the lowest cost for the community. However, it needs to be supported by or allowed to benefit from other revenue streams outside the farebox in order to perform this key role in a sustainable way.
Globally, in all respects, Anbessa is proved to be more efficient than most other transportation modes. Many efficiencies have been made in the past few years but as the fares are set artificially low and government subsidies do not fully cover the gap between revenues and operations and maintenance costs, Anbessa makes an annual loss that occasional grants for vehicles or spare parts cannot resolve in a sustainable manner. In spite of these good results, Anbessa finds itself in a precarious situation, due to the lack of compensating measures, which would be in line with the social commitment of the State to provide the population with low-cost transport.

The case studies show how reform can bring order and other benefits to the sector and that there are many ways to reorganise the offer of public transport to meet both the needs of the passengers, local stakeholders and decision makers and the commercial needs of small market-driven operators, which is the typical profile of the informal sector across the continent.

Recommendations and Conclusion

After reviewing these successful African case studies in the public transport sector we can draw up the following recommendations and stress the necessity of the following factors:

1  The involvement of public authorities in the management of public transport activity

In all the cities studied and others known to have put public transport reforms in place, strong involvement of the public authorities is required. Sustained and supportive political will is needed to direct funds and interest towards public transport and ensure sustainable mobility is made available to the majority of people, rather than the few.

The active participation of the public authorities can take various forms, for example:

- implementing a robust legal and regulatory framework backing public transport operations;
- acting as a guarantor for the acquisition of vehicles for the operators at preferential conditions;
- entering the capital of the public transport enterprise to have a better perception of issues and better work towards solutions;
- creating an authority or other competent body responsible for urban transport and sometimes creating a public transport company;
- engaging with stakeholders and the informal sector to put regulations in place to professionalise the sector.

2  Investment in transport infrastructures

Well managed formal public transport is undeniably efficient in terms of passengers carried and energy used. Yet its efficiency can be hampered by the poor condition of the road infrastructure, as is the case in much of Africa. It can even be suggested that a poor road network tends to encourage the development of small informal transport units such as motorcycle-taxis, which can cope better with variable road conditions.

Improving roads and developing public transport goes hand-in-hand with improving mobility for the majority of people. Such policies were adopted both in Lagos and Douala and immediately resulted in a clear improvement of the quality of the public transport offer.

3  Investment in quality rolling stock, notably in new vehicles, to cut costs and improve operations

Buying cheap, low-quality vehicles and rolling stock can be a false economy putting the overall performance of a formal public transport organisation at risk. In Côte d’Ivoire, it was shown that, in the case of SOTRA, the higher initial investment of buying new or almost new vehicles to renew the fleet was quickly offset by the significant saving in operational and technical costs. With quality rolling stock and newer vehicles, along with the management support provided to the GIE in the Dakar case, loans granted to the operators for fleet renewal were 99% recovered. Although not mentioned, it is also the case with the Lagos BRT.

The recent introduction of successful BRT services in both Lagos and Johannesburg can be considered to be the initial signs of a new era of formal public transport services in Africa. The environmental, social and economic benefits, at least at first, appear to outweigh those of a market-based unregulated system such as the low-capacity minibus. However if it is efficiently organised, informal transport can be a useful and valued feeder service for BRT express lines. Attention to stakeholder engagement and involvement from an early stage is critical for success.
4 Establishment of transport organising authorities

Success was notable where the more substantial and sustainable reforms took place at institutional levels. Organising and regulatory authorities, empowered by adequate legal frameworks, as in the cases of Lagos and Dakar, are notable in this respect. In a similar vein, reinforced safety rules, such as the ones applied in Nairobi, can be recommended to clearly make public transport safer.

Knowledge transfer and capacity building is needed at national and local governmental level and this can be accessed via professional organisations such as UITP, overseas aid agencies and multilateral donors.

5 Formalisation of the informal operators

As urban populations increase, they can no longer be served in an efficient manner by low-capacity transport and the notion of mass transport needs to become mainstream.

The challenge for Africa is largely to incorporate the existing informal collective transport into more effective and viable formal transport systems, rather than to augment the collective transport market share, which is already quite high.

However, a critical issue throughout Africa, and one that will certainly shape the future of urban transport across the continent, is the need to reconcile the dominant informal sector, with its advantages of low public investment and flexibility, and adapt it to a more formal and organised operational structure, interchanging with formal high-capacity public transport. The experiences of Dakar, Lagos and Johannesburg, where the formalisation of the informal operators was the basis for guiding the implementation of far-reaching reforms, show that it can be successfully done. This improved the conditions for those working in the sector as well as those using it, reduced externalities and helped protect the environment.

6 Financial support to public transport

It is difficult to compare the financial performance of formal and informal public transport, as due to its very nature informal transport is just that—informal. The lack of reliable data on vehicle numbers or revenues makes true comparisons complicated. In addition, the external costs caused by informal transport were found to be higher than formal, but so far this is not usually taken fully into account.

In addition, focussing too strongly on the affordability of public transport does not always work in its favour; setting and keeping fares at artificially low levels and not giving operators full compensation for concessionary fares do not help to make them commercially viable entities. Obviously, any fare increases are sensitive politically and those not able to pay high prices should still be able to be mobile. Keeping fares low prevents the willing from paying higher fares, which then leads to less service overall.

Subsidies and other forms of compensation can help formal public transport but an integrated framework and a level playing field are also needed for all types of transport to flourish. Financial mechanisms should be put in place to support the system, integrating the different types of collective transport rather than allowing profits to be scooped up by the informal sector with no regard for the burden of costs they might place on local governments and society as a whole. This can include trust funds, better credit facilities, land-value capture and other sources of revenues that can be used to help build sustainable low-carbon transport systems that will allow Africa to flourish and develop economically.

7 Public transport planning and integration with urban planning

These basic recommendations should be implemented in parallel following an integrated transport plan. As cities grow, this will become even more important in the future. City boundaries should be set so as not to encroach on useful agricultural land on the outskirts and transport must be an integral feature of urban development. Dedicated high-capacity mass transit corridors to be established will give future authorities the possibility to introduce rail or BRT systems in an affordable manner, avoiding the displacement of the poor for new transport infrastructure.

Transport is a derived good, and few people travel for the sheer joy of doing so, but the way we travel and the choices we make has a direct impact on economic development and poverty alleviation. Improving formal public transport and increasing the professionalism of the informal sector would bring widespread benefits, not only to those that use public transport as their only form of transport but across the whole community.

The lack of information and statistics across much of the continent makes it difficult to compare modes, however it is hoped that this report and the case studies will provide some valuable insights to help focus attention on this vital sector in the future.