

URBAN TRANSPORT IN AFRICA

BUILDING SUSTAINABLE CITIES FOR THE FUTURE

Demand for urban mobility infrastructure and services is surging across the continent, driven by unprecedented demographic growth. Inspired by a sample of flagship projects, this report presents six recommendations to transform urban mobility and build tomorrow's African cities.



OCTOBER 2022





Julien Wagner AFRICA CEO FORUM
Amaury de Féligonde OKAN PARTNERS

As it has done for the last four years, the **AFRICA CEO FORUM** (the largest international meeting of the African private sector) has teamed up with **OKAN PARTNERS** (a strategy consulting and advisory firm dedicated to Africa) in conducting a detailed review of a major transport and logistics issue faced by the continent. The 2022 edition focuses on the mobility challenges of African cities, a major concern that offers unique opportunities to project developers in the context of surging demand for urban transport infrastructure and services.

URBAN MOBILITY, A GLOBAL CHALLENGE

Whether big or small, wealthy or emerging, all countries and cities need an efficient transport system that contributes to the social objective of accessibility and the economic objective of efficiency. Mobility is essential to the economic development of cities, which are the primary source of wealth creation: the world's 100 largest cities account for nearly 40% of global GDP.

Mobility contributes to the virtuous circle of economic growth. An efficient transport system fuels economic activity, which in turn generates resources to maintain the system and develop it, primarily by capturing some of the land value gains that occur in areas surrounding an infrastructure project. Mobility plays an important role in making a city more attractive for its residents and in improving its image. For example, the construction of a tramway can bring about the complete overhaul of a city centre. Simply put, a city cannot be “liveable” without an efficient transport system.

All countries and cities need an efficient transport system that contributes to the social objective of accessibility and the economic objective of efficiency

At the same time, urban mobility projects throughout the world must grapple with several major challenges. Among these are long lead times, technical complexity, difficult implementation, the need to establish a system of subsidies to ensure affordable fares an adequate service, strong competition from more immediately profitable land use projects, and subtle balance-of-power arrangements between stakeholders with potentially divergent interests.

In developing countries, these challenges are even more significant. Not only is it necessary to overcome transport system deficiencies, but also to meet the needs of an ever-growing urban population seeking access to urban spaces and opportunities. Therefore, the only way to speed up the development of the mobility offer is through a relentless pursuit of efficiency.

AFRICA'S SPECIFIC CHALLENGES AND OPPORTUNITIES

Africa is facing two underlying trends. The first is booming city growth characterised by unbridled urbanisation, both in terms of population (900 million additional urban dwellers between now and 2050) and geographical area (African cities are, on average, 20% more spread out than other emerging cities). The second is soaring demand for urban transport infrastructure and services (multiplied by more than six by 2050), against a backdrop of structurally high costs and limited financial resources for governments and users. These underlying trends are associated with five key urban mobility issues:

- Public transport systems are largely informal, accounting for up to 90% of public transport in large African cities.

- Walking is the main transport mode in cities, representing 40% to 80% of daily trips.
- African cities suffer from massive congestion even though average car ownership is 2 to 4 times lower than in other emerging regions.
- Mobility is a key social concern, with urban transport being 40% more expensive in Africa on average than in the rest of the world (as a proportion of household income).
- African cities are heavily polluted due to their specific modes of transport, a situation that opens up substantial opportunities for promoters of sustainable, resilient projects.

Based on an in-depth examination of Africa's urban mobility challenges and of several major projects emerging across the continent, the AFRICA CEO FORUM and OKAN PARTNERS have established six recommendations for political and economic decision-makers in Africa.

RECOMMENDATION 1 **PLANNING:** **ADOPT AN ECOSYSTEM APPROACH**

Long-term planning is essential to developing coherent and integrated transport ecosystems and relies on four prerequisites: conducting a careful assessment of available options, comparing and choosing the best solution in terms of economic and social issues at stake, creating a suitable institutional framework, and training the necessary talents for the project's success (particularly local urban planners). The Addis Ababa metro, which was launched in 2015, is an example of effective planning. Designed according to a multimodal approach (access to the city's bus rapid transit system), it transports over 30 million passengers per year.

**Operational projects
in African cities fail
to generate sufficient
revenue to fully
cover the operating
expenses**

RECOMMENDATION 2 **FINANCING:** **SECURE PUBLIC CAPITAL AND PRIVATE SECTOR EXPERTISE**

In African cities, capital expenditure is particularly massive due to the rapid pace of urban growth. Furthermore, when projects become operational, they fail to generate sufficient revenue to fully cover the operating expenses, which means that reaching the minimum threshold of economic viability is often a challenge. To ensure that

projects break even, it is therefore necessary for the public sector to provide the bulk of the funding, bearing in mind that a future increase in land value will benefit governments and local communities in the long term. This public support should encourage private sector involvement in public-private partnerships (PPPs). The partnerships must be well balanced and purposefully designed, similar to the agreement between the Senegalese government and SNCF to

develop the Dakar TER, a regional express train (110,000 commuters expected per day).

RECOMMENDATION 3 **OPTIMISE:** **CAPITALISE ON EXISTING SYSTEMS AND AVOID 'WHITE ELEPHANTS'**

Faced with the urgent need to improve their transport infrastructure but hindered by limited budgetary resources, African governments must, when possible, optimise their small-scale informal transport services and promote moderate-cost infrastructure projects with strong social benefits. One example is the eco-friendly cable car project being carried out by POMA

in Antananarivo that will minimise the cost of land in a dense urban area.

RECOMMENDATION 4 **INNOVATION:** **LEVERAGE NEW URBAN MOBILITY** **TECHNOLOGIES**

Urban mobility solutions and applications have proliferated over the last ten years. Yassir, the Algeria-based “African Uber”, boasts nearly 3 million users and has raised close to \$70 million in funding from dozens of venture capital firms in just a few years. The development of new technologies needs to focus on three objectives: promoting the platformisation and the integration of transport services using the Mobility as a Service (MaaS) model, embracing innovative fintech solutions to simplify payments and make it easier to fund mobility, and using data analysis to provide operators and authorities with a better understanding of the transport system.

RECOMMENDATION 5 **INCLUSION:** **MAXIMISE SOCIAL IMPACT** **AND INVOLVE ALL STAKEHOLDERS**

Two conditions must be met to ensure that mobility projects are successfully implemented and benefit

the largest number of people possible. First, project developers must secure the commitment of the different stakeholders to overcome points of contention, using the Johannesburg Bus Rapid Transit (BRT) system as a template. The operating company for the Johannesburg BRT, Litsamaiso, succeeded in aligning the interests of the different stakeholders by making local taxi unions shareholders of the company (alongside project developer PUTCO). Second, the projects must foster job creation,

either through the transfer of know-how, as in the case of the Casablanca tramway whose workforce is 99% local, or by enabling city dwellers of underserved areas to move closer to economic opportunities.

Projects must foster job creation through the transfer of know-how or by enabling city dwellers of underserved areas to move closer to economic opportunities

RECOMMENDATION 6 **SUSTAINABILITY:** **ESTABLISH SUSTAINABLE** **PROJECTS WITH RESILIENT** **MODELS**

As sustainability is at the core of public and private decision-making, urban mobility projects must offer eco-friendly modes of transport and adopt resilient models to mitigate the climate risks hanging over African cities. Dakar’s 100% electric BRT is an example of a system designed to reduce greenhouse gas emissions.

FOREWORD



Amadou Koné

Minister of Transport of the Republic of Côte d'Ivoire

In a context of rapid urbanisation for the whole continent, Côte d'Ivoire undoubtedly is one of the nations where city growth – both past and future – is the most spectacular. The country has one of the highest rates of urbanisation in sub-Saharan Africa, with 50% of the population living in urban areas, versus 20% in 1960. This urban surge is primarily felt in Abidjan, which today has more than 5 million residents, up from 1.4 million in 1980. The contribution of secondary cities to the country's urbanisation, though less visible, is profoundly significant. The populations of these cities have increased fivefold over the last 40 years and now represent more than 8 million people. According to the United Nations, this exceptional urban growth will continue through to 2050. Côte d'Ivoire will have 35 million urban dwellers – two-thirds of its population at that date – or 700,000 additional residents in its cities per year on average over the next three decades.

The massive urban expansion brings two challenges for transport systems in Ivorian cities. The first is an economic and social challenge, with all neighbourhoods to be made more accessible and economic opportunities more available to as many urban dwellers as possible.

This will be a remarkable feat for cities such as Abidjan, which spans over more than 2,000 square kilometres and has a population expected to surpass 8 million people by 2035. The second is a climate-related challenge. A long-term approach must be adopted for urban transport, with an emphasis on promoting mass transit and limiting emissions of CO₂ and fine particles. This is a key issue for cities similar to Abidjan that sees nearly 14 million daily trips.

To face these challenges, we have launched ambitious policies, particularly the National Development Plans for 2016-2020 and 2021-2025, to boost the country's social and economic development with a special focus on infrastructure. Côte d'Ivoire created a far-reaching urbanisation and transport programme with large-scale projects (asphalting and lighting)

both in Abidjan and secondary cities. These include the Cocody lagoon developments and the densification of the bus network, with a BRT project underway. These infrastructure projects have changed the lives of many Ivorians. For example, waterway transport on the lagoon allows residents to travel through Abidjan in 10 minutes for a price of 300 CFA francs, compared to an hour on road transport at twice the cost. In the future, new promising initiatives will continue improving transport in Abidjan and surrounding cities. Among these are the elevated metro project connecting Anyama to Port-Bouët, the cable car project to connect Yopougon to Plateau, and the (long-term) development of the necessary infrastructure for electric vehicles.

New promising initiatives will continue improving transport in Abidjan and surrounding cities

Thanks to the experience gained by cities in Côte d'Ivoire, we have identified three key principles on urban transport that can be applied on the continent. The first is that having a (national) vision is essential in obtaining resilient, efficient and long-lasting infrastructure. This has to be done through rigorous planning and the use of innovative transport models. The second is that pragmatic decisions must be made for project design, existing infrastructure use and for private sector engagement through structured and balanced

partnerships. The third is that an inclusive approach is crucial to secure the participation of all stakeholders (users, operators, trade unions, authorities, etc.) in the transport projects and to ensure that a real and sustainable impact is felt by all.

The AFRICA CEO FORUM, the major strategic event for political and economic decision-makers across the continent, is an opportunity to discover and co-construct the transport solutions necessary to develop African cities. This report is a reminder of the scale of the challenges ahead and reveals the many solutions created by the promising initiatives emerging across the continent. It also provides six concrete recommendations to tackle one of the most complex and deep-rooted challenges for Africa over the next few decades and to confidently plan for a resolutely urban continent.

Contents

| | |
|------------------------|---|
| Editorial | 4 |
| Foreword | 5 |

1 KEY FIGURES

7

| | |
|---|----|
| 1. An urban future | 8 |
| 2. A financing challenge | 14 |
| 3. Five key urban mobility issues in Africa | 17 |
| 4. Flagship projects emerging across the continent | 22 |

2 SIX RECOMMENDATIONS

23

| | |
|--|----|
| 1. Planning | 24 |
| Adopt an ecosystem approach | |
| 2. Financing | 31 |
| Secure public capital and private sector expertise | |
| 3. Optimise | 40 |
| Capitalise on existing systems and avoid ‘white elephants’ | |
| 4. Innovation | 45 |
| Leverage new urban mobility technologies | |
| 5. Inclusion | 52 |
| Maximise social impacts and involve all stakeholders | |
| 6. Sustainability | 56 |
| Establish sustainable projects with resilient models | |



IDUMOTA MARKET, LAGOS - SOURCE: HENGLIN & STEETS

1 KEY FIGURES

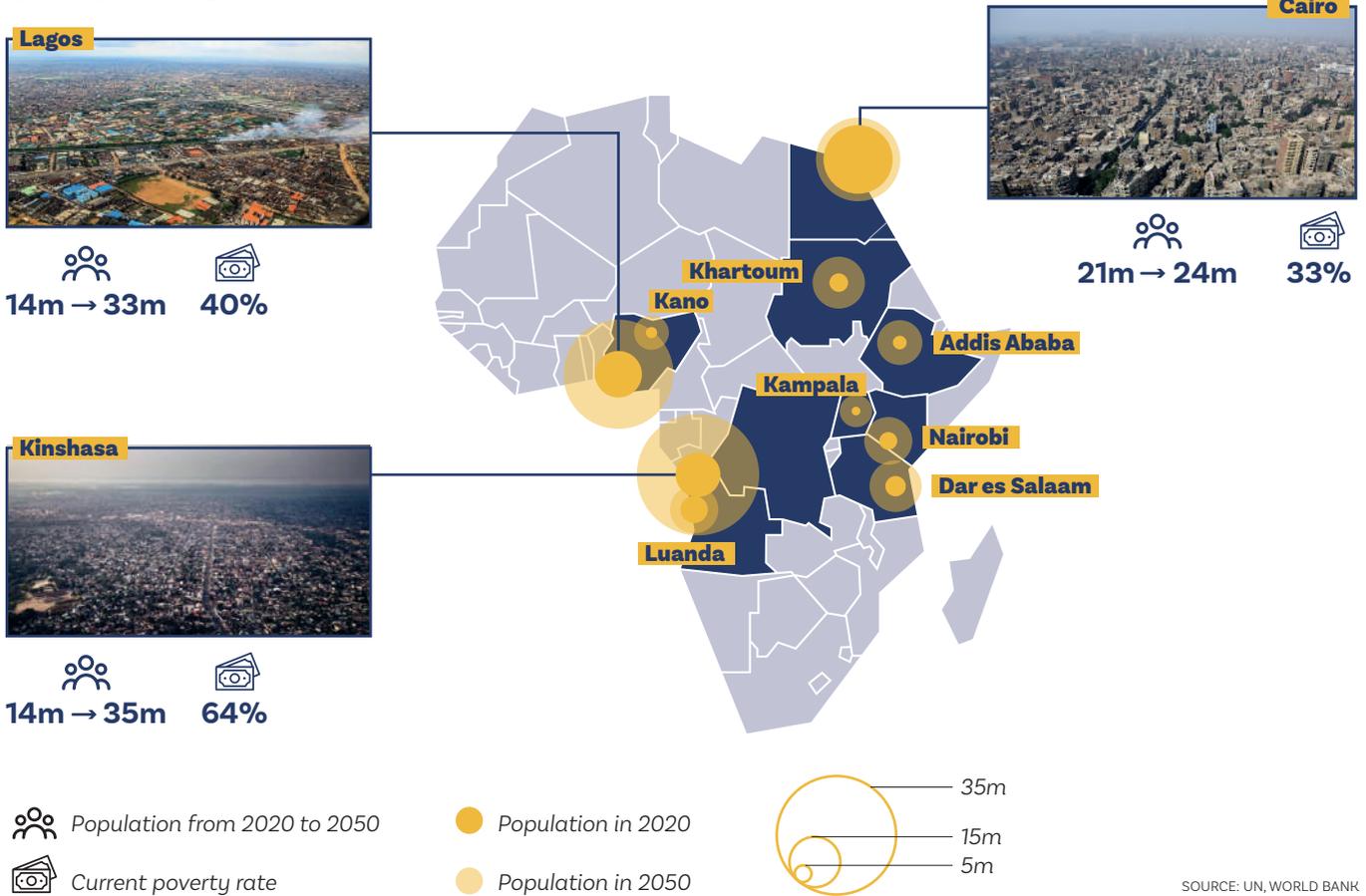
Urban mobility, a key challenge for booming cities

1 An urban future

As Africa emerges as the world's new demographic engine, cities are experiencing unprecedented growth throughout the continent. This major transformation has given rise to four key observations:

- A large part of urbanisation is yet to come: 900 million new inhabitants are expected in African cities by 2050, primarily in large urban centres (with over 1 million people), with contrasting trends from one country to another.
- Small- and medium-sized cities, the historic drivers of demographic growth, are today home to 65% of Africa's urban population.
- Cities are sprawling outward, with urban areas being on average 20% more spread out than other developing cities.
- Slums are expanding, with 50% of the urban population (300 million people) living in these settlements.

Main African cities in 2050



SOURCE: UN, WORLD BANK

900 MILLION NEW URBAN DWELLERS BY 2050

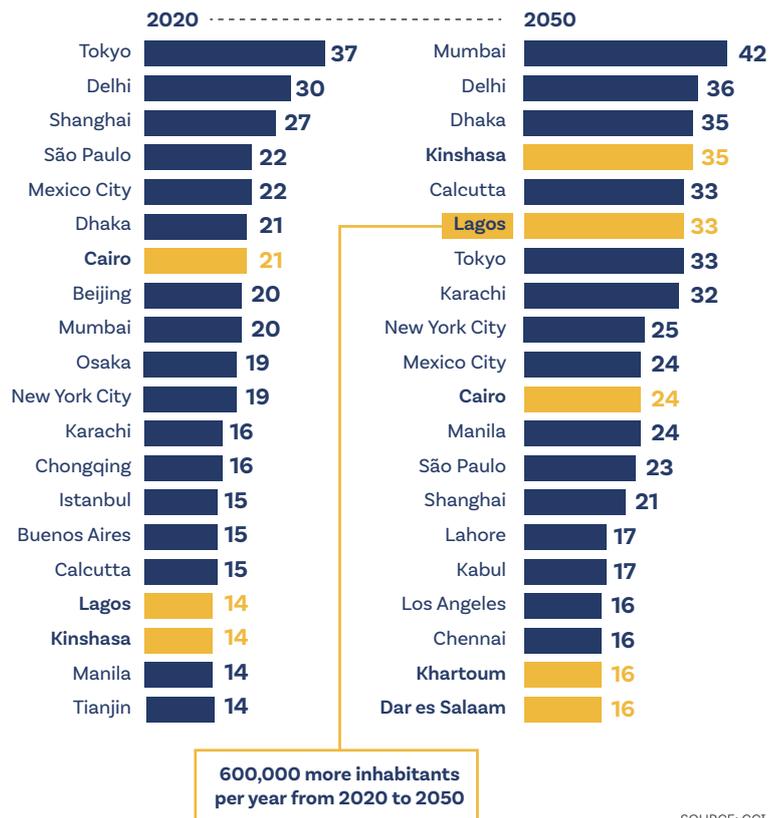
Although Africa still has a low level of urbanisation (around 40% of the population living in urban areas), its cities are growing at an exceptionally fast pace, led by the continent’s demographic upsurge.

While about 30% of Africans lived in cities in 1990, 60% will live in cities by 2050. At that time, there will be 900 million additional urban dwellers.

Large metropolises (over one million inhabitants) will be the main driver of this growth, attracting more than 50% of all new urban dwellers from 2020 to 2030, versus 35% between 1970 and 1990.

By 2050, five of the world’s 20 largest cities will be African. The continent will also have around 10 megacities (over ten million inhabitants), versus three today.

The 20 most populated cities in the world, in millions of inh.

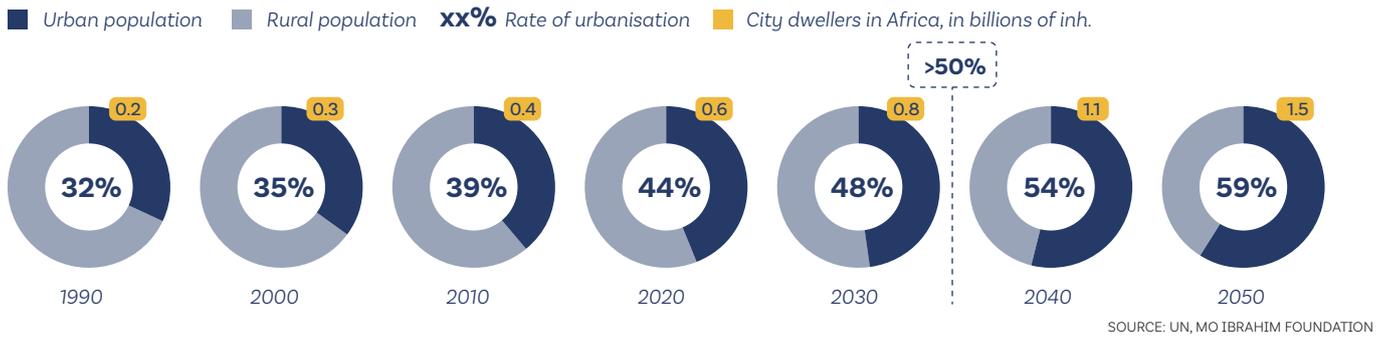


SOURCE: GCI



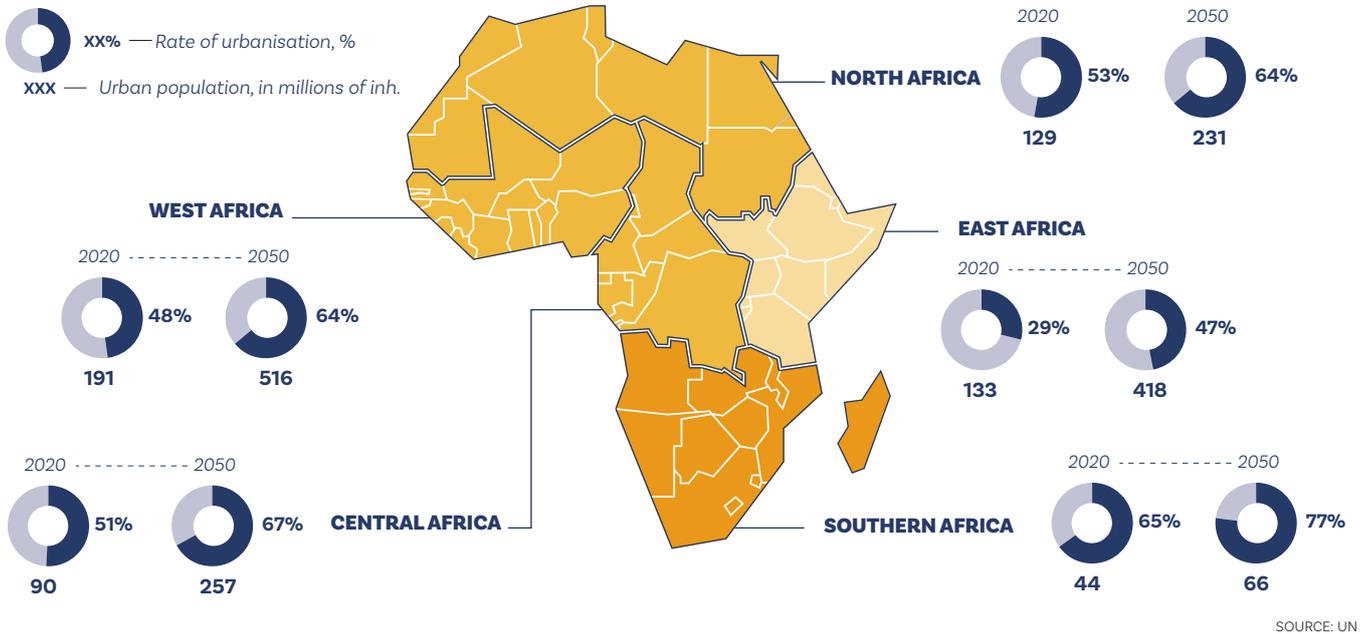
SOURCE: UN

Change in urban population in Africa, in billions of inh.



Contrasting urban trends

Level of urbanisation High Moderate Low



SMALL- AND MEDIUM-SIZED CITIES ACCOUNT FOR 65% OF THE URBAN POPULATION

Africa’s urban growth is not due to large cities alone but also to the proliferation of small- and medium-sized cities (less than one million inhabitants), of which 80% were either villages or did not exist in 1960.

Although these secondary cities are home to nearly 65% of Africa’s urban population, their

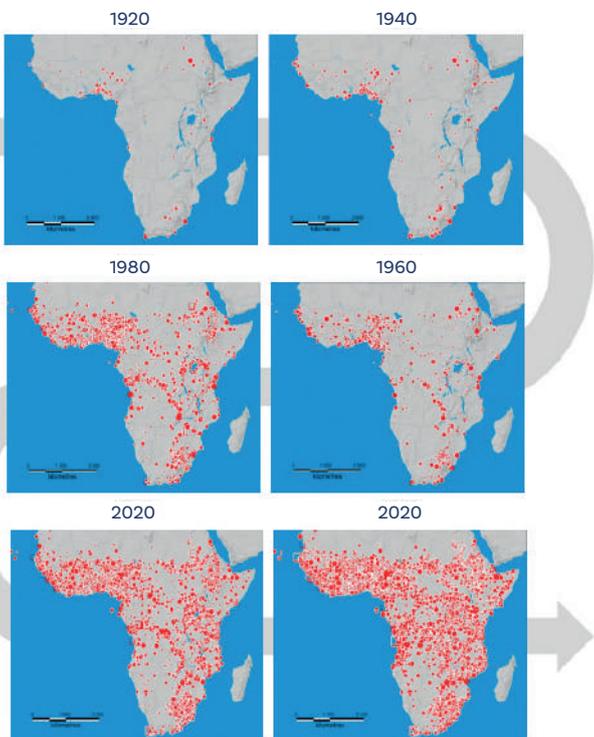
contribution to urban growth is decreasing, in favour of larger cities.

The smaller cities are developing in networks around primate cities to form vast agglomerations. The continent has six mega-agglomerations: West Africa (130 million dwellers in the mega-agglomeration), the Nile Valley

(80 million), the Great Lakes Region (50 million), North Africa (40 million), Southern Africa (30 million) and the Ethiopian Plateau (25 million).

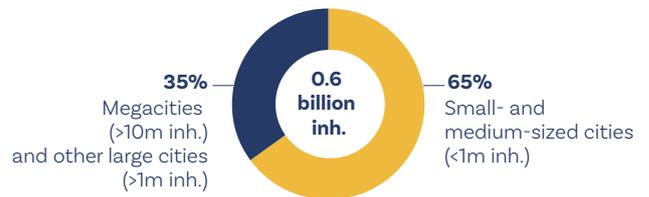
These six mega-agglomerations alone currently host nearly two-thirds of Africa’s urban population.

Change in the number of cities with less than 10,000 inhabitants in sub-Saharan Africa



SOURCE: AFRICAPOLIS

Breakdown of the African urban population in 2020, %



Populations of the 6 African mega-agglomerations, in millions of inh.



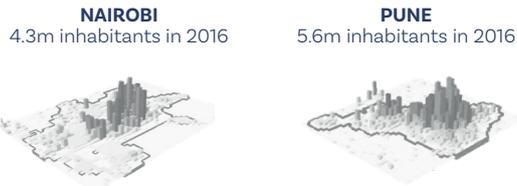
SOURCE: UN, AFRICAPOLIS

A SPATIAL EXPLOSION, WITH AFRICAN CITIES 20% MORE SPREAD OUT THAN OTHER EMERGING CITIES

The growth of African cities is taking the form of an unprecedented urban sprawl. This trend is reflected in relatively low urban population densities compared to the continent's extraordinary demographic growth.

Urban sprawl is more pronounced in Africa than in other emerging regions. According to the World Bank, African cities are on average 20% more spread out than Asian and Latin American ones.

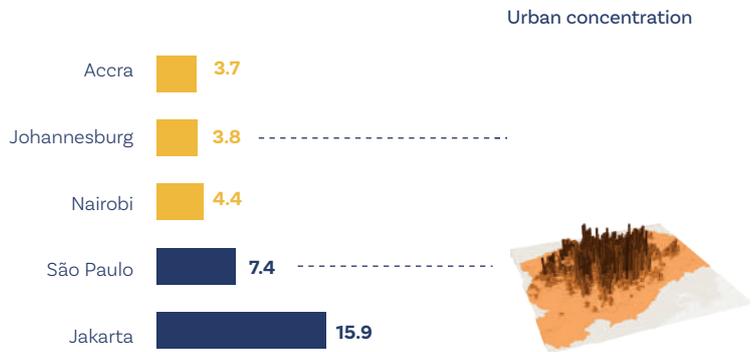
Urban concentration in Nairobi (Kenya) and Pune (India)



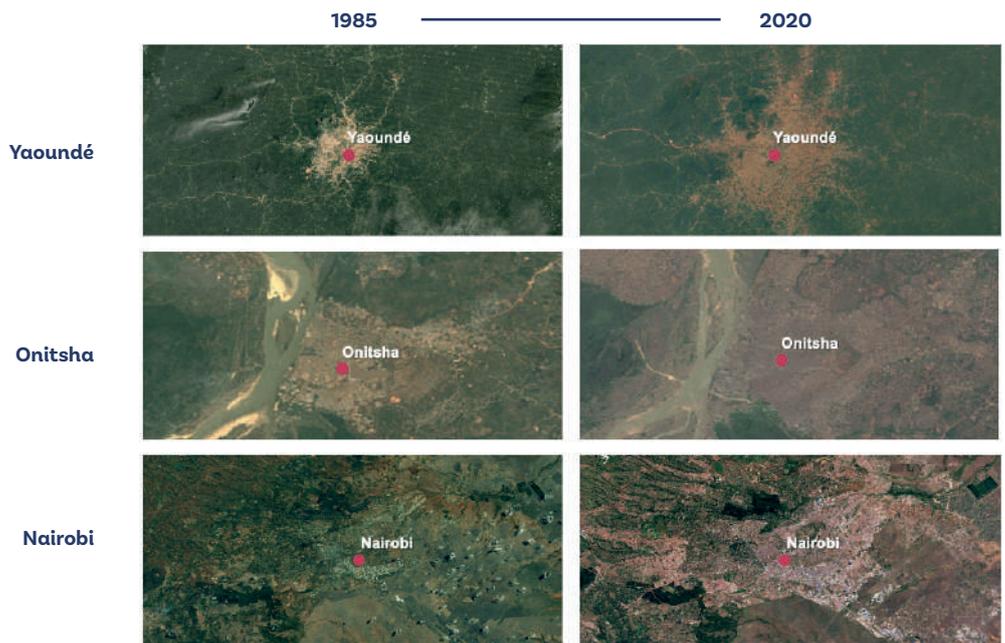
Urban areas **25% larger in Nairobi** despite a population size **25% smaller than Pune**

SOURCE: WORLD BANK, LSE

Population density, in thousands of inh. per km²



SOURCE: AFRICAPOLIS, INEGI, IBGE, BPS, LSE CITIES



SOURCE: GOOGLE EARTH

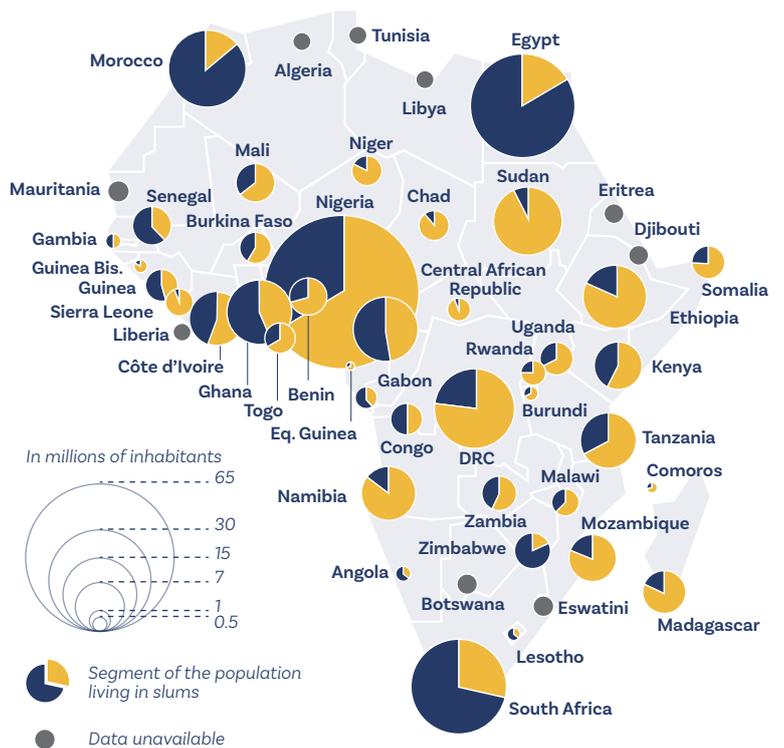
THE EXPANSION OF SLUMS, WHICH ARE HOME TO 50% OF THE URBAN POPULATION OR NEARLY 300 MILLION PEOPLE

Most African cities are unable to absorb the explosion of their population and suffer from a massive housing deficit (estimated at 2 million homes in Kenya and 17 million in Nigeria).

As a result, huge slums are developing on the edge of the cities, accounting for nearly 50% of the urban population and up to 95% in countries such as the Central African Republic.

Africa's slums are home to nearly 300 million people, almost as many as the population of the United States.

Breakdown of the urban population living in slums, %



SOURCE: UNDESA, WORLD BANK

A future in jeopardy:

It will cost 2 to 8 times more to improve existing slums than to develop new accommodations

The Kibera neighbourhood in Nairobi (Kenya): One of the largest slums in Africa and the world



SOURCE: SCHREIBKFRAT, WIKIPEDIA

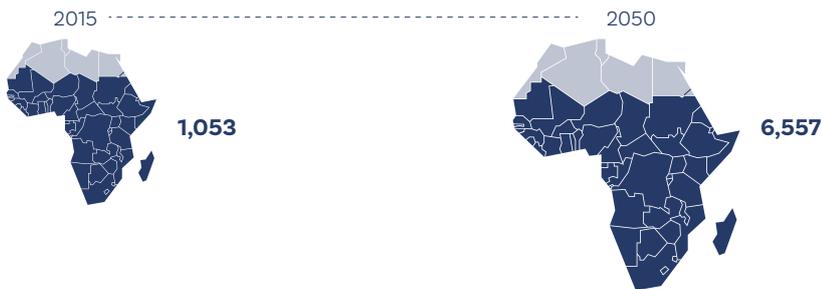
2 A financing challenge

As urban populations continue to expand across the continent, authorities are facing a major financing challenge: providing adequate urban transport and satisfying the booming demand for infrastructure and services (projected to be multiplied by 6 in 2050) when infrastructure costs are structurally high, mainly due to urban sprawls.

At the same time, African countries are facing limited financial resources, both for governments and users. It is for this reason that urban infrastructure suffers from a massive shortage of funds, with infrastructure gaps estimated at \$30-\$40 billion per year on the continent.

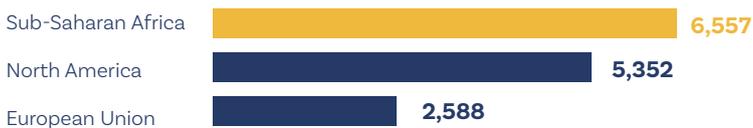
GROWING DEMAND FOR URBAN MOBILITY INFRASTRUCTURE AND SERVICES

ESTIMATED CHANGE IN THE DEMAND FOR URBAN TRANSPORT IN SUB-SAHARAN AFRICA
In billions of passenger-kilometres



SOURCE: ITF TRANSPORT OUTLOOK (RECOVER SCENARIO)

Demand for urban transport per world region by 2050
In billions of passenger-kilometres



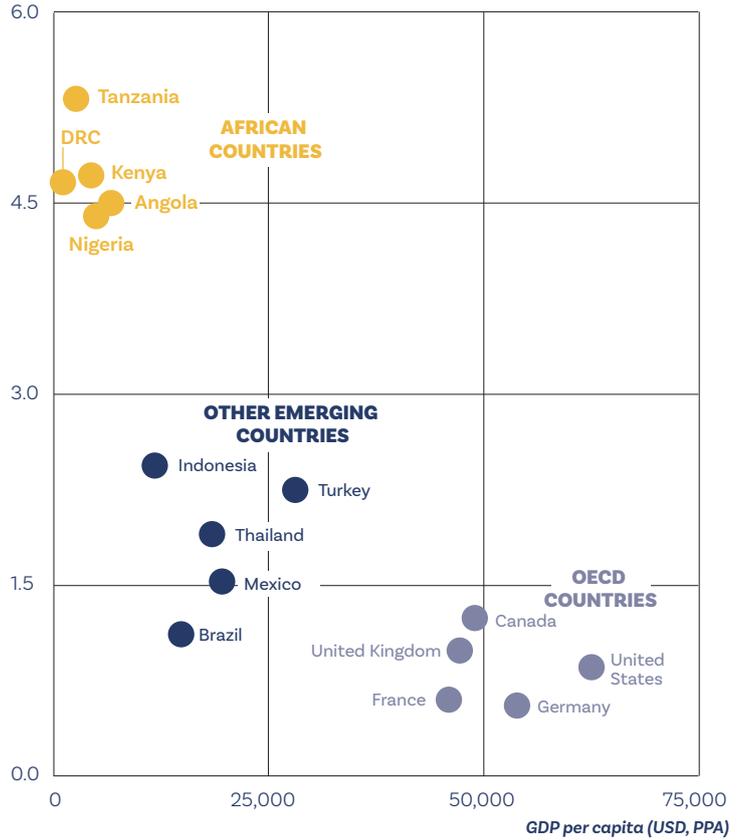
SOURCE: ITF TRANSPORT OUTLOOK (RECOVER SCENARIO)

GROWING FINANCING NEEDS FOR CITIES ALREADY LAGGING BEHIND

The continent’s rapid urbanisation is happening in a context where weak economic development persists, with payment capacities (direct or indirect) far below the levels needed to finance the massive investment effort required. This situation inevitably results in a financing gap for urban infrastructure in most countries across the continent.

Urban growth rate and wealth level by country group

Annual growth of the urban population (% , 2013-2019 average)



SOURCE: WORLD BANK

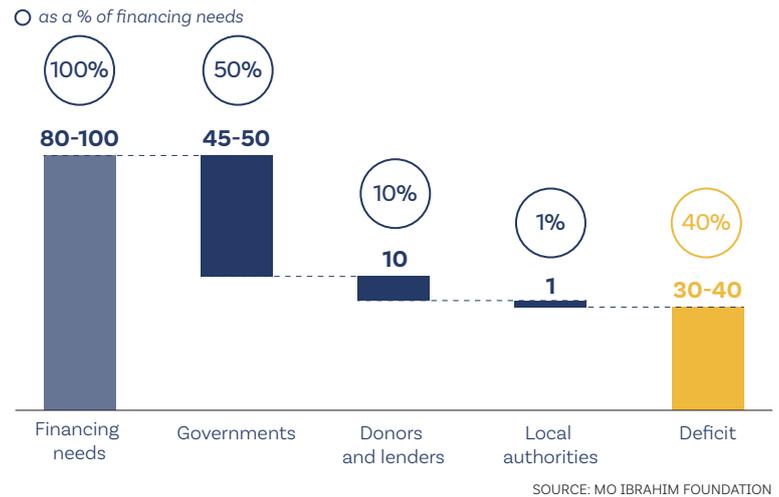
AN URBAN INFRASTRUCTURE FUNDING GAP OF \$30-\$40 BILLION PER YEAR

Africa’s urban infrastructure financing needs (including mobility) are estimated at \$80-\$100 billion per year, which represents more than 5% of the continent’s GDP.

Most African countries do not have sufficient resources to cover more than 50% of their infrastructure investment needs, leading to a funding gap of \$30-\$40 billion per year despite support from international donors (World Bank, AfDB, etc.) and bilateral lenders (AFD, BII, etc.)

Urban infrastructure financing in Africa suffers notably from insufficient use of land value capture, primarily due to inefficient cadastral systems and property tax collection.

African urban infrastructure funding
In billions of USD per year



Public funding (governments and local authorities) of urban infrastructure
In USD per year per urban dweller



Luanda (Angola): A shortage of funds for urban mobility infrastructure projects



SOURCE: STEPHANE DE SAKUTIN, AFP, GETTY IMAGES

3 Five key urban mobility issues in Africa

In the context of a financing gap for urban mobility infrastructure and services, African authorities and operators face five key challenges:

- Public transport systems are largely informal, accounting for up to 90% of mass transit in large African cities.
- Walking is the predominant transport mode in cities, representing 40% to 80% of daily trips.
- African cities suffer from massive congestion even though car ownership is 2 to 4 times lower than in other emerging regions.
- Growing social concerns linked to spatial division and mobility inequalities, with urban transport costs being 40% more expensive in Africa than in other emerging regions (as a proportion of household income).
- Cities are heavily polluted, mainly due to local modes of transport.

LARGELY INFORMAL TRANSPORT SERVICES, ACCOUNTING FOR UP TO 90% OF MASS TRANSIT IN SEVERAL LARGE CITIES

Faced with chronic underfunding, institutional transport systems in Africa (metros, tramways, etc.) are often poorly developed and only account for 5% of daily commuting, compared to 10%-20% in Latin America.

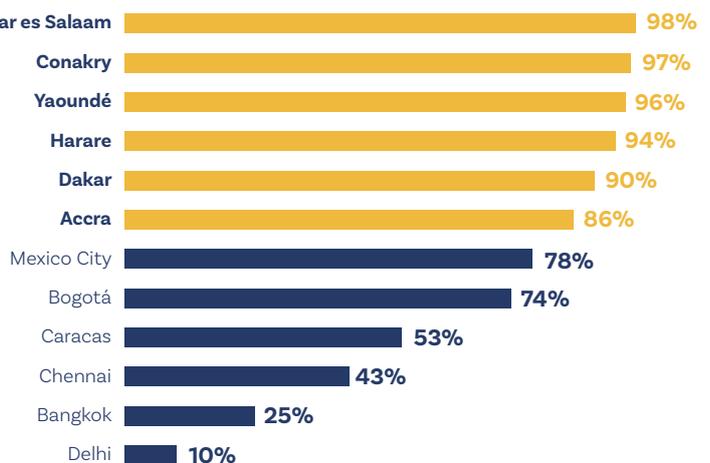
In African cities, public transport is usually provided by a multitude of private, informal, and largely unregulated operators (minibuses, shared taxis, etc.). Locally called trotro, gbaka, or dala dala, informal systems account for over 90% of mass transport in African cities like Dakar, Yaoundé, or Dar es Salaam, compared to less than 30% in Asian cities like Bangkok and Delhi.

Institutional transport in cities, %



SOURCE: MO IBRAHIM FOUNDATION

Informal transport in the transport system, %



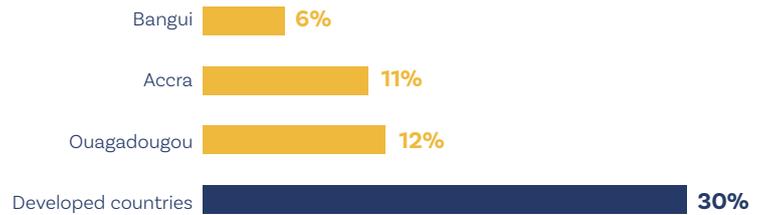
SOURCE: MO IBRAHIM FOUNDATION, AFD

WALKING IS THE PREDOMINANT TRANSPORT MODE, REPRESENTING 40% TO 80% OF DAILY TRIPS

Walking is the main transport mode in African cities, representing 40% to 80% of daily trips even though urban infrastructure is often unsuitable (lack of pavements, lighting, water drainage systems, etc.). In many African cities, the amount of urban space allocated to streets does not exceed 10%-15%.

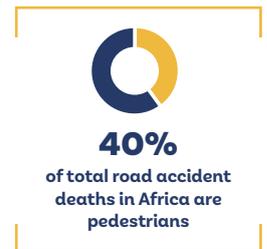
These insufficiencies are the source of major safety issues. In Africa, pedestrians account for 40% of total road accident deaths. In Addis Ababa, over 70% of road accident victims are pedestrians.

Amount of urban space allocated to streets, %



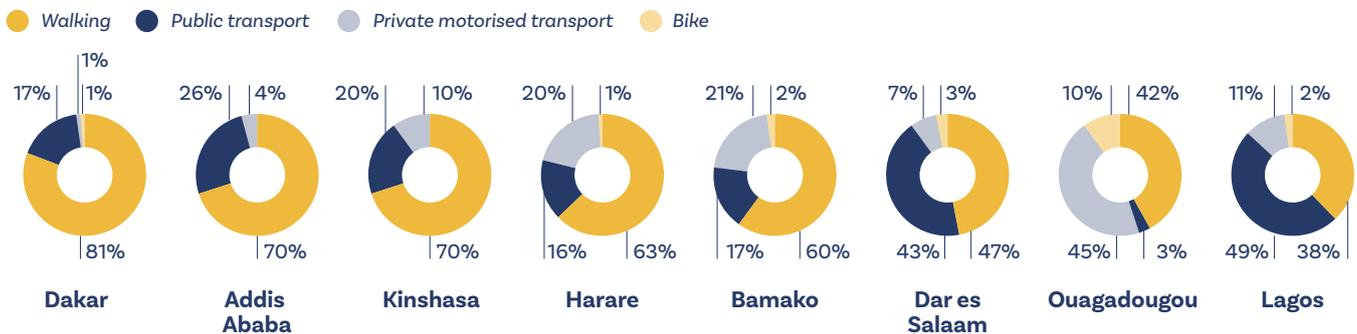
SOURCE: MO IBRAHIM FOUNDATION

Road accident deaths, deaths per 100,000 inh.



SOURCE: WHO

Mode of transport in a selection of African cities, %



SOURCE: MO IBRAHIM FOUNDATION

MASSIVE URBAN CONGESTION DESPITE A MOTORISATION RATE 2 TO 4 TIMES LOWER THAN IN OTHER DEVELOPING REGIONS

African cities suffer from major congestion despite a persistently low motorisation rate on the continent (2 times lower than emerging Asia and 4 times lower than Latin America).

The issue could worsen in the future with the number of cars massively increasing (2 to 10 times more vehicles expected on African roads by 2050).

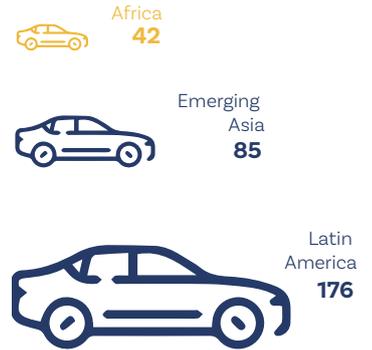
Urban congestion leads to significant productivity losses (estimated at \$1 billion per year in Nairobi and 8% of GDP in Ghana).

Time spent in traffic jams each week, hours



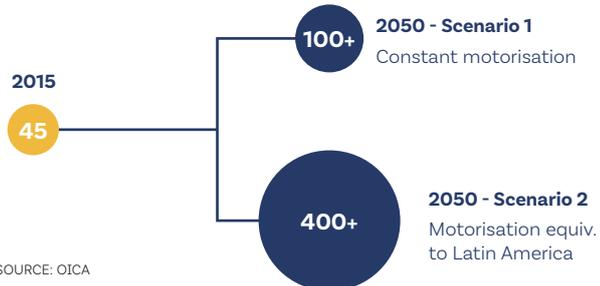
SOURCE: OICA

Motorisation rate, cars per 1,000 inhabitants



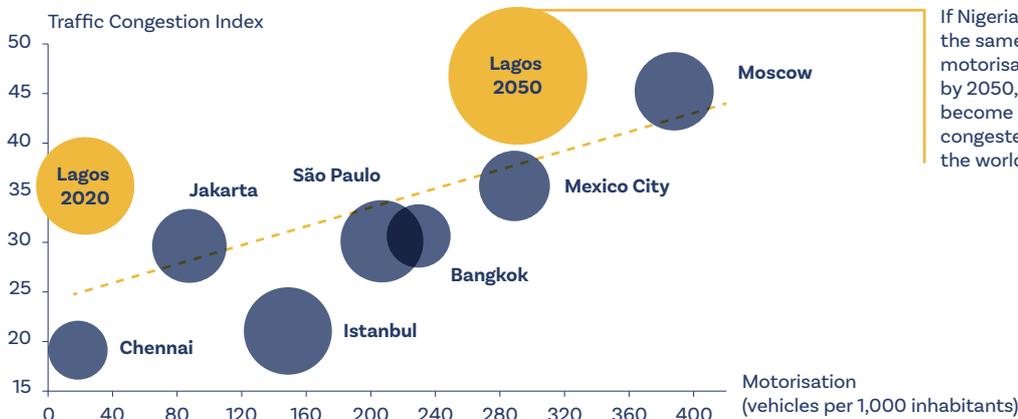
SOURCE: CNN, INRIX, BCG, UBER

Vehicle fleet in Africa by 2050, in millions



SOURCE: OICA

Urban congestion and motorisation: Is this just the start for Africa?



If Nigeria were to achieve the same level of motorisation as Mexico by 2050, Lagos would become the most congested city in the world

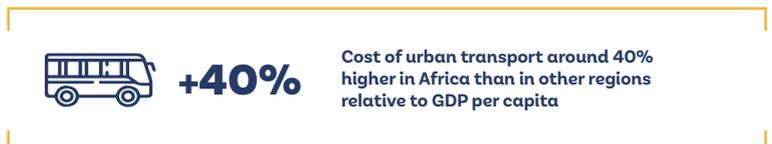
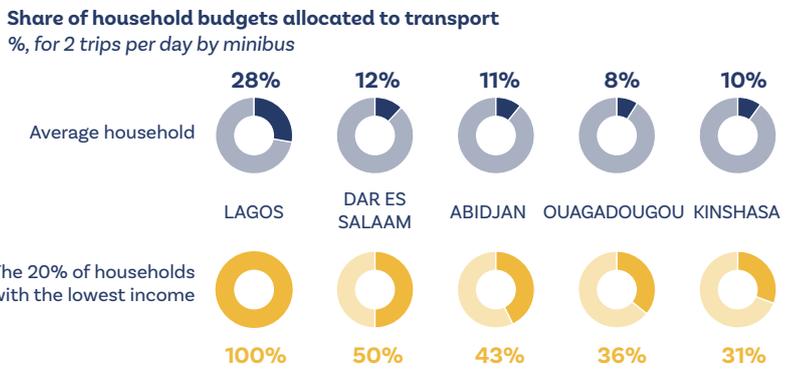
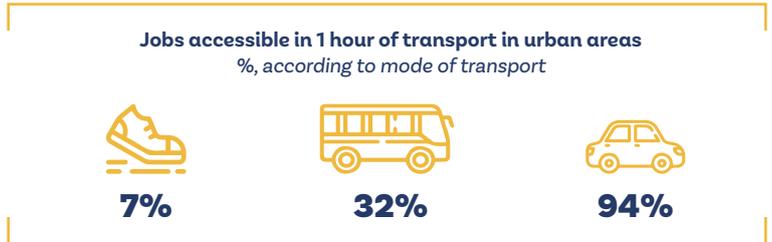
NOTE: THE SIZE OF THE SPHERES REFLECTS THE SIZE OF EACH CITY'S POPULATION SOURCE: TCI, OICA

SOCIAL CONCERNS DUE TO SPATIAL DIVISION AND MOBILITY INEQUALITIES

For African city dwellers, urban sprawls result in spatial divisions and mobility inequalities, with a strong impact on the population’s access to economic opportunities.

While only 7% of jobs are accessible on foot (versus 94% by car), the cost of transport is a major barrier to employment for people living in the city, particularly those with the lowest income.

The cost of urban transport in Africa is higher than in other low- and middle-income countries. The additional cost, weighted by the GDP per capita, is estimated at 40% by the World Bank.



SOURCE: WORLD BANK, JOURNAL OF TRANSPORT GEOGRAPHY

Abuja (Nigeria): Limited access to economic opportunities for low-income households



SOURCE: KOLA SULAIMON, AFP, GETTY IMAGES

CITIES ARE HEAVILY POLLUTED, MAINLY DUE TO LOCAL MODES OF TRANSPORT

African cities are among the most polluted in the world. The quantity of fine particles per square kilometre related to urban transport is 35% higher in sub-Saharan Africa than in Asia, and 5 times higher than in North America.

Low-occupancy modes of transport are a major cause of this pollution. For example, CO₂ emissions per passenger associated with car transport are up to 5 times higher than with rail transport.

This outdoor pollution has a significant impact on public health. Between 1990 and 2019, outdoor pollution-related deaths increased from about 26 to 29 per 100,000 people.

Cairo (Egypt): Low-occupancy transport modes, a major contributor to urban pollution



SOURCE: KHALED DESOUKI, AFP

Current pollution levels related to urban transport
Tonnes of particles (PM2.5) per square kilometre



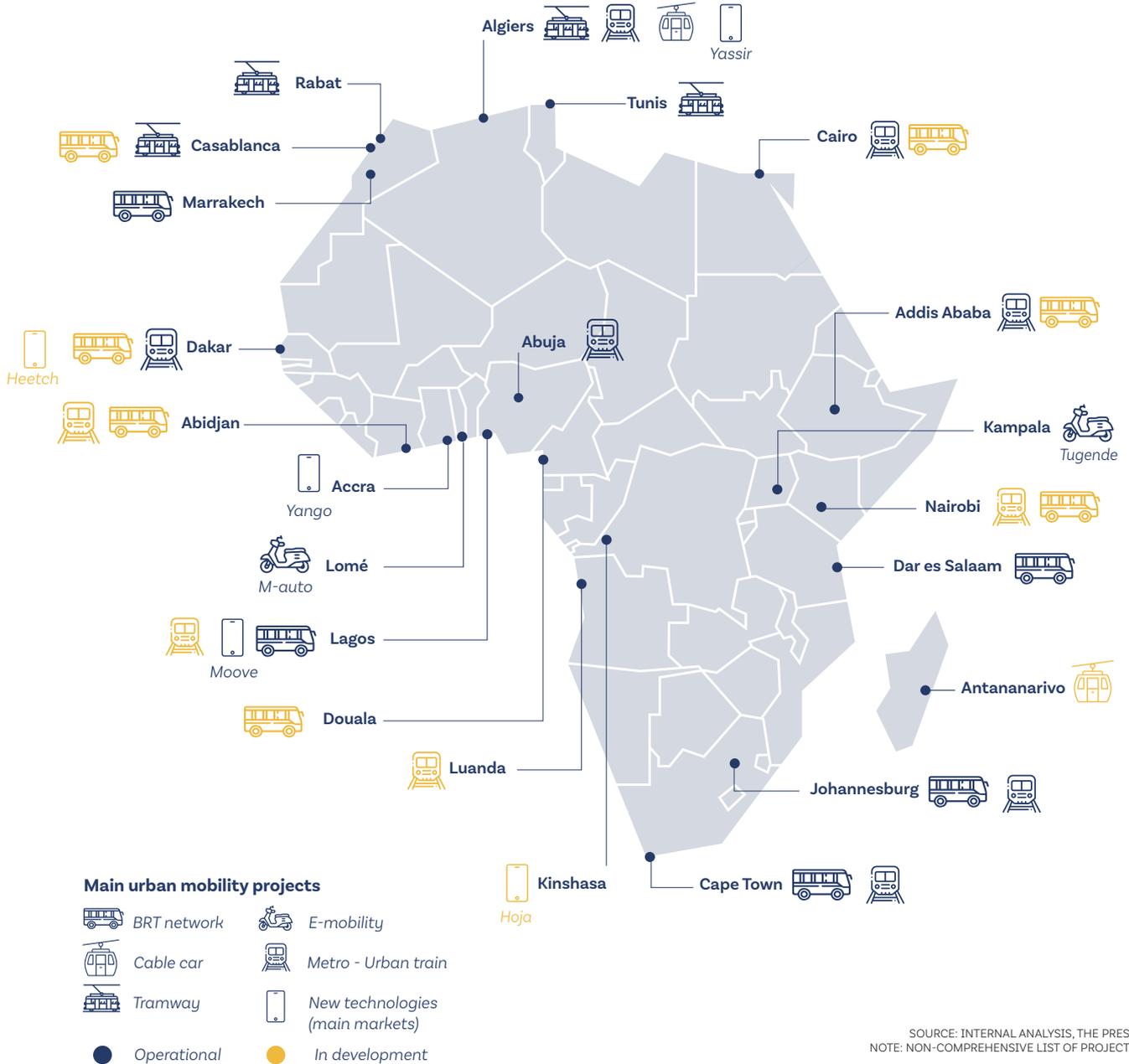
SOURCE: ITF TRANSPORT OUTLOOK

Pollution per mode of transport
Kg of CO₂ per kilometre and per passenger



SOURCE: US FEDERAL TRANSIT ADMINISTRATION

4 Flagship projects emerging across the continent



SOURCE: INTERNAL ANALYSIS, THE PRESS
NOTE: NON-COMPREHENSIVE LIST OF PROJECTS



SANDTON REA VAYA BRIDGE, JOHANNESBURG - SOURCE: SCHREDER

2 SIX RECOMMENDATIONS

Pathways to transform urban mobility in Africa

1 PLANNING

Adopt an ecosystem approach

Planning a mobility project is complex, especially in Africa, due to rapid urban population growth and large-scale urban sprawl.

The planning process is twofold: (i) spatially, with the establishment of transport ecosystems combining different modes to maximise user efficiency and convenience in terms of time, cost, comfort, access and safety, and (ii) temporally, by defining a long-term development vision for the transport network, i.e., with a 30-40-year horizon.

For the planning process to be successful, decision-makers must meet four prerequisites:

- Evaluate available options by analysing the data (especially cadastral data) on the sites where the mobility project will be implemented.
- Arbitrate between available options and choose the most suitable solution, particularly in terms of economic and social issues at stake.
- Prepare the implementation of the solution by establishing an appropriate institutional framework that ensures the smooth functioning of the project.
- Train the talent needed for the entire planning process, especially urban planners from local backgrounds.

Casablanca tramway: Intersection of lines 1 and 2



SOURCE: ASSOCIATION QUEBÉCOISE DES TRANSPORTS

EVALUATE THE AVAILABLE OPTIONS

Planning a mobility project first entails evaluating available options by analysing the data (especially cadastral data) on the sites where the mobility project will be implemented. The evaluation also involves a census of the urban population. Although it can be costly and complex, a census provides a more accurate assessment of a city's transport needs and their future evolution. Thanks to the demographic data gathered in the 2019 Kenyan census, for example, the authorities in Nairobi were able to evaluate the growth rate of the city and the associated urban transport requirements.

This assessment also requires

precise data on transport flows and modal splits, i.e., the share of each mode of transport within the overall transport usage of a city. In Senegal, the survey on mobility, transport and urban services in Dakar (EMTSU), first conducted in 2000 and again in 2015, provided valuable information for the development of Dakar's transport network.

Finally, an improvement of cadastral systems in order to establish precise cartography of territories is also necessary. For this, the authorities can leverage various technologies, including satellite imaging and aerial photography. A better cadastre allows the authorities to assess

the upside potential of the land and simplifies administrative procedures. For example, in 2021, Côte d'Ivoire launched the Integrated Urban Land Management System (SIGFU) to digitise land records and facilitate the obtention of land titles.

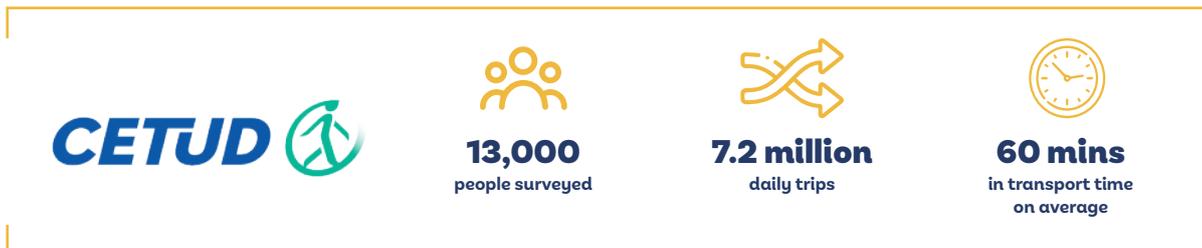
“ Even before the TER project began, we conducted simulations to determine what the right fare was. We combined transport requirements and purchasing power and compared the TER with other modes of transport.”



ABDOU NDENE SALL

Managing Director, Société de Patrimoine du TER - Dakar

Survey on mobility, transport and urban services in Dakar (EMTSU) - 2015



ARBITRATE AND CHOOSE THE MOST SUITABLE SOLUTION

Once the options have been identified, a solution must be chosen considering the economic issues at stake. In this respect, pricing is a key issue, as it determines what share of the capital and operational expenditure will be financed directly by the user, with the remainder being borne by the state, the local authorities, or a private operator. Trade-offs must also be made on the desired level of service, i.e., frequency, accessibility and operating hours, and can have a strong impact on the cost and complexity of the system. In addition, decisions must be made on land use. Authorities have to weigh the pros and cons of allocating space to transport infrastructure projects rather than to other urban initiatives (residential, commercial, etc.) that can potentially become profitable more quickly.

“ It is extremely important for a local company to be actively involved in the ongoing management of the project. The Gautrain expansion plan offers considerable employment and economic development potential for Gauteng.”



MZOLISI DILIZA
Executive Chairman -
Strategic Partners Group (SPG)

When deciding, it is necessary to adopt a long-term vision and consider future gains in land value generated by the new mobility infrastructure.

In addition, it is essential to take into account political and social issues, by structuring the new projects with the alternative (often informal) offers and ensuring that any opposition is appropriately addressed.

Furthermore, the participation of local stakeholders is essential.

International investors must ensure that local partners - whether political, technical or financial - are involved in the project. RATP Dev, for example, which operates the Gautrain rail system in Johannesburg, established a partnership with Strategic Partners Group (SPG), a South African company with a 37% interest in the initiative.

PREPARE THE IMPLEMENTATION OF THE SELECTED SOLUTION

Next comes the institutional framework necessary to deploy the solution. This mainly includes the creation of a transport authority responsible for

planning, regulating, and managing the network as well as ensuring the overall coordination of the project. Since the 1990s, several African cities have set up transport authorities, one example being the Lagos Metropolitan Area Transport Authority (LAMATA). These authorities make it possible to establish clear governance and ensure coordination between the different stakeholders (governments, local communities, operators, etc.).

An efficient transport system also connects the different modes of transport (tramway, metro, BRT, green mobility) to ensure a high level of intermodality, as in the case of the Addis Ababa Light Rail, which provides multiple transfer opportunities to the city’s BRT. An optimally organised network also has an integrated ticketing system that allows users to use a single ticket to travel on all of the city’s transport services, like the Rabat-Salé system in Morocco.

An integrated transport ticketing system in the Rabat-Salé region



SOURCE: RABAT-SALÉ TRAMWAY

“ LAMATA plans, develops and regulates a multimodal transport system. Our goal is to develop an integrated, sustainable, world-class system that satisfies all stakeholders and stimulates growth in Lagos.”



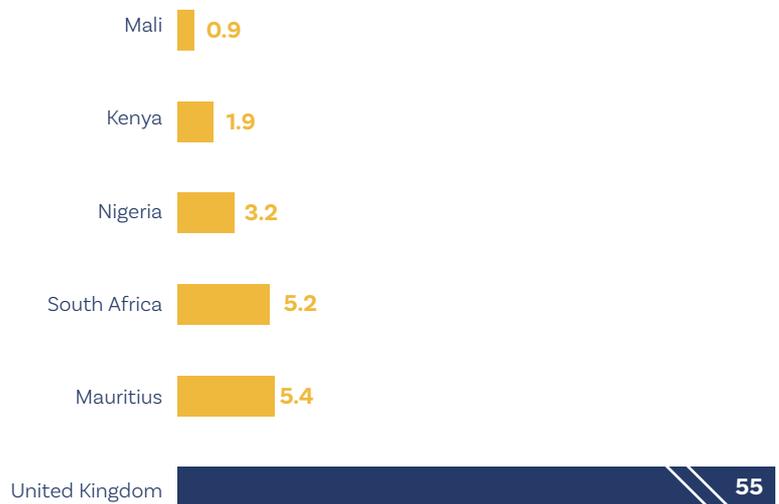
ABIMBOLA AKINAJO

Managing Director – Lagos Metropolitan Area Transport Authority

TRAIN THE TALENT NEEDED FOR THE ENTIRE PLANNING PROCESS

Effective urban planning requires increased involvement of urban planners, whose number is limited in Africa compared to other parts of the world. For example, there are about 15 times fewer urban planners per 100,000 city dwellers in Nigeria than in the United Kingdom. More training programmes are needed to train technical, political, and economic managers capable of structuring urban policies and managing the continent’s exceptional urban growth.

Number of urban planners in a selection of countries (per 100,000 urban dwellers)



SOURCE: MO IBRAHIM FOUNDATION

Several schools are already playing a central role in training the planners who will be responsible for designing the future of African cities. One of these is the School of Architecture and Urban Planning (EAMAU) in Lomé. Created from an inter-governmental cooperation agreement, EAMAU offers programmes in urban management and transport and mobility to students from 14 African countries.

“ The small number of urban planners in Africa is a problem. People don't know the difference between an urban planner and an engineer. It is necessary to raise awareness about the profession. That is part of our job.”



MOUSSA DEMBÉLÉ
Director - EAMAU

School of Architecture and Urban Planning (EAMAU) in Lomé, an example of inter-governmental cooperation to train urban planners



SOURCE: L-FRII, EAMAU

CASE STUDY

The Addis Ababa metro integrated into an intermodal transport network

Rolled out in 2015, the Addis Ababa light rail system currently comprises 2 lines. These will be interconnected with a BRT network, for which 2 lines are currently under construction. The city developed the light rail network using a multimodal approach to cope with the rapid growth of the urban population.

A LARGE-SCALE PROJECT FOR ADDIS ABABA

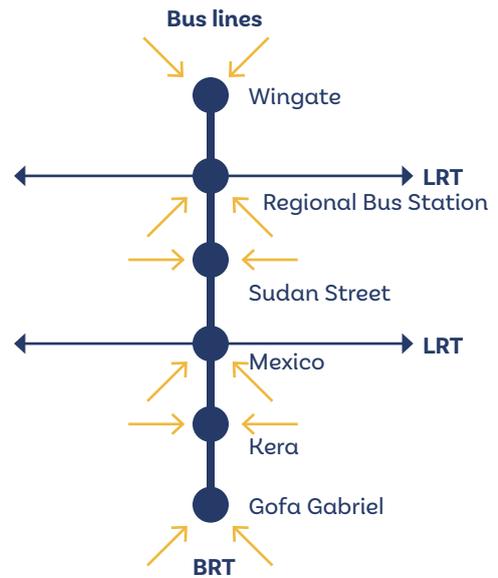
- A **32-km**, two-line network with **39 stations**.
- A **\$475 million** project mainly financed by China Exim Bank (80%).
- **32 million passengers** per year (2019).



SOURCE: TIKSA NEGERI, REUTERS

A SYSTEM DESIGNED TO FACILITATE INTERMODAL TRAVEL

- Interchange hubs being developed at major interconnection points between the metro and BRT systems (Mexico Square and Gofa Gabriel).
- Construction of secure pedestrian access to metro stations.
- Development of a single integrated ticket system for different modes of transport.



SOURCE: EGIS RAIL

2 FINANCING

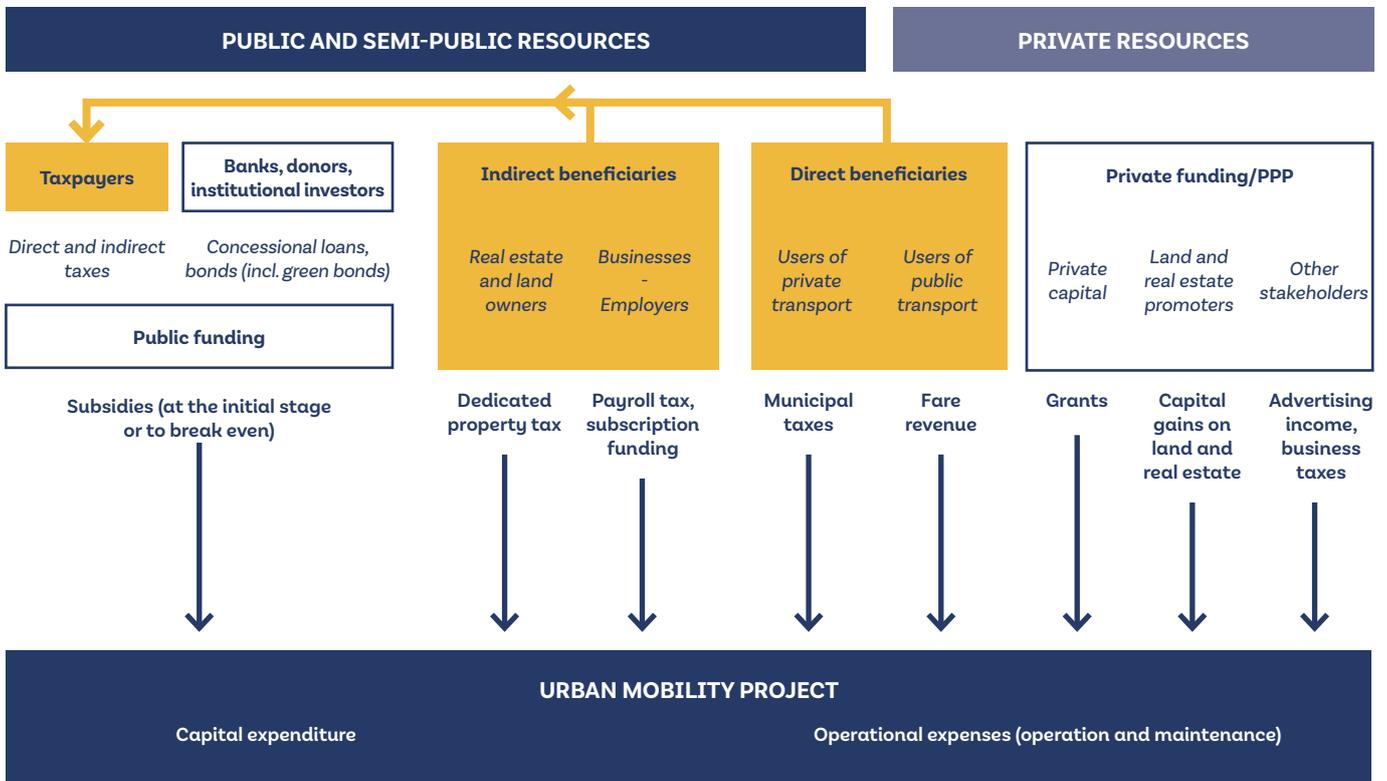
Secure public capital and private sector expertise

Urban mobility projects throughout the world hardly achieve financial sustainability mainly due to their high capital requirements and the obligation to set low fares for social reasons. This is also true for African cities, for which four observations can be made regarding financing challenges:

- The level of capital expenditure in African cities is particularly high due to the booming demand for services as a result of urban growth. In addition, when projects become operational, they do not generate sufficient revenue to cover all the operating expenses.

- The majority of the funding should be provided by the public to ensure that the projects achieve breakeven, both in terms of capital and operating expenditures (to reach the minimum threshold of economic viability).
- This public support makes it possible to attract private sector expertise within the framework of public-private partnerships (PPPs) that should be well-balanced.
- Land value capture, which is inherent to these types of projects, ensures benefits to governments in the longer term.

Funding resources for urban mobility projects



SOURCE: AFD

“ Through PPPs, the private sector can play an important role in transport infrastructure by allowing the public sector to focus on areas in which the private sector is not willing to invest.”



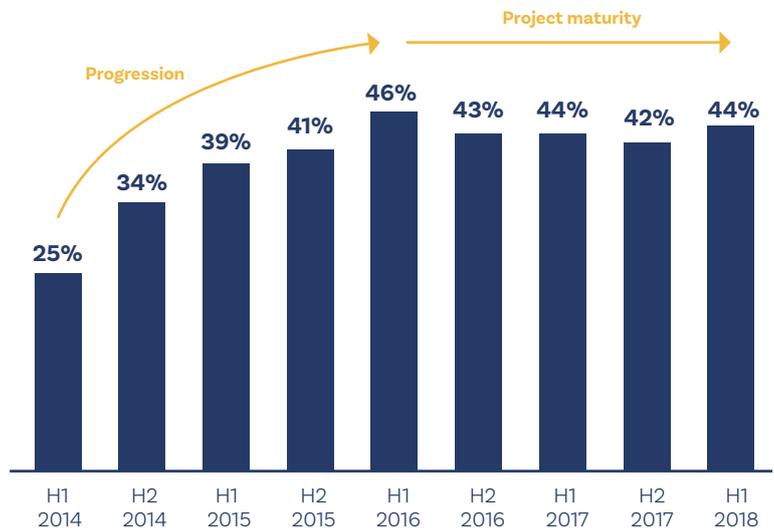
MAKHTAR DIOP

Managing Director – International Finance Corporation

IDENTIFY THE PROJECT’S BREAKEVEN OPTIONS

Most urban transport projects around the globe require massive capital expenditure since they usually involve large-scale changes in complex urban environments. This is particularly the case in Africa, where rapid urban growth is fuelling the demand for mobility infrastructure and services. According to the International Finance Corporation (IFC), for example, Nairobi alone will need to invest \$1.6 billion in public transport between now and 2030.

Economic balance of the Cape Town BRT - rate of coverage of operational expenses by ticketing revenues (%)



Insufficiencies requiring additional revenue:

Public subsidies
(tax on fuel, dedicated land tax)

Advertising revenue

SOURCE: PPIA, WORLD BANK, MYCITI

In addition, most urban mobility projects fail to generate enough revenue to cover their operating expenses. This situation is particularly frequent in Africa where transport fares are set at the lowest level possible to accommodate low-income residents. At the same time, operating conditions (insufficient infrastructure, urban congestion, etc.) make it more difficult to maintain an adequate level of service. In Cape Town, for example, fares generated by the BRT only cover 45% of its operational expenditure.

Cape Town BRT, a key role for government in financing the transport system



SOURCE: MYCITI

“ Depending on the fare policy, public funds may be needed to close the gap between operating expenses and fare revenue. Resources are also needed for infrastructure maintenance.”



IBOU DIOUF

Manager – Africa Transport Policy Programme (SSATP) World Bank

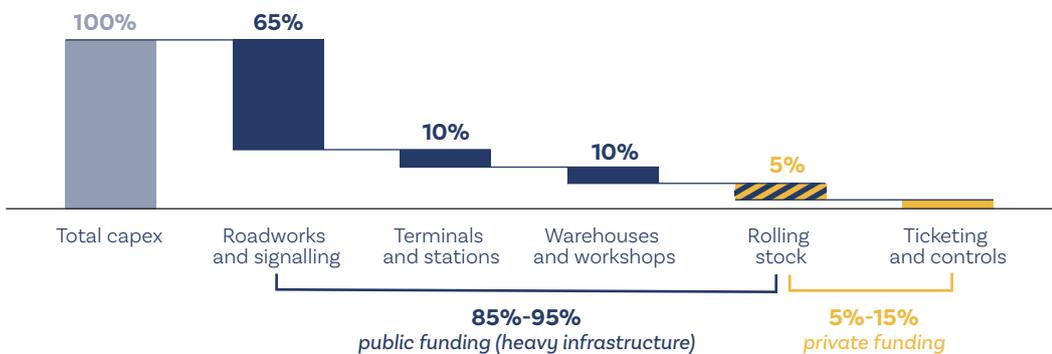
SECURE PUBLIC FUNDING FOR THE MAJORITY OF THE INVESTMENTS

In the face of capital-intensive urban mobility projects, the public sector can access much more favourable financing terms than the private sector, notably through concessional loans from bilateral or multilateral institutional lenders. The public sector can therefore take on the majority of the capital expenditure, particularly heavy infrastructure

components (roadworks, signalling, stations, etc). The Dakar TER was granted a 25-year loan with a 2% interest rate by top-tier financial institutions, including the Islamic Development Bank (IsDB), the African Development Bank (AfDB), the French Development Agency (AFD), the French Treasury and Bpifrance. Should fare revenue fail to cover

operating expenses, the latter must be covered by the public sector via a special mechanism to ensure that the project reaches the minimum threshold of economic viability. In Lagos, for instance, half of all proceeds generated by car registration certificates are allocated to LAMATA to help fund the transport authority’s urban projects.

Breakdown of BRT capital expenditures by source (%)



NOTE: AVERAGES TAKEN FROM A SAMPLE OF AROUND 50 BRT PROJECTS ACROSS THE WORLD

“ To support SOTRA¹, we want to try introducing the ‘versement transport’, an employer tax to fund public transport. This would supplement fare revenue, which really does not cover operating costs.”



DR SIÉLIÉ SILUÉ

Advisor to the Prime Minister of Côte d’Ivoire in charge of transport

¹ Société des transports abidjanais

2

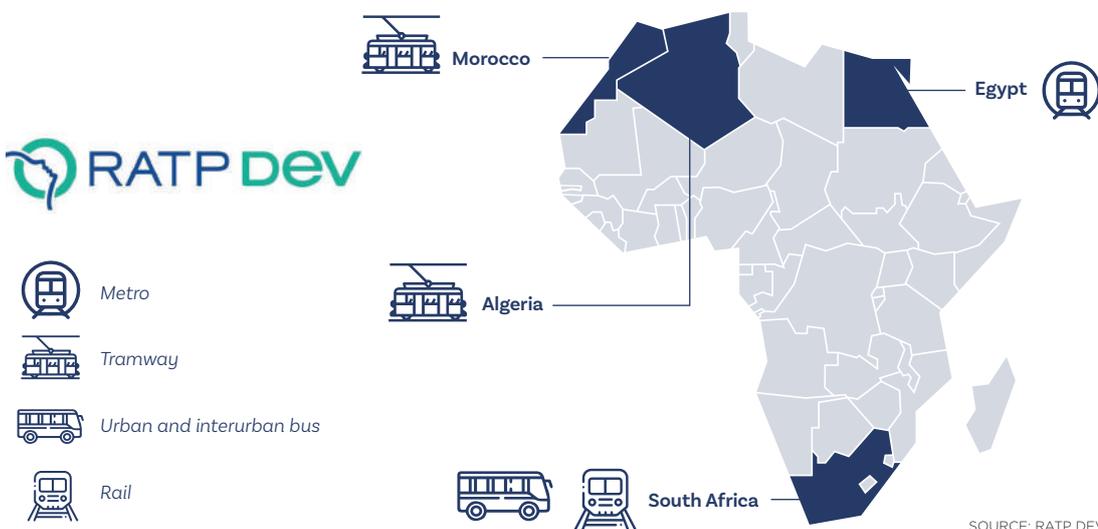
LEVERAGE THE EXPERTISE OF PRIVATE OPERATORS VIA WELL-BALANCED PPPS

The public sector’s involvement makes it possible to attract private operators within the framework of PPPs that must be well-balanced. The private sector must focus on the project components that are financially independent or, failing that, be remunerated in proportion to their contribution. In the case of the Cape Town BRT, for instance, the private operators receive public subsidies to run the network, in addition to fare revenue. The subsidies are notably financed through a fuel tax. The operation of mobility projects requires a high level of technical expertise that can be delegated to

operators with proven know-how in this field. RATP Dev, for example, has developed recognised expertise in urban rail systems (metro, tramway) and now develops and operates rail projects in several African countries.

The allocation of responsibilities must be negotiated between the government and the private operator, and be reflected in a well-balanced PPP agreement aligning the interests of the two parties. This would follow the partnership between the Senegalese government and SNCF to develop Dakar’s TER, which will eventually carry 110,000 commuters per day.

RATP Dev, a recognised expert in urban mobility projects, especially in Africa



SOURCE: RATP DEV

“ The Dakar TER rail infrastructure belongs to the Senegalese government, whereas the operating company (SETER) is wholly owned by SNCF. The Senegalese government will eventually acquire a 34% interest in SETER for the purpose of owning the infrastructure and obtaining a blocking minority.”

**STÉPHANE VOLANT**

Chairman of the Board of Directors of SETER – Dakar TER

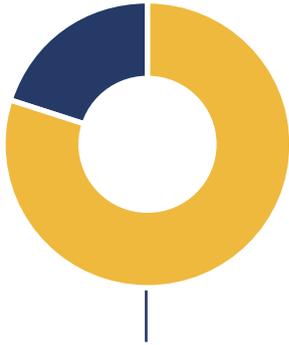
CAPTURE LAND VALUE INCREASES AND ENSURE BENEFITS TO THE PUBLIC SECTOR IN THE LONGER TERM

There are two channels through which the public sector can capture a portion of the increases of land value to offset the cost of project development: land development and taxation.

Land development and real estate in the vicinity of a transport infrastructure project can generate significant resources for the projects. For example, 80% of the income generated by the operator of the Hong Kong Mass Transit Railway (MTR) comes from land and real estate promotion (real estate sales, rentals, fees from commercial premises in stations, etc.).

The property tax is intended to capture the appreciation in land value for the populations benefiting from the positive externalities of the project (connection to the main transport routes, business and commercial opportunities, etc.). With this in mind, 35% of the funding for the Crossrail rail link in London was provided by a property tax mechanism, i.e., a tax on landowners whose property value rose as a result of the project. However, the tax mechanism needs to be backed by an efficient collection process, starting with an up-to-date land registry.

The Hong Kong metro: A business model based on real estate development



80%

of the Mass Transit Railway's operating income comes from real estate and land promotion (sale/rentals, local business taxes)

SOURCE: THE PRESS, MTR, DIEGO DELSO



“ If local communities want to benefit from land value appreciation, they can only do so by creating right-of-way reserves or during the implementation of public infrastructure and through development initiatives that must be targeted at specific city locations.”



JEAN PIERRE ELONG MBASSI

Secretary General - United Cities and Local Governments of Africa (UCLG Africa)

CASE STUDY

The Dakar TER, a well-balanced PPP to build the backbone of the city's mobility network

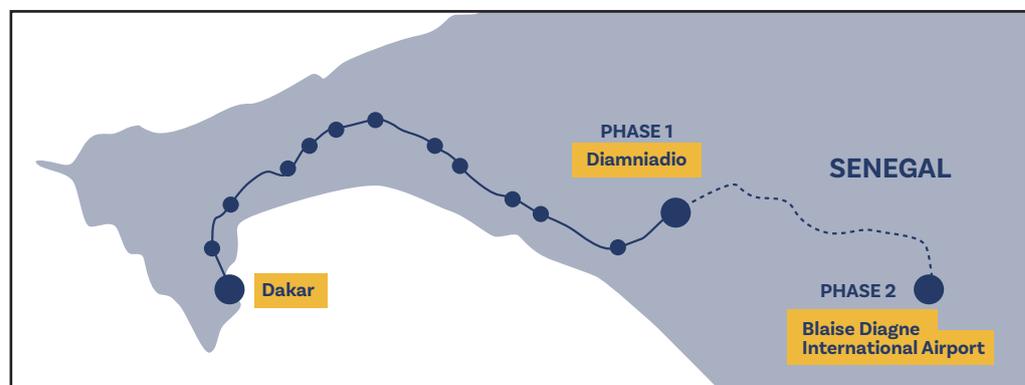
Inaugurated in 2021, the Dakar TER is West Africa's first regional express train. Based on a PPP between the government and SETER (a wholly owned SNCF subsidiary), the project aims to reduce traffic congestion in Dakar and connect the capital first with the new city of Diamniadio (Phase 1 - 36 km of track for a cost of €1.1 billion) and, by 2035, with the Blaise Diagne International Airport (Phase 2 - 19 km). The TER is part of the Plan for an Emerging Senegal (2012-2035).

A WELL-BALANCED, PUBLICLY FINANCED PPP

- Entirely financed by the public sector via a concessional loan: **2% interest rate with a 25-year maturity.**
- **Operated by the private sector**, i.e., SETER (an SNCF subsidiary), of which part of the capital (one-third) will eventually be sold to the Senegalese government.



SOURCE: SEYLOU, AFP



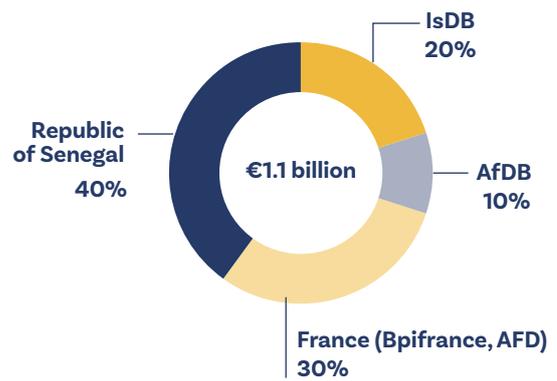
SOURCE: SETER

CASE STUDY

THE DAKAR TER

A SIGNIFICANT IMPACT ON RELIEVING CONGESTION AND CONNECTING THE CITY

- **Prior to the project:** annual losses of around €150m due to traffic jams.
- **Project benefits:** a 45-minute gain during rush hours, with a train every 15 minutes on average. An estimated 110,000 daily users at the time of launch.



SOURCE: THE PRESS

3 **OPTIMISE** **Capitalise on existing systems and avoid ‘white elephants’**

Faced with the urgent need to improve their transport infrastructure but hindered by limited budgetary resources, African governments should favour high-impact and low-cost solutions.

Although useful, mass transit rail transport solutions (metro, tramway, urban train) are highly capital intensive and complex to implement. Moreover, Africa’s informal transport sector is vital to the lives of millions of people and meets real needs. Given the importance of these systems and their role in providing jobs, it is essential to integrate these informal systems into any approach to transforming mobility in African cities.

Significant progress can be achieved by mobilising two low-cost levers:

- Optimise informal transport services.
- Promote moderate-cost infrastructure projects with high social benefits.

Rea Vaya bus rapid transit system in Johannesburg



SOURCE: CITY OF JOHANNESBURG



SOURCE: SEN360

Avenue du Sénégal EIG buses in Dakar, financed by AFTU

OPTIMISE INFORMAL TRANSPORT SERVICES

Significant developments in the informal transport sector (minibus, shared taxis, etc.) are possible and can enhance the mobility experience of the millions of African urban dwellers. The first change would entail encouraging the renewal of vehicles resulting in a safer and less polluting fleet. This can be done via restrictive measures, such as age-based vehicle bans, or incentive measures, like social loans or scrappage schemes for older vehicles. In Cairo, the Vehicle Scrapping and Recycling Programme led to the

replacement of around 40,000 taxis.

Optimising can also be achieved through driver training programmes aimed at improving driving skills and raising awareness on safety. They can also help informal operators to develop their management skills by teaching them accounting and business management. This is the purpose of the Capacity Building Programme for informal transport operators in Cape Town.

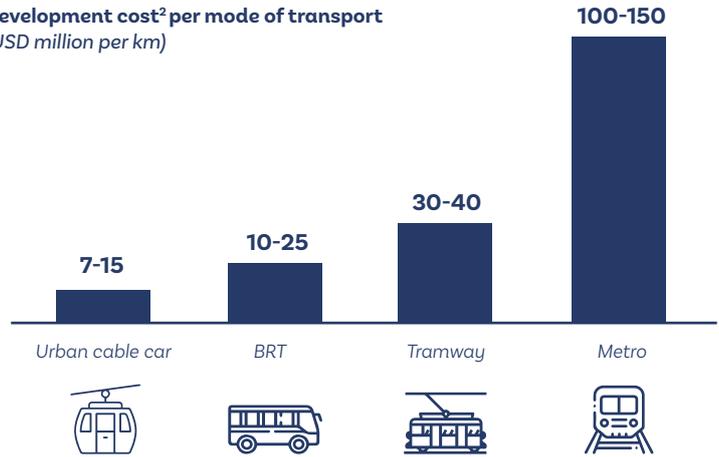
Another solution is to structure and streamline transport sectors

and related activities by, for instance, grouping operators together into cooperatives or economic interest groups (EIGs). These groupings make it possible to finance the vehicle pool through dedicated structures. In Dakar, dozens of operators, grouped in EIGs, created the Urban Transport Financing Group (AFTU), which enabled them to finance the acquisition of around 1,600 new buses in the city.

PROMOTE MODERATE-COST INFRASTRUCTURE PROJECTS WITH HIGH SOCIAL BENEFITS

There are several moderate-cost projects that can significantly help to enhance mobility in African cities. Making pedestrian travel easier and safer is a crucial issue that can be addressed through the implementation of safety programmes and the construction of dedicated facilities such as passageways and walkways. These limited-cost infrastructure improvements are extremely valuable in cities where walking is the primary mode of transport. With this in mind, Addis Ababa launched the Non-Motorised Transport Strategy, which aims to develop 600 km of walkways and 200 km of cycling paths by 2028.

Development cost² per mode of transport (USD million per km)



² Estimated on the basis of selected African and international projects.

Another lower-cost mass transit option is BRT, which offers a service level comparable to rail-based transport. BRT costs vary - from \$14 million per kilometre for Phase 1 of the Johannesburg BRT to \$25 million per kilometre for the Dakar BRT - but are on average lower than those of a tramway network, estimated at \$30-\$40 million per kilometre. A BRT system also takes less time to build than rail-based transport. For example, the first phase of the BRT service in Lagos was completed in 15 months, whereas the construction of a metro line requires 4 to 10 years.

Urban cable cars can also be an affordable solution, particularly for cities with difficult topography. Ropeway systems require little ground space and have limited construction and maintenance costs. Pioneering cable car projects are being deployed on the continent, for instance in Antananarivo.

“ In 2023, Antananarivo will have an eco-friendly cable car system capable of overcoming land obstacles, which are particularly pronounced in Antananarivo due to its topography.”



MEHDI CAILLIS

Head of Sales, Africa - POMA

CASE STUDY

Antananarivo cable car: An alternative, eco-friendly transport option

The Antananarivo cable car is an innovative mass transit project under development in the capital of Madagascar, famous for its steep terrain. The project is being developed by POMA, which specialises in cable transport solutions. The system will comprise two lines with a total length of 12 kilometres.

AN INNOVATIVE SOLUTION TO REDUCE TRAFFIC IN ANTANANARIVO

- **40,000 passengers** per day.
- **274 detachable cabins** with a capacity of 10-12 passengers.
- **An alternative to the Taxi Be** minibus service, which accounts for 70% of motorised travel in the city.
- **A rapid transit solution** for a heavily congested city: 30 minutes travel time on the Orange Line (10 km).

AN ATTRACTIVE PROJECT IN TERMS OF DEVELOPMENT COST AND ENVIRONMENTAL IMPACT

- A total cost of **€152 million**, or roughly €12 million per km, which is competitive in comparison to other mass transit systems.
- **A fully electric power system** that helps reduce urban pollution



40,000
Passengers/day
(capacity)



12km
Length of the first
two lines



€150 million
Cost of the first
two lines

DESIGN & IMPLEMENTATION



SPONSORS



Cable car in Saint-Denis, Réunion Island (Poma)



SOURCE: LAURENT DECLITRE

4 INNOVATION

Leverage new urban mobility technologies



SOURCE: SHUTTLEERS

Shuttlers, a Nigerian application revolutionising minibus transport

Africa's leapfrog development, as witnessed by the rapid spread of smartphones and mobile money, has led to the adoption of technological innovations to improve city transport systems. Over the last ten years, urban mobility solutions and applications have popped up across the continent, sparking keen interest from development finance institutions and venture capital investors. Many of the projects are in the initial stages of development and are being deployed on a small scale. However, these apps are set to become key tools in the coming years thanks to their ability to make public transport more efficient, comfortable, and safe.

For the development of these technologies, three main objectives are to be pursued:

- Promote the platformisation and the integration of transport services using the Mobility as a Service (MaaS) model.
- Capitalise on innovative fintech solutions to simplify payments and facilitate mobility financing.
- Conduct data analysis to provide operators and public authorities with a better understanding of the transport system.

PROMOTE THE PLATFORMISATION AND THE INTEGRATION OF TRANSPORT SERVICES USING THE MOBILITY AS A SERVICE (MAAS) MODEL

Mobility platforms make it possible to improve transport services and consider in the long run the integration of different modes of transport into a single mobility service via the adoption of the MaaS model. Platformisation is a global trend that is also being observed in Africa, where the number of local and international initiatives is rising. Regardless of the type of vehicle used, mobility service platforms can enhance the transport system, provided that they take into account the needs of existing operators. In the ride-hailing sector, there is a proliferation of international applications such as Uber or Yango, but the number of local initiatives is increasing as well (see case study on Yassir below). These services aim to improve user comfort and reduce the cost of car transport.

A Gozem moto-taxi in Lomé, Togo



SOURCE: GOZEM

“ The first thing one notices about West Africa’s transport system is the predominance of motorbikes. It was therefore necessary to create a specific model based on this reality.”



EMEKA AJENE

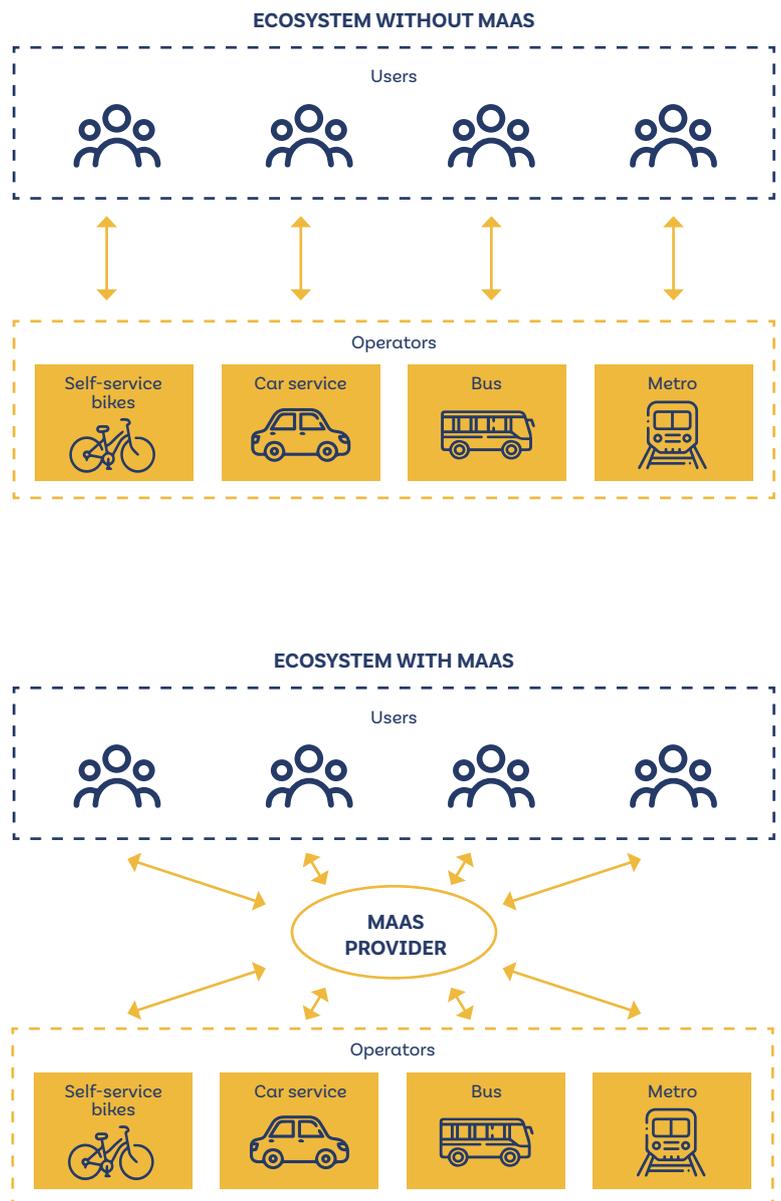
Co-founder and Managing Director - Gozem

4

Several platforms in the moto-taxi segment focus on making the motorbike a safer means of transport for both passengers and drivers. Gozem, for example, is a mobile moto-taxi platform app that provides helmets to drivers and passengers, among other services. In the minibus segment, platforms like SWVL and Shuttlers are committed to making the daily commute to and from work more comfortable and efficient.

The longer-term objective will be to combine different forms of mobility into a single platform using the MaaS model. The aggregation of multiple transport options within a single interface allows users to use a single app to book and pay for a car service, unlock a self-service bike or take a bus. Although MaaS is in its fledgling stage - even in the most economically developed countries - it has taken its first steps in Africa, as shown by the development of Moovit, an urban mobility app that aggregates the data of several transport networks in Cape Town and Casablanca.

Mobility as a Service (MaaS) model



CAPITALISE ON INNOVATIVE FINTECH SOLUTIONS TO SIMPLIFY PAYMENTS AND FACILITATE MOBILITY FINANCING

Fintechs offer numerous urban mobility solutions that can make day-to-day life easier for African urbanites, primarily thanks to two key services. The first is the digitalisation of payments. Several African start-ups are present on this market. In Abidjan, for example, Soutrali Paiements offers users an electronic wallet to pay for transport, which eliminates certain problems associated with cash payments, such as not having enough cash available to pay the taxi fare.

Fintechs are also ushering in changes in the field of vehicle financing. Thanks to transport service platforms (ride-hailing, moto-taxi, minibus), lenders have access to detailed data on revenues generated by the entrepreneurs who use them. Consequently, these data make it possible to determine repayment capabilities and set up loans to finance a vehicle. This revenue-based financing model is used by Moove Africa, a Nigerian start-up active in three African countries, which provides vehicle



The Soutrali payment card simplifies the transport payment process in Abidjan

SOURCE: SOUTRALI PAIEMENTS

financing solutions to Uber drivers. By expanding the access to financing solutions to new segments of the population, these applications make it easier to renew aging vehicles that cause pollution and road safety issues.

Limited access to vehicle financing



5% of new vehicles purchased with a loan in Africa...



...versus 92% in Europe

SOURCE: THE PRESS, SPEEDINVEST

“ We want to democratise car ownership in Africa. Moove is committed to providing the African people with access to affordable vehicle financing, while creating employment opportunities and empowering a new generation of mobility entrepreneurs.”



LADI DELANO

Co-founder, Managing Director – Moove Africa

CONDUCT DATA ANALYSIS TO PROVIDE OPERATORS AND PUBLIC AUTHORITIES WITH A BETTER UNDERSTANDING OF THE TRANSPORT SYSTEM

The collection and analysis of data provide greater insight into the traffic patterns of African cities, particularly by making it possible to produce a map of the informal network, for which information tends to be incomplete. A good understanding of traffic flows is a prerequisite for implementing effective transport policies. Several African cities analysed data collected from users’ smartphones to chart their informally run transport routes. In Accra, a map of the city’s trotro minibuses network was created with the help of the French Development Agency (AFD).

Data analysis is also a tool for reducing urban congestion. Collecting traffic data allows real-time congestion management by redirecting users to alternative routes. Analysing data over longer periods of time with congestion measures, such as the TomTom Traffic Index, also helps to refine the understanding of traffic to plan urban roads more efficiently.

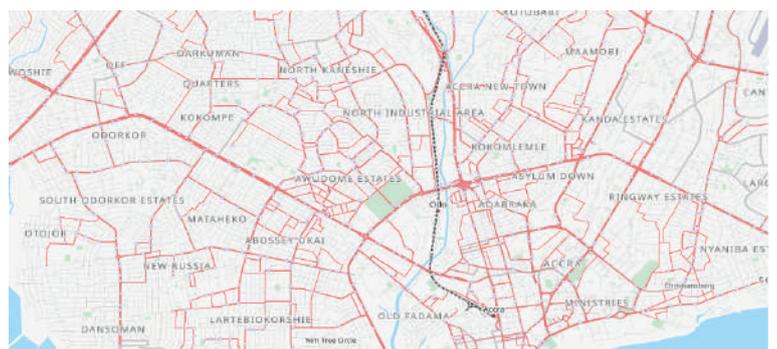
“ We want to make more efficient use of the existing transport system. The Accra Trotro Apps Challenge aims at developing more efficient ways of getting around the city on trotro.”



AMÉLIE JULY

Former Resident Manager of AFD Ghana

Accra trotro network map



SOURCE: JUNGLE BUS

CASE STUDY

Yassir, the success of the “Algerian Uber”

Launched in 2017, Yassir is Algeria’s first ride-hailing platform. Since its creation five years ago, it has obtained the support of dozens of venture capital investors and raised around \$67 million. The company has expanded internationally (Morocco, Tunisia, France, Canada) and has nearly three million users.

OFFERING AN ALTERNATIVE TO TAXIS

- **Prices are predetermined** by the app, allowing users to avoid excessive taxi fares during peak hours.
- **The journeys are safer** for users thanks to the vehicle tracking service.

OFFERING FLEXIBLE PAYMENT SOLUTIONS

- **Adapted to markets** where “cash is king”, with cash payment solutions already available since the app’s inception in 2017.
- Development of a prepaid wallet to enable **digital payments**.



SOURCE: YASSIR



SOURCE: YASSIR



20,000
drivers



3 million
users



29 cities
covered



US\$67 million
raised

SOURCE: YASSIR, THE PRESS

5 INCLUSION

Maximise social impacts and involve all stakeholders

Urban mobility projects must be designed to benefit the largest number of people possible and promote access to employment, while ensuring that all stakeholders are engaged in the process and that existing operators are not negatively affected, especially those from the informal sector.

To meet these objectives, project leaders must do two things:

- Ensure stakeholder buy-in right from the start of the project and overcome any points of contention by using specific mechanisms aimed at aligning interests.
- View the projects as catalysts for creating and facilitating access to jobs for local populations.

The Dar es Salaam BRT system, Tanzania



SOURCE: SSATP

ENSURE STAKEHOLDER BUY-IN AND OVERCOME POINTS OF CONTENTION

Before launching a project, it is key for project developers to meet all relevant stakeholders (e.g., taxi and bus unions, trucker associations) to convince them of the project's merits and socioeconomic impacts. Such an approach was adopted by the Nigerian government for the BRT system in Lagos. Official visits were organised to Latin America to demonstrate the benefits of BRT systems, which succeeded in mitigating the Lagos bus unions' initial concerns.

To deal with points of contention after the project launch, including nuisance issues and right-of-way conflicts (resettlement, expropriations, etc.), project developers need to set up specific mechanisms to align interests. For instance, one of the operators of the BRT system in Johannesburg (Litsamaiso) facilitated the convergence of stakeholder interests by making local taxi unions shareholders in the company (alongside project developer PUTCO), and by converting the taxi drivers into bus drivers.

“Litsamaiso is a partnership between taxi drivers who were concerned that they could be adversely affected by the BRT project, and PUTCO, a leading South African bus operator. We succeeded in bringing them together despite their differences and in making Litsamaiso an efficient transport company.”



NELSON RIKHOTSO

General Manager - Litsamaiso (Rea Vaya)

Shared taxis in Johannesburg, South Africa



SOURCE: NONZUZO GXEKWA

USE URBAN MOBILITY PROJECTS AS CATALYSTS FOR CREATING AND FACILITATING ACCESS TO JOBS

One of the project developer’s roles is to foster the creation of skilled, long-term jobs in the operation of the transport network, by focusing on local worker training and know-how transfer. To this end, Société d’Exploitation des Tramways d’Algérie (SETRAM) hired and trained close to 3,000 people for urban rail jobs across all Algeria’s various tramway systems. It also created a railway training institute.

Projects must be designed to maximise access to economic opportunities, which are often out of reach for many African city dwellers due to urban sprawl and lack of transport. Public transit can have an immediate effect on the living conditions of people based in the vicinity of the services. For instance, in Bogotá, people living in neighbourhoods served by the TransMilenio BRT benefited from a wage increase 7% higher than people living in areas located further away. The gains were driven by improved connectivity, allowing for a better balance between job supply and demand.

SETRAM: Know-how transfer to build the Algiers tramway



SOURCE: ALGERIA PRESS SERVICE



Creation of a railway training institute in Algiers



Over 3,000 people recruited and trained



“ RATP Dev carried out a dynamic skills-transfer programme, with more than 99% Moroccans among its 565 employees who worked on the Casablanca tramway.”



YOUSSEF DRAISS

Former Director General – Casa Transport

CASE STUDY

Johannesburg BRT, aligning interests to overcome points of contention

Johannesburg's Rea Vaya BRT network was inaugurated in 2009 as part of a large-scale initiative to modernise South Africa's transport systems for the 2010 FIFA World Cup. To overcome the initial points of contention from taxi unions, public authorities negotiated to settle differences and ensure the success of a project with major benefits for commuters in the Johannesburg area.

INITIAL POINTS OF CONTENTION

- **Initial protests by taxi unions opposed to the project**, despite its direct benefits for transport users in the Johannesburg area.
- **Fear of direct competition** and the destruction of jobs among the taxi driver community.



SOURCE: SIPHIWE SIBEKO, REUTERS

USE OF CONSTRUCTIVE NEGOTIATIONS AND INTEREST-ALIGNING MECHANISMS TO ENSURE THE PROJECT'S SUCCESS

- **Acquisition of stakes by the taxi unions** in the BRT operating companies (Litsamaiso, PioTrans).
- **Financial compensation** for taxi drivers.
- **Jobs maintained** thanks to the conversion of taxi drivers into bus drivers.



SOURCE: SOWETO URBAN

6 SUSTAINABILITY

Establish sustainable projects with resilient models

Environmental concerns must be placed at the core of urban mobility planning. Due to their importance in terms of space and financial resources, urban mobility projects must be built to last for several decades.

With climate change looming on the horizon, two key success factors must be considered to ensure the sustainable development of projects:

- Propose eco-friendly modes of transport.
- Adopt resilient models to mitigate climate risks.

Eko Atlantic City in Lagos (Nigeria), a new area designed to protect the city from coastal erosion



SOURCE: ASH PROPERTIES

PROPOSE ECO-FRIENDLY MODES OF TRANSPORT

Sustainable transport projects must focus on collective transport modes rather than individual solutions, giving priority to electrified systems when possible. For instance, the Dakar BRT, spanning over 18 kilometres between Guédiawaye and Petersen, will have reduced commute times (45 minutes instead of 90) and will use electric buses to reduce its carbon footprint (59,000 tonnes avoided annually according to Dakar Mobilité).

“ Cable transport has significantly lower infrastructure costs than other public modes of transport and has the further advantage of requiring little energy.”



JULIE BENOIST

Director Africa - MND Ropeways

Projects must also provide eco-friendly alternatives to existing systems. The M-Auto project, for example, offers moto-taxi operators the possibility to replace their combustion engine vehicles (mostly imported from Asia) with electric motorcycles manufactured locally. M-Auto’s goal is to deploy a fleet of over 1.2 million clean vehicles in around ten African countries.

ADOPT RESILIENT MODELS TO MITIGATE CLIMATE RISKS

Building resilient transport infrastructure that will remain functional in the event of ever-increasing weather hazards (flooding, coastal erosion, etc.) is critical for cities in Africa. Abidjan’s elevated metro project is an example of a resilient system capable of remaining in operation during flooding, a frequent occurrence in the lagoon that regularly paralyses the city and its transport system. With the erosion threat hanging over Africa’s numerous coastal cities,

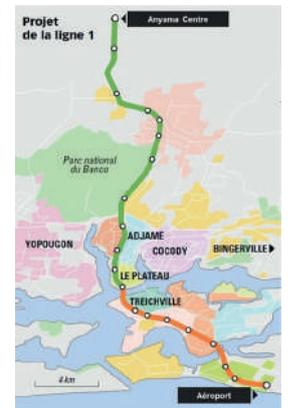
Abidjan’s elevated metro project: A choice dictated by topographical constraints



Repeated flooding in Abidjan



Elevated metro project (Anyama-Port Bouët)



SOURCE: LEGNAN KOULA, JEUNE AFRIQUE - RADAR PRESS

“ Everyone is talking about the energy transition. At M-Auto, we wanted to create a solution that would be cost-effective and environmentally friendly.”



SHEGUN ADJADI BAKARI
CEO of M-Auto

6

integrating transport infrastructure issues into coastal protection plans is of the utmost importance. For instance, the rehabilitation of the Lomé-Cotonou Road has helped to contain coastal erosion in Togo and Benin while protecting the Abidjan-Lagos Corridor, identified as the backbone of economic and social development of the subregion. Such projects are attracting more and more funds, as evidenced by the support of The Urban Resilience Fund (TURF), a partnership between Meridiam, the Rockefeller Foundation, and the UN Capital Development Fund. TURF's goal is to invest in essential and resilient infrastructure, with a focus on urban areas in Africa.

Rehabilitation of the Lomé-Cotonou Road: An important project for combating erosion



SOURCE: TOGO BUSINESS NEWS - AFDB

TURF: An initiative aimed at developing and funding resilient infrastructure

Overview of TURF

- **The Urban Resilience Fund (TURF)** is the product of a partnership between **Meridiam, the Rockefeller Foundation and the United Nations Capital Development Fund**
- It aims to **develop and invest in essential and resilient greenfield infrastructure projects** in emerging cities
- In addition to providing **financial support**, TURF will supply **technical expertise in structuring projects**
- TURF will invest both in **Africa and Europe**. It reached first close with an amount of **€290 million**

Expertise



Identify and develop project pipelines in collaboration with cities



Structure projects to ensure that they are “financially viable” for private investors



Invest through invitations to tender or partnerships with the public sector

Targeted sectors



Urban mobility



Energy transition



Urban development



Smart cities



Water & sanitation

Partners



“ Together with TURF, we hope to tackle the major challenges facing African cities by developing and investing in essential and resilient urban infrastructure projects in line with our DNA and that of our partners.”



MATHIEU PELLER

Partner, COO Africa - Meridiam

CASE STUDY

The Dakar BRT, a fully electric project to unblock the capital

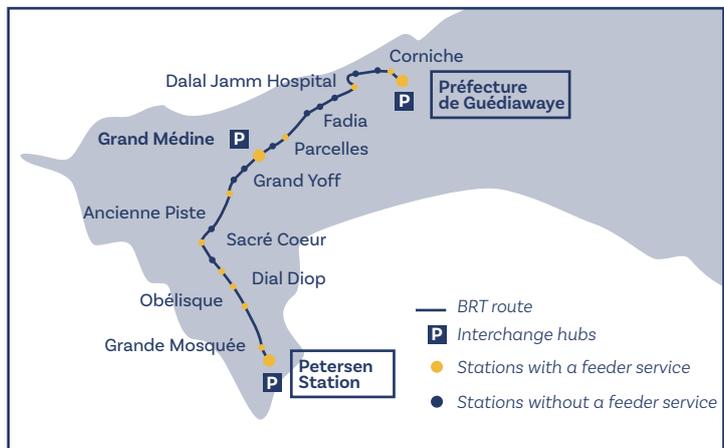
The 18.3 km BRT route currently under construction will connect the northern suburb of Guédiawaye to Petersen station in downtown Dakar, going through 14 municipalities. This fully electric system will be able to transport 300,000 passengers per day, reduce urban traffic, and curtail transport-related greenhouse gas emissions.

A PPP FINANCED MAINLY BY DEVELOPMENT FINANCE INSTITUTIONS

- **Concession agreement** between the Executive Council of Urban Transport (CETUD), and Dakar Mobilité, an operating company, which is the result of a partnership between Meridiam, Keolis and FONSIS.
- **Heavy infrastructure** components including roads and stations (90% of the total cost) financed by loans and subsidies from institutional lenders (World Bank, European Investment Bank, Green Climate Fund) and the Senegalese government.
- **Rolling stock** (10% of the total cost) financed by the consortium responsible for operating the network.



SOURCE: CETUD



SOURCE: CETUD

CASE STUDY

THE DAKAR BRT

A SIGNIFICANT SOCIOECONOMIC IMPACT

- **A sharp reduction in traffic,** with travel time halved (45 minutes instead of 90).
- **Better access to jobs** (500,000 people living less than 500 metres from the stations).
- **Inclusive governance,** with around 30% of the operating company's shares reserved for local operators and the government.



121
electric buses



18.3km
of lines



300,000
passengers/day



59k tonnes
of CO₂ avoided per year



Frédéric Maury, Julien Wagner – AFRICA CEO FORUM
Amaury de Féligonde, Benjamin Romain, Jérôme Cachau,
Max Navarro-Roch, Léo Poupineau, Simon Sibé, Louis Tengo,
Maxence de Féligonde – OKAN PARTNERS