SSATP
Africa Transport Policy Program

TRANSNATIONAL REPORT

African cities facing the urban mobility crisis

The challenge of national mobility policies in Côte d'Ivoire, Ethiopia, Guinea, Ghana, Kenya, Nigeria, Rwanda and Senegal

An international partnership supported by:

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Sound policies lead to safe, reliable, and cost-effective transport, freeing people to lift themselves out of po verty and he lping countries to compete internationally.

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The findings, interpretations, and conclusions expressed here are those of the author and do not necessarily reflect the views of the SSATP or its partners.

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Introduction

African leaders are facing a major question: How, rather than undergoing urban expansion that promotes inequality and informality, can the dynamics of urbanization be managed so that urban centers become engines of economic development that are both pleasant to live in, and environmentally friendly?

Most cities on the continent are currently experiencing extreme rapid population growth. This is resulting in uncontrolled expansion of urban areas beyond institutional boundaries. Wealthier households are acquiring motorized individual transport modes, while the informal economy is adapting to meet the needs of the poor. The demand for mobility is becoming increasingly complex. Roads and streets are increasingly congested at peak hours, and public transport and active modes suffer from the growing number of circulating and parked vehicles. Governments, in response to these trends, are finding themselves at a loss.

Yet urban mobility policies, in conjunction with urban development policies, can play a major role in tackling this challenge. By encouraging intensive urban development along transport corridors and by controlling the urbanization of agricultural land on the periphery, policymakers can structure cities by making them less costly for their inhabitants to live in, and more conducive to economic and social interaction, while also making them less dependent on individual modes of transport and ensuring they consume less arable land.

To develop sustainable, safe and affordable urban transport in the continent's cities, it is essential to develop a comprehensive approach, at the national level, that can provide clear direction and a suitable framework for the necessary action by the public and private actors concerned.

The Urban Transport and Mobility Pillar of the African Transport Policy Program (SSATP) aims to provide African policymakers with tools to support the implementation of these policies and measures. To this end, SSATP launched a program to support the development of policies that are geared towards improving accessibility and mobility in urban areas in Africa, based on an empirical study of a representative sample of African cities. This work culminated in the June 2015 publication of Working Paper No. 106 entitled "Sustainable Mobility and Accessibility Policies in African Cities" (Stucki, 2015).

The "EASI conceptual framework" described in this document outlines a set of specific policy actions in four areas of intervention:

- ENABLE: Establish an efficient and responsible governance system, capable of anticipating needs, guiding public action, and ensuring integrated management and development of urban transport systems;
- AVOID: Minimize the need for individual motorized travel through adequate land-use, and transport planning and management;
- SHIFT: Maintain or increase the modal shares of public transport and non-motorized transport modes such as walking and cycling;
- IMPROVE: Improve the efficiency and safety of transport modes while minimizing their environmental footprint.

This publication proposed specific actions for leaders on each of these pillars of intervention. A complementary work program was developed to implement these recommendations in eight pilot countries (Côte d'Ivoire, Ethiopia, Guinea, Ghana, Kenya, Nigeria, Rwanda and Senegal). This work aimed to change policymakers' approach to accessibility and urban mobility in an effort to develop appropriate strategies and implement relevant actions.

The same methodology was used in these countries to allow transnational comparisons and encourage the exchange of good practices. After carrying out a diagnosis of urban mobility policies at the national level, a list of priority recommendations was proposed in each country to both national and local, political and technical leaders in the framework of National Urban Mobility Forums. This list of pragmatic and realistic recommendations, based on the EASI concept, was then consolidated into a proposed plan of action.

This report provides a cross-national view of the conditions of urban mobility and accessibility in Africa, and focuses on the conditions necessary for the implementation of sustainable urban mobility policies, based on good practices and lessons learned globally and in each pilot country.

After defining the major trends in urbanization and motorization in African countries, the report presents the challenges of urban mobility in the cities used in the study and highlights the relevant experiences observed in the different countries. While we have observed poor accessibility and mobility conditions in the field, we can also see that many countries are on the verge of an increased awareness when it comes to the importance of urban mobility policies.

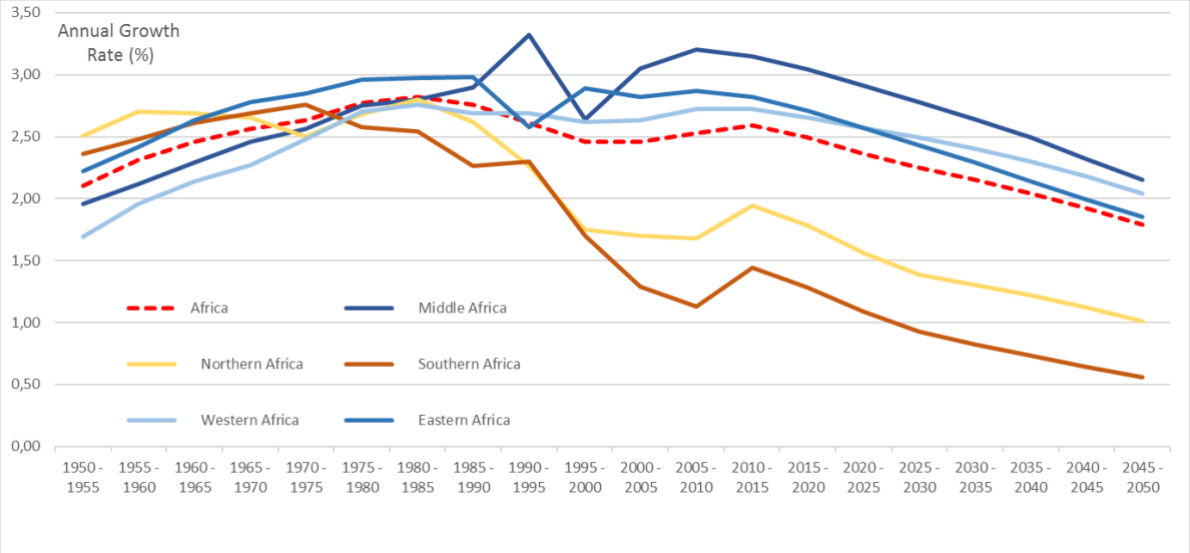
Some cities already have a mature governance structure in place, while others are adapting their model to have more capacity to address the issues of urban mobility. Some larger public transport projects are driving change and are being used as vehicles to capitalize on existing expertise. The report highlights the challenges and experiences of the eight pilot countries, as well as the recommendations made in the national reports to accelerate and improve the efficiency of governance, both in the larger cities and in the smaller cities where dissemination is most needed.

1. Africa's rapid urbanization

1.1 High population growth in sub-Saharan Africa

In 2009, Africa's population surpassed the one billion mark. According to projections by the *World Population Prospects*[1], it is expected to continue to grow, reaching 1.5 billion by 2025 and 2.5 billion by 2050. While population growth was particularly rapid across the continent, Southern Africa since the 1970s and North Africa since the 1980s have seen their population growth rates slow to between 1% and 2% per year since the early 2000s. Sub-Saharan Africa, on the other hand, has experienced a growth rate of more than 2.5% over the past thirty years. According to United Nations forecasts, East and West Africa will fall below this rate in the 2020s, followed by Central Africa in the 2030s (Figure 1). Consequently, the eight Sub-Saharan African countries studied follow this trend.

Figure 1 - Annual growth rate of the African population (1950-2050)



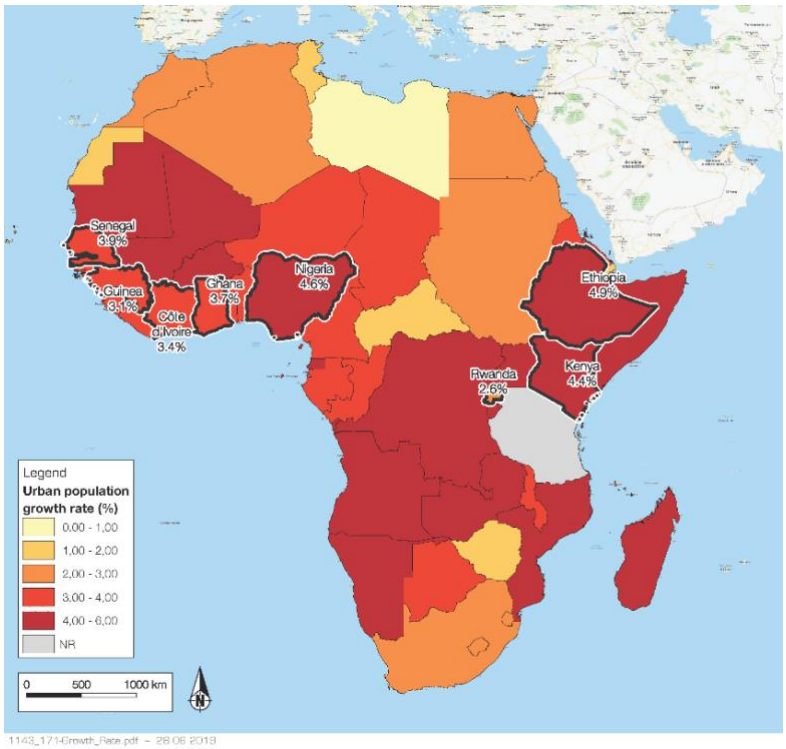
Source: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospect: The 2017 Revision, custom data acquired via website.

At the same time, Sub-Saharan African countries are experiencing even more rapid urbanization. The average annual rate of change of the urban population in East, West, and Central Africa has remained above 4% since 1950. Figure 2 presents the 2010-2015 growth rates for the various countries on the continent. The number of people living in African cities was projected to be 590 million by 2020. The projections for 2040 is around 1.1 billion.

In Sub-Saharan Africa, the number of urban dwellers is expected to double over the next two decades to reach 870 million by 2040. The eight countries studied showed very different urbanization rates in 2015, ranging from 20% in Ethiopia, to 55% in Ghana. In 15 years, these rates are expected to reach 27% for Ethiopia and 65% for Ghana, which represent the two extremes of the sample.

[1] https://population.un.org/wpp/DataQuery/

Figure 2 - Urban population growth in Sub-Saharan Africa (2010-2015)



Data: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.2 Urban growth that is not limited to capital cities

Regardless of local specificities, a pattern of urban architecture frequently emerges: The economic and political capitals dominate the urbanization process, and this process will likely be even more concentrated around those cities that are part of the global economy.

Among the countries studied, Senegal and Côte d'Ivoire stand out because nearly one-third of the total national population resides in their respective capitals, which for Dakar represents 55% of Senegal's urban population. In Guinea, 18% of the population lives in Conakry, a figure which represents 40% of the country's urban population. With two major metropolises, Ghana's urban structure is somewhat unusual. This is a result of the long history of Kumasi, capital of the Ashanti kingdom. In addition, the ongoing decentralization process is linked to the redistribution of power to secondary cities.

In Nigeria, the most populous of the eight countries studied, 49% of the population lives in urban areas. In addition to Lagos, a megalopolis with 13.5 million inhabitants[2], Nigeria has seven cities with more than one million inhabitants (Kano, Ibadan, Abuja, Port Harcourt, Benin City, Onitsha and Kaduna). If the urbanization process in Nigeria differs from other countries in the region, it is mainly due to the pre-colonial legacy, the high population density in rural areas and the urban sprawl underway around the main cities (as shown by the example of Onitsha). The capital, Abuja, has the highest annual population growth rate in Africa (5.5%) and one of the highest in the world.

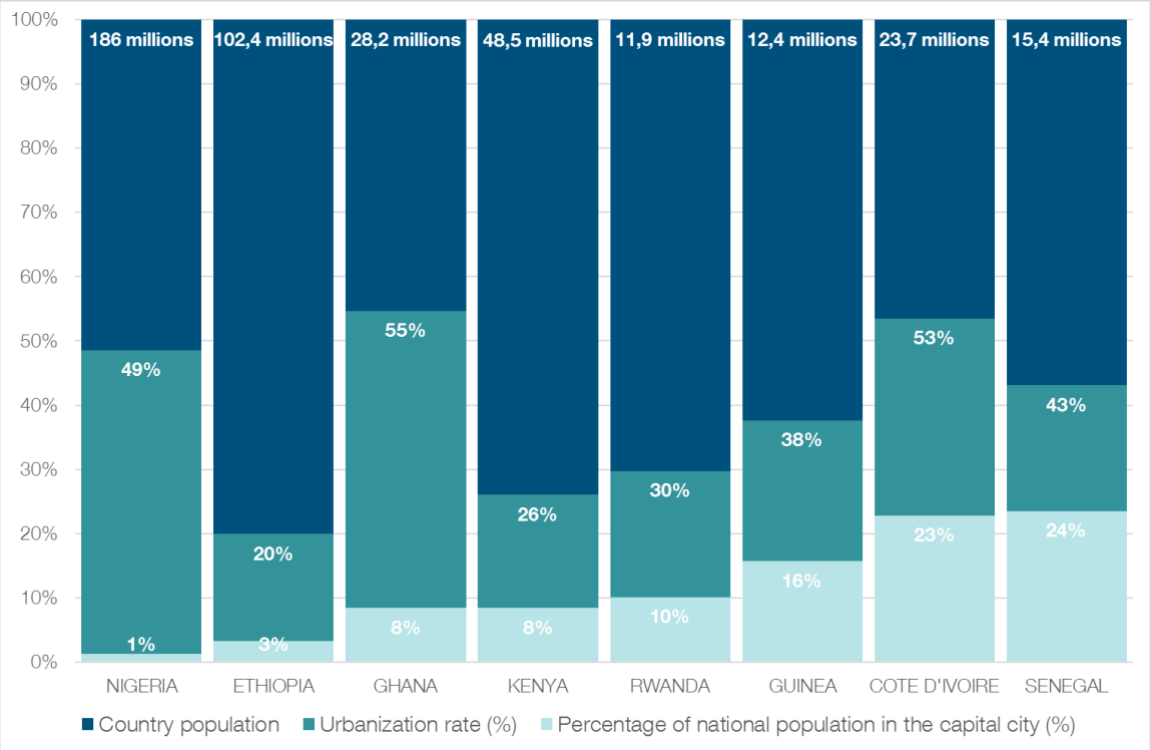
East African countries are relatively less urbanized, with urbanization rates of 30% in Rwanda, 26% in Kenya, and even 20% in Ethiopia (Figure 2). Ethiopia has the fastest urban growth rate of the eight countries studied. This urbanization is taking place mainly in the capital Addis Ababa (with 3.3 million inhabitants according to UN-DESA) but to an even greater extent in the country's eight regional capitals, which each have fewer than 350,000 inhabitants, with the exception of Dire Dawa (0.5 million), and the other small towns. The 2030 UN-Habitat

[2] UN-Habitat data, 2015

projections shown in Figure 4 confirm that urban population growth will not be limited to the capital cities, but will increasingly affect the secondary cities.

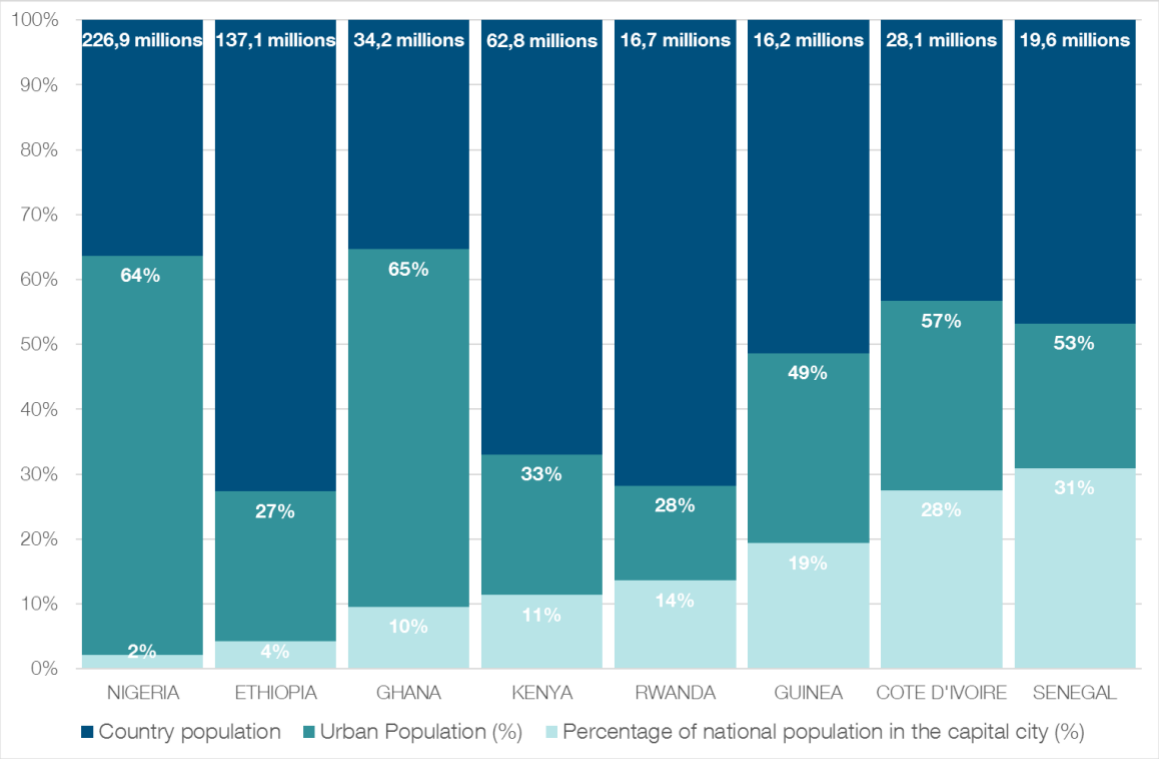
This trend is confirmed by the UN-DESA projections (Figure 5), which show that the main cities continue to grow and maintain their primacy over the secondary cities in terms of number of inhabitants, but that some secondary cities show higher annual growth rates than these main cities. This is the case in five of the eight countries studied (Ghana, Côte d'Ivoire, Guinea, Ethiopia and Nigeria).

Figure 3 - Share of urban population residing in the capital and secondary cities in 2015



Data: UN Habitat, World Bank

Figure 4 - Projected share of population residing in the capital and secondary cities in 2030



Data: UN Habitat, World Bank

Figure 5 - Demographic comparison of the largest African cities, based on the UN-DESA[3] data (in thousands)

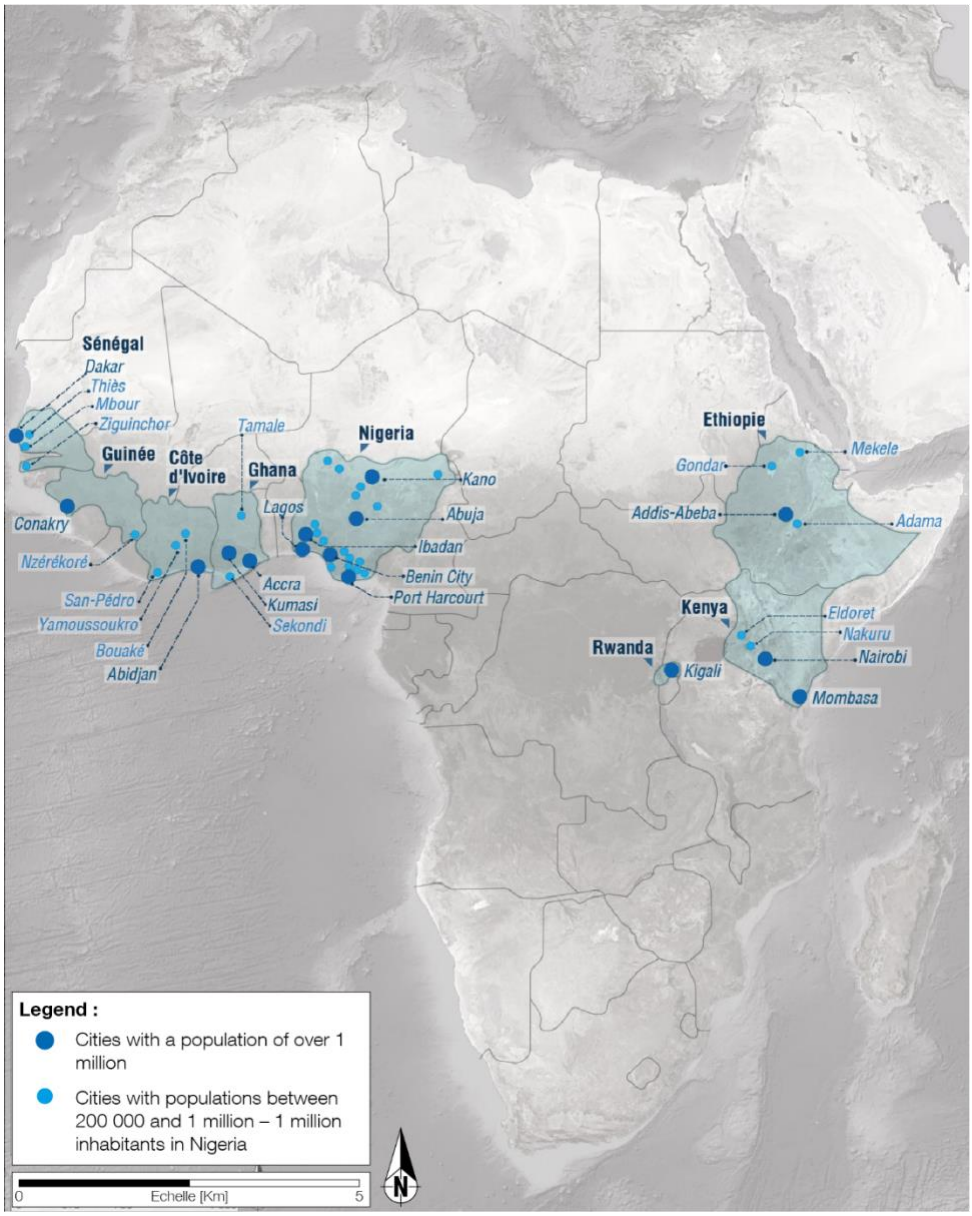
Country	Urban Agglomeration	Population in 2015	Population in 2030	Annual growth rate (2015-2030)
		in 1000 inhabitants		
Nigeria	Lagos	13 123	24 239	4,18%
	Kano	3 587	6 198	3,71%
	Ibadan	3 160	5 499	3,76%
	Abuja	2 440	4 913	4,78%
	Port Harcourt	2 343	4 562	4,54%
	Benin City	1 496	2 667	3,93%
	Onitsha	1 109	2 147	4,50%
	Kaduna	1 048	1 748	3,47%
	Aba	944	1 675	3,90%
	Ilorin	857	1 481	3,71%
	Uyo	847	1 709	4,79%
	Jos	810	1 397	3,70%
	Nnewi	770	1 576	4,90%
	Maiduguri	728	1 233	3,58%
	Owerri	716	1 337	4,26%
	Ikorodu	706	1 414	4,74%
	Zaria	703	1 148	3,33%
	Enugu	681	1 201	3,86%
	Warri	663	1 298	4,58%
	Oshogbo	650	1 116	3,67%
	Umuahia	580	1 167	4,77%
	Akure	556	1 025	4,16%
	Sokoto	552	993	3,99%
	Bauchi	496	919	4,20%
	Abeokuta	495	837	3,57%
	Lokoja	473	1 027	5,31%
	Calabar	467	886	4,37%
	Ogbomosho	439	842	4,43%
	Abakaliki	439	867	4,65%
	Gombe	417	781	4,27%
	Okene	407	722	3,90%
	Igbidu	402	706	3,82%
	Ado-Ekiti	402	740	4,15%
	Katsina	395	724	4,13%
	Minna	385	694	4,01%
	Gboko	381	685	3,99%
	Ondo	377	672	3,92%
	Oyo	371	664	3,95%
	Okpogho	343	669	4,56%
	Makurdi	342	629	4,13%
	Ife	331	583	3,85%
	Effon Alaiye	329	594	4,03%

Country	Urban Agglomeration	Population in 2015	Population in 2030	Annual growth rate (2015-2030)
		in 1000 inhabitants		
Senegal	Dakar	3 520	6 046	3,67%
	Touba	801	1 283	3,19%
	Thiès	335	500	2,71%
	Kaolack	248	394	3,13%
	Mbour	246	367	2,70%
	Saint-Louis	221	326	2,63%
	Ziguinghor	218	352	3,25%
	Diourbel	142	228	3,22%
	Tambacounda	115	197	3,65%
Côte d'Ivoire	Abidjan	4 860	7 773	3,18%
	Bouake	762	1 219	3,18%
	San Pedro	347	630	4,05%
	Korhogo	268	456	3,60%
	Daloa	264	449	3,60%
	Yamoussoukro	257	437	3,60%
Guinea	Conakry	1 936	3 134	3,26%
	Kankan	490	833	3,60%
	Kindia	456	775	3,60%
	Nzérékoré	346	642	4,21%
Ghana	Kumasi	2 599	4 215	3,28%
	Accra	2 277	3 262	2,43%
	Sekondi Takoradi	711	1 197	3,54%
	Tamale	486	817	3,52%
Kenya	Nairobi	3 915	7 140	4,09%
	Mombasa	1 104	1 973	3,95%
	Nakuru	335	589	3,83%
	Eldoret	321	598	4,23%
Ethiopia	Addis Ababa	3 238	5 851	4,02%
	Mekele	315	633	4,77%
Rwanda	Kigali	1 257	2 268	4,01%
	Musanze	112	183	3,30%
	Huye (Butare)	56	74	1,90%
	Muhanga	54	74	2,10%

Data: World Urbanization Prospects.

[3] UN Habitat data

Figure 6 - Major cities in the eight pilot countries

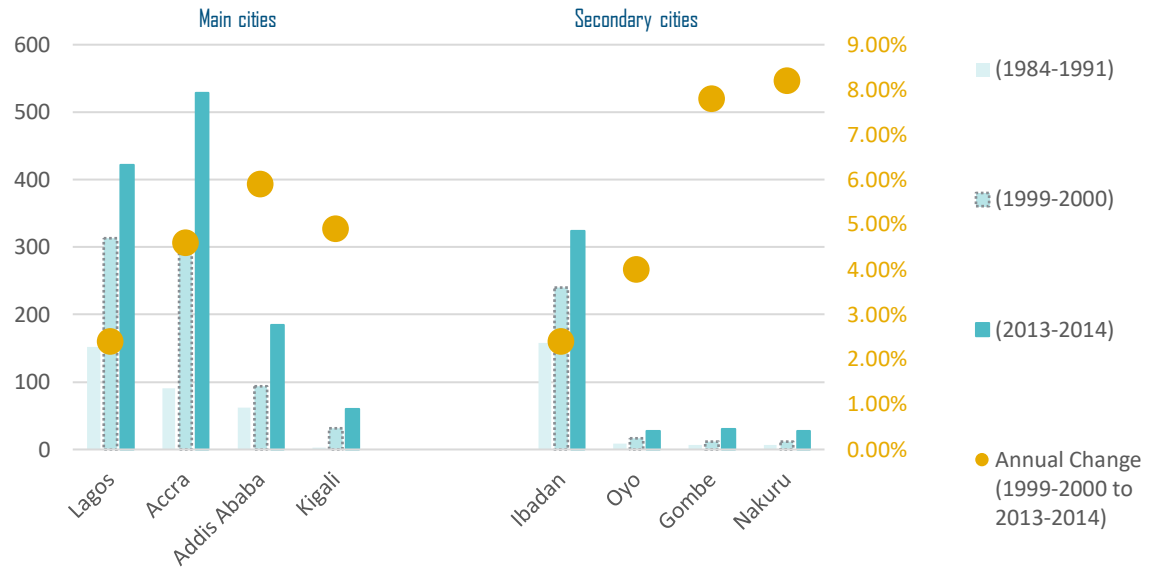


Data: United Nations, Department of Economic and Social Affairs

1.3 Low urban density leading to massive urban sprawl

Despite their size, African cities are not dense, which contributes to a lack of connectivity of urban territories. Satellite towns are developing around existing[4] urban centers, but the lack of basic infrastructure and social facilities, and the inaccessibility of urban centers marginalize them and prevent them from becoming genuine secondary centers. This phenomenon does not only affect major cities. Figure 8, based on data from the Atlas of Urban Expansion[5], shows that the average annual growth rate of the urban area of secondary cities already exceeds that of the main cities[6].

Figure 7 - Evolution of the built-up area in a selection of main and secondary cities (km²)



Data: Atlas of *Urban* Expansion

Note: The years are presented as ranges corresponding to the data available in each country. This is a known limitation of the use of satellite images in the Atlas of Urban Expansion.

This growth of the urban area at an annual rate that can vary from 2.5% to 8% (for some secondary cities) is accompanied by a decline in urban population density in all the cities studied, except Lagos, where the density has remained stable (Figure 8). The low density of African cities can be explained in part by their historical legacies[7]. All other things being equal, the former British colonies have a 25% higher urban sprawl than the former French colonies. However, it is also enabled by the weakness of institutions in terms of land management and urban planning, which forces households to settle on the outskirts of the city, where land is cheaper.

[4] Source: Lall, Somik Vinay, J. Vernon Henderson, and Anthony J. Venables. 2017. "Africa's Cities: Opening Doors to the World." ("African Cities: Opening Doors to the World.")

[5] The Atlas of Urban Expansion is the result of a research program led by New York University to better understand and analyze urban expansion around the world: http://atlasofurbanexpansion.org/.

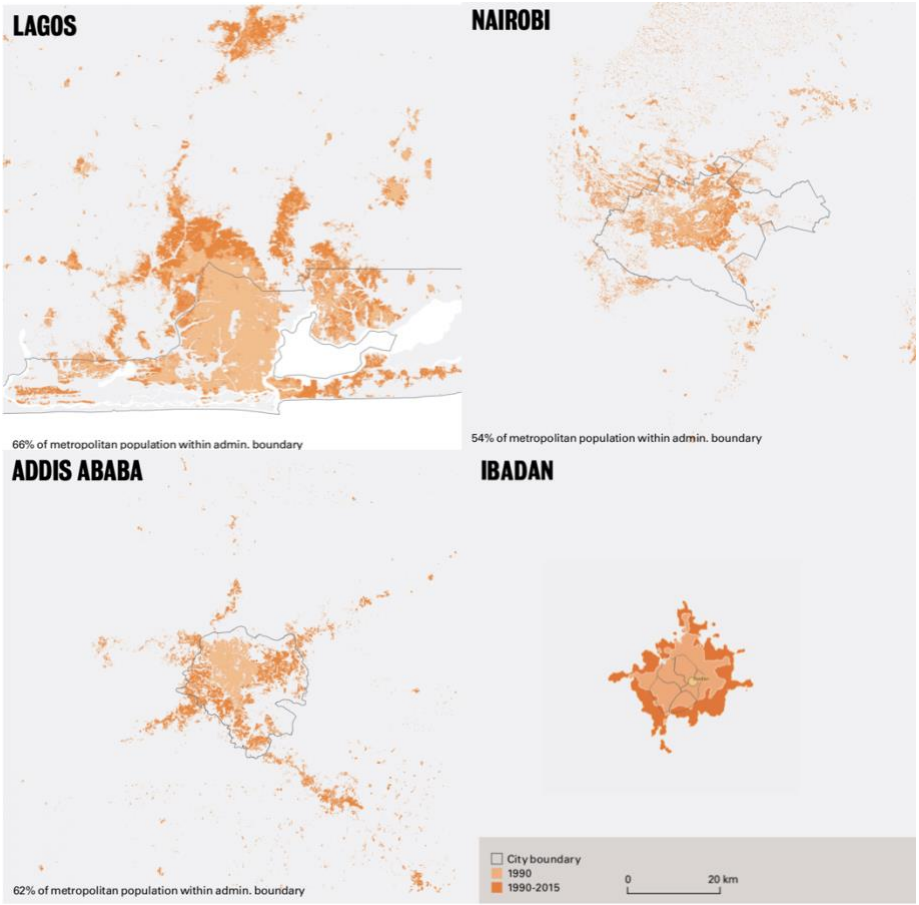
[6] The interest of this Atlas is that it allows the analysis of the growth of cities over time, and more specifically over three periods: 1984-1991, 1999-2000 and 2013-2014. The identification of urban growth via the Atlas is done through satellite images and a unified methodology, allowing for a finer comparison of cities than by using administrative boundaries. For our analysis, we were first interested in the densest forms of settlement: built-up urban areas. This excludes non-urbanized areas within the urban area, such as rivers, forests etc.

[7] Based on the work of Baruah, Henderson, and Peng (2016).

Figure 8 - Density of urban areas and associated annual change, for selected cities, based on the Atlas of Urban Expansion

Source: Urban Age/LSE Cities analysis based on data from Addis Ababa Masterplan Project Office, University of Lagos, DIVA-GIS; CORINE land cover/Copernivus.eu); DLR-DFD; and Transitec analysis based on data from the Atlas of Urban Expansion

Figure 9 - Visualization of urban growth in 4 cities between 1990 and 2015



Source: Urban Age/LSE Cities analysis based on data from Addis Ababa Masterplan Project Office, University of Lagos, DIVA-GIS; CORINE land cover/Copernivus.eu); DLR-DFD; and Transitec analysis based on data from the Atlas of Urban Expansion

Note: The orange color applied to Ibadan represents the year 1984, not 1990.

Figure 9 illustrates the explosive nature of urban expansion in several of the cities studied, and shows how this urbanization is structured. Addis Ababa, the Ethiopian capital, has grown primarily along the southeast and east-west transit corridors. The four example cities demonstration how urban growth has expanded beyond the administrative boundaries of the cities. For example, only 54% of Nairobi's metropolitan population resides within the city's administrative boundaries.

This urban growth poses several challenges for the structuring of agglomeration economies in the long term, mainly in the area of infrastructure and governance:

- Urban expansion beyond a territory's administrative boundaries contributes to the fragmentation of governance and affects the ability of policymakers to respond by implementing appropriate policies and investments. As a result, urban planning and land-use regulations become more complex to implement, and hinder the ability to have sufficient control over the urban growth.
- This expansion is costly; the low density of the territory requires more infrastructure to ensure territorial coverage. Because of their cost, urban networks (electricity, water, sanitation, roads and public transport) do not cover all of the urbanized areas. Research has shown that when the fragmentation of the territory decreases by 1%, the cost of urban infrastructure decreases by 12%[8]. Looking specifically at the transport sector, urban sprawl leads to an additional cost of around 42%, when the prices of vehicles and transport services are considered[9].

1.4 Ways to take advantage of economies of agglomeration

Economic growth in Africa has not generated the same agglomeration effect as cities on other continents: GDP per capita remains low and economic growth is not keeping pace with urban growth. This is known as the "urbanization without growth" phenomenon[10]. Other regions of the world have reached a similar stage of urbanization with a much higher GDP per capita.

Yet, cities should be able to exploit the dynamic advantages of specialization and productivity gains from economies of scale to promote economic growth. In urban areas, suppliers are closer to customers, workers move from the countryside to cities in search of better wages, firms use the same suppliers and have access to a larger labor market. Finally, workers share knowledge and learn from each other, and so on. Research on developed cities shows that when a city doubles its population, productivity increases by 5% and income elasticity increases by 3-8%[11].

In Sub-Saharan Africa, cities continue to grow and contribute to economic growth until the negative externalities of overcrowding and congestion outweigh the positive externalities of urban density. This is why many cities in the region are not currently functioning as engines of growth[12] and show contrasting patterns of economic activity and urban density:

- In Africa, economic activity and markets are particularly concentrated in the center of large cities, which is not the case in other cities of comparable size around the world. A 2017 study by the World Bank used light intensity at night to measure economic activity, and the main finding was that economic density tends to decrease as one moves away from the city center[13]. This concentration in the city center is explained both by the need to be close to the labor market and amenities, but also by the difficulty of getting around.
- Economic activity continues to be dominated by non-tradable products and services, which are relatively protected from international competition, and which induce high costs, linked to the inefficiency of the

[8] These estimates are based on the work of Nakamura et al. (2016) and Henderson and Nigmatulina (2016), reported in Lall, Somik Vinay, J. Vernon Henderson, and Anthony J. Venables. 2017. "Opening African Cities to the World." World Bank, Washington, DC.

[9] Lall, Somik Vinay, J. Vernon Henderson, and Anthony J. Venables. 2017. "Opening African Cities to the World." World Bank, Washington, DC.

[10] Fay, M., & Opal, C. (1999). Urbanization without growth: a not-so-uncommon phenomenon. The World Bank.

[11] Rosenthal and Strange (2004) presented in Lall, Somik Vinay, J. Vernon Henderson, and Anthony J. Venables. 2017. "Opening African Cities to the World." World Bank, Washington, DC.

[12] Henderson, 1974; Glaeser, 2014; World Bank, 2008).

[13] Lall, Somik Vinay, J. Vernon Henderson, and Anthony J. Venables. 2017. "Opening African Cities to the World." World Bank, Washington, DC.

economy. Reasons for this include coordination failures, poor policy design, weak property rights, and other factors that contribute to lower economic density. The failure of transport networks is both a symptom and a cause, increasing the cost of transport and reducing the competitiveness of tradable goods.

This phenomenon, which is specific to Africa, is amplified in secondary cities that do not have an economic center and do not benefit as much as the main cities from integration into the international economy.

Thus, urban population growth results in fragmented urban expansion coupled with economic centralization. The current urban growth dynamic is often the result of a monofunctional logic of increasing travel distances and chronic congestion due to commuting. Good management and investment in urban transport should address the risks associated with these four trends, and enable a more sustainable pattern of development through the exploitation of the positive effects of agglomeration economies.

This becomes all the more urgent as "resource-poor" countries (such as Ethiopia, Côte d'Ivoire and Rwanda) are becoming increasingly attractive destinations for Foreign Direct Investment (FDI)[14]. In West Africa, the manufacturing and high-tech industries are showing the strongest growth rates, and FDI has already helped to reduce wage inequalities in this region[15]. UN-Habitat, in its "State of African Cities 2018", estimates that Nigeria and Côte d'Ivoire should attract particularly high levels of investment in the manufacturing sector, while Kenya and Rwanda are expected to see strong growth in investments in the services sector.

The current dynamics of urban growth must therefore be rethought in order to implement a more sustainable urbanization model. Firstly, this will involve strengthening metropolitan institutions to carry out structural reforms concerning land use (clearly established land rights and property titles, improved tax collection, support for urban planning, modernization of administrative procedures, creation of efficient land markets and urban planning regulations, etc.). At the same time, urban mobility planning must play a structuring role in improving accessibility for all residents within the urban area while minimizing the risk of crashes, air pollution, and energy consumption.

[14] UN-Habitat and Rotterdam University (2018) ≪ The State of African Cities 2018: the geography of African investment. ≫ (Wall R.S., Maseland J. Rochell K. and Spaliviero M). United Nations Human Settlements Programme (UN-Habitat).
[15] idem

	COTE D'IVOIRE	ETHIOPIA	GHANA	GUINEA	KENYA	NIGERIA	RWANDA	SENEGAL	SUB-SAHARIAN AFRICA
DEMOGRAPHY									
Country population *(million, 2016)*	23,7	102,4	28,2	12,4	48,5	186,0	11,9	15,4	1033,2
Country population projection *(million, 2030)*	28,1	137,1	34,2	16,2	62,8	226,9	16,7	19,6	1470,7
Country density *(pop. / sq. km)*	75	102	124	50	85	204	483	80	44
URBANIZATION									
Urbanization Rate (%, 2016)	53%	20%	55%	38%	26%	49%	30%	43%	39%
Urban Growth Rate *(%, 2010-2015)*	3,9%	5,0%	3,7%	3,5%	4,3%	4,6%	2,3%	3,6%	4,2%
Urban areas with more than 300 000 inhabitants *(2015)*	3	2	4	2	4	42	1	1	164
ECONOMY									
GDP per capita *($PPP, 2016)*	3 693	1 734	4 293	1 966	3 151	5 861	1 913	2 567	3 459
Average economic growth rate *(% / year, 2010-2015)*	5,8%	10,6%	7,7%	4,5%	6,0%	5,2%	7,5%	4,1%	4,5%
Poverty headcount ratio w/r to the international poverty line *(2011 PPP, % of pop.)*	28%	34%	14%	35%	34%	54%	60%	38%	41%
Human Developement Index *(0-1 scale, 2015)* 0 - low , 1 - high human development	0,47	0,45	0,58	0,41	0,56	0,53	0,50	0,49	0,54
BUSINESS AND GOVERNANCE									
Doing Business *(Distance to Frontier, 2017)* 0 - lowest, 100 - highest performance over time or "frontier"	52	46	57	49	63	48	70	49	49
Corruption Perceptions Index *(1-100, 2016)* 1 - low transparency or high corruption, 100 - high transparency or low corruption	34	34	43	27	26	28	54	45	32
MOTORIZATION									
Gazoline Price / Diesel Price *(US$ / L, 2016)*	0,93 / 1,15	0,75 / 0,81	0,92 / 0,92	0,9 / 1,16	0,95 / 1,11	0,46 / 0,84	1,17 / 1,47	1,14 / 1,34	0,95 / 0,86
Gazoline Price *(US$ / L, 2010-2016)*	0,93	0,75	0,92	0,9	0,95	0,46	1,17	1,14	
Diesel Price *(US$ / L, 2010-2016)*	1,15	0,81	0,92	1,16	1,11	0,84	1,47	1,34	
Private vehicules in use according to OICA *(2015)*	430 000	90 000	560 000	N/D	848 000	2 970 000	N/D	340 000	17 000 000
Private vehicules in use according to national data	640 000 *(2018)*	550 000 *(2015)*	1 950 000 *(2015)*	360 000 *(2017)*	1 300 000 *(2014)*	11 500 000 *(2017)*	180 000 *(2016)*	470 000 *(2015)*	N/D
Motorization Rate according to OICA *(private vehicules / 1 000 inhabitants, 2015)*	19	1	20	N/D	18	16	N/D	23	2
Road Safety Casualties *(nb of casualties / 100 000 people, 2015)*	24	27	26	28	30	21	33	28	27

Figure 10 - Main demographic, economic, urban and motorization characteristics of the 8 countries studied

2. Countries in the process of motorization

2.1 A steadily increasing number of vehicles despite a low motorization rate

The analysis of motorization and fleet growth suffers from a lack of transnational data and a common methodology. National data is sometimes unreliable due to vehicle registration rules, while other times it may be because of the disorganization of, or a lack of resources dedicated to, the statistical system. In Guinea, for example, three different entities have the right to register vehicles according to their use. The International Organization of Motor Vehicle Manufacturers (OICA) provides lower figures than the various national sources (which is probably due to the fact that it takes into account a higher vehicle scrapping rate than those prevailing in Africa).

In 2015, according to OICA, there were 44 million vehicles on the African continent, which is about the same number as in Germany (48 million vehicles in circulation). Considering a total population of 1.2 billion, the continent's motorization rate is over 12 times lower than that of Europe, 3 times lower than Latin America and 2.5 times higher than Asia and the Middle East.

Table 1 - Vehicles in circulation by country and motorization rate (2015)

REGIONS/COUNTRIES	**Fleet of vehicles (2015)**	***Motorization rate 2015 (/1000 inhabitants)***
World	1 282 270	182
Western Europe	250 037	602
Central and Eastern Europe	52 545	500
Russia, Turkey & rest of Europe	84 937	281
North America (excluding Mexico)	324 763	670
Central & South America	88 962	176
Asia, Oceania & Middle East	436 222	105

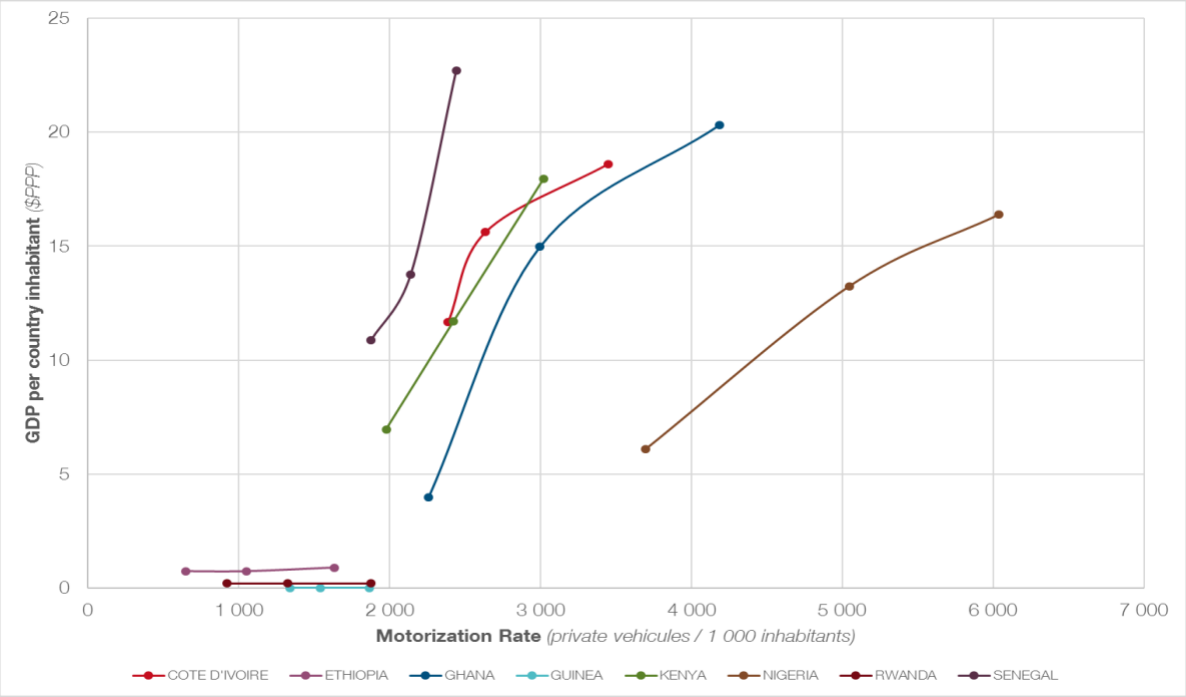
Data: www.oica.net

This is obviously due to the economic situation of African countries. Sub-Saharan Africa, with an average of USD 3,500 per capita, is in the early stages of the motorization process. However, Sub-Saharan African countries are indeed experiencing rapid growth in motorization (although there are still uncertainties about volumes), and trend analyses confirm the rapid and widespread growth of motorization in all the countries concerned. Cities that account for a high proportion of the national GDP also have a higher concentration of the vehicle fleet.

Côte d'Ivoire, Ethiopia, Kenya, and Rwanda are each recording annual increases in vehicle imports of 10-12%, far exceeding the number of vehicles that are scrapped each year. In Kenya, the volume of vehicles imported annually more than tripled between 2003 and 2012, according to the Kenya National Bureau of Statistics (KNBS). However, the national car ownership rate remains low, estimated to be around 32 vehicles per 1,000 inhabitants in 2019, which is faster than population growth.

Figure 14 shows the motorization rate as a function of national GDP. The correlation between these two data points is logically observed, however, it differs according to the pilot countries. This is due in particular to import policy and the cost to the users of buying and operating a vehicle.

Figure 11 - Evolution of GDP and motorization in the 8 pilot countries from 2005 to 2015



Data: www.oica.net ; The World Bank

Table 2 - Motorization indicators in 8 pilot countries[16]

	Côte d'Ivoire	Ethiopia	Ghana	Guinea	Kenya	Nigeria	Senegal	Rwanda
Number of vehicles on the road (thousands)	640	550	1'950	360	1'300	11'500	470	180
Motorization rate (veh / 1000 inhabitants)	-	6	70	-	26 à 28	24	-	15
Number of vehicles imported annually (in thousands)	45		-	-	110	-	33	-
Annual increase in vehicle imports	10%	10%	-	-	10 à 12%	-	-	12%
Average age of vehicles (years)	-	14	14	-	-	-	-	-

Data: National Sources

[16] National Data DGTTC 2014 in Côte d'Ivoire, FTA 2015 in Ethiopia, MoT 2015 in Ghana, BMI and KNBS 2015 in Kenya, NBS 2017 in Nigeria, DTR 2015 in Dakar, RRA 2016 in Rwanda

2.2 Imported and aged vehicles

The various countries of sub-Saharan Africa do not have sufficient automobile production capacity to meet the growing demand. In 2017, OICA mentioned few producing countries in Africa, namely Algeria, Egypt, Morocco and South Africa. Most vehicles are therefore imported via the continent's main ports.

For economic reasons, used cars are preferred by end-buyers over new vehicles. Some countries have introduced restrictions on imports of older used vehicles and most have specific taxes in place. The eight pilot countries have variations on these:

- The age limit of imported vehicles;
- The level of taxation according to the age of the vehicles;
- The level of tax according to the engine capacity.

Table 3 - Age limits and vehicle import taxes in the eight study countries

	Côte d'Ivoire	**Ethiopia**	**Ghana**	**Guinea**	**Kenya**	**Nigeria**	**Senegal**	**Rwanda**
Age limit of imported vehicles (passenger vehicles) in years	5	n/a	10	8	8	15	8	n/a
Import tax on new vehicles	22%	93 to 163% (depending on engine size)	22 to 39% (depending on engine size)	27%	45% + 150,000 KES	5 to 75% (depending on engine size and fuel)	47,5%	5 to 15% (depending on engine size)
Import tax on used vehicles	22%	93 to 163% (depending on engine size)	22 to 39% (depending on engine size) tax if > 10 years (> 5 years: 50%)	51%	45% + 200 000 KES	40 to 75% (depending on engine size and fuel)	49%	5 to 15% (depending on engine size)

Data: National Sources

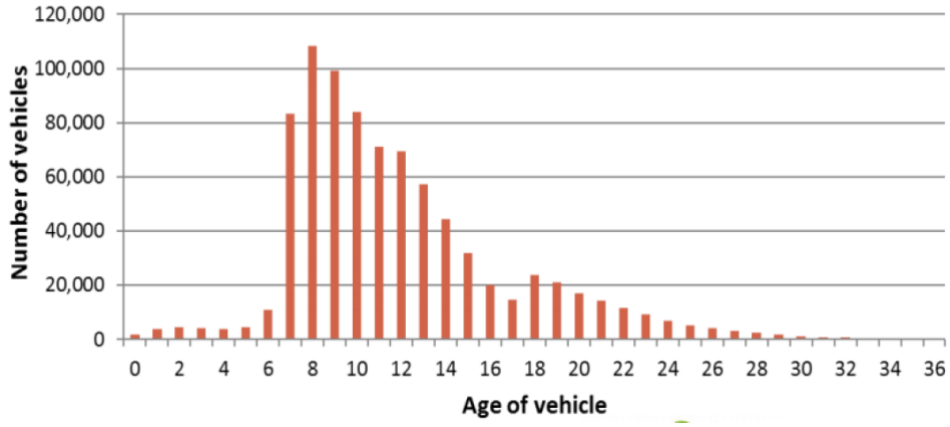
In some countries, import taxes on new vehicles are higher than on used vehicles. In Ethiopia, for example, these taxes can be as high as 100% or 200% of the purchase price of the new vehicle, a disincentive for both businesses and individuals. As a result, 85% of newly registered vehicles in Ethiopia are pre-owned vehicles.

In general, age limits on imports and taxes on used vehicles do not make them less affordable than new vehicles. They represent the largest import quota. In Nigeria, for example, only 10% of imported vehicles are new, despite the 35% import surcharge on used vehicles. In fact, import taxes are primarily of interest in terms of tax revenue, and are not seen as a mechanism for guiding consumers to less fuel-intensive or less polluting categories of vehicles.

Because the cost of acquisition is particularly high for households[17], vehicles are kept in circulation for many years. In both Ethiopia and Ghana, the average age of vehicles is 14 years. In Kenya, the vehicle age distribution curve also illustrates an aging fleet (Figure 16).

[17] In Senegal, the maximum age for importing vehicles was raised from 5 to 8 years in 2012, to encourage household motorization.

Figure 12 - Distribution curve of vehicles on the road in Kenya in 2015[18]



In West Africa, imported second-hand vehicles represent 85% of the vehicle fleet. Beyond the aging of the vehicle fleet, its rapid growth is the main concern both in terms of the functioning of cities and the consequences in terms of air quality and public health.

Vehicle maintenance is also lacking, emphasizing negative externalities on road safety and air quality. In Côte d'Ivoire, the coverage rate of technical inspections has dropped from 73% in 1999 to 61% in 2016, according to the Ivorian Automobile and Industrial Control Company (SICTA). In addition, inspection criteria remain permissive and have little consideration for vehicle emission levels.

2.3 Variable prices at the pump

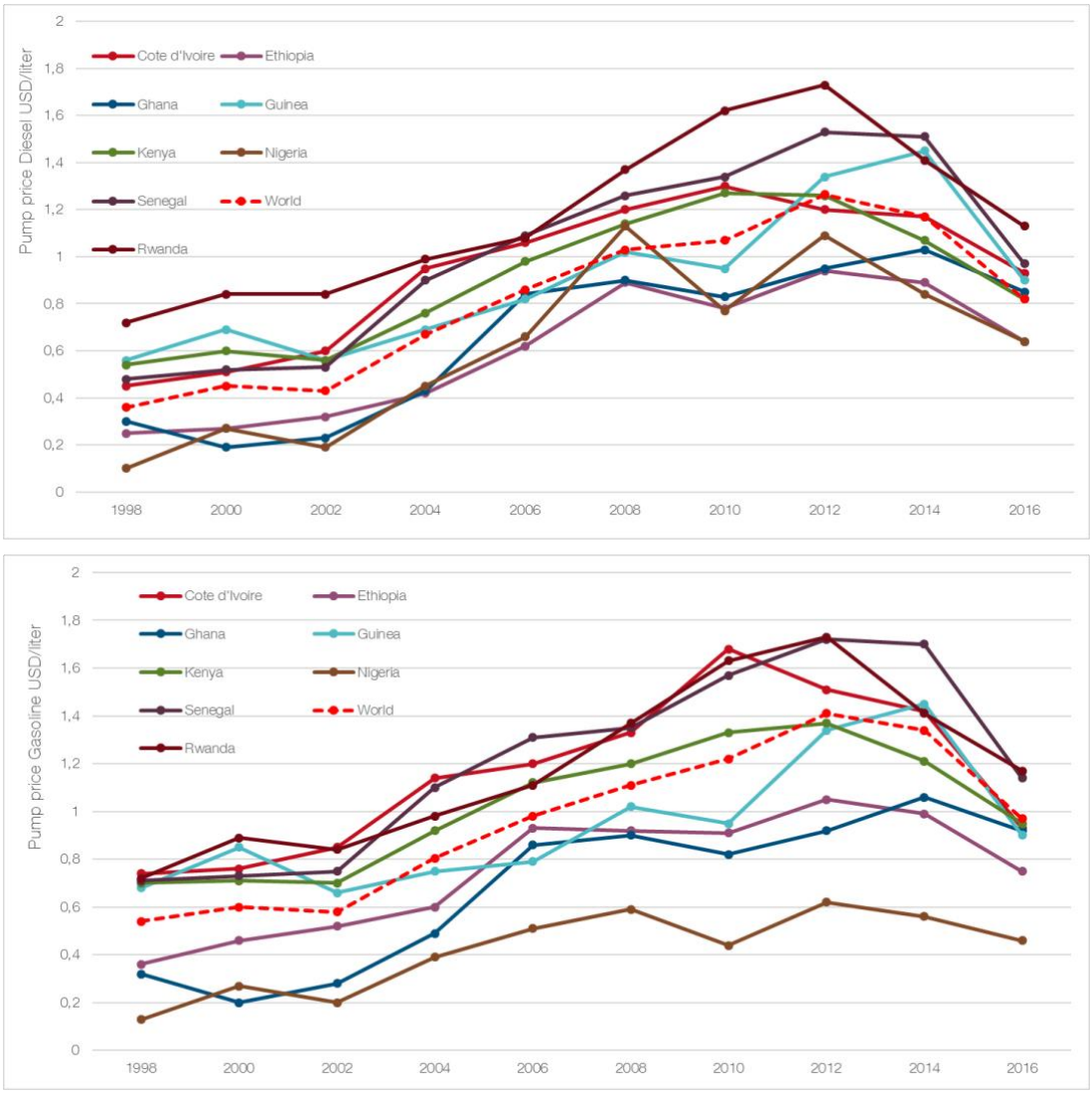
It is widely accepted that low mobility costs can stimulate the economies of developing countries. In African countries, vehicle taxation is mainly based on fuel taxes. They can account for a significant amount of domestic tax revenues. Each country thus proposes a different tax, which often changes in line with international oil prices.
Depending on the country, the cost of fuel varies by a factor of two. An oil-producing country like Nigeria keeps gasoline and diesel prices very low. Conversely, in Rwanda, a landlocked country that must import fuel from Tanzanian or Kenyan ports, prices are high to prevent fuel imports from weighing heavily on the balance of trade. In 2010, the group of countries could be split in two:

- those with pump prices higher than the world average (Senegal, Côte d'Ivoire, Kenya, Rwanda)
- those with lower prices (Ethiopia, Guinea, Nigeria, Ghana).

In 2016, after a deceleration in oil price increases, the range narrows. In the end, the link to economic growth was not proven over the long term. Some countries with high fuel prices may have higher growth rates than countries with low prices. On the other hand, they generally tend to favor automobile-based development and oil dependence.

[18] Nyang'aya (2018), Fuel Economy Policy Impact Tool Case Study

Figure 13 - Gasoline and diesel prices in the eight pilot countries (1998-2016)



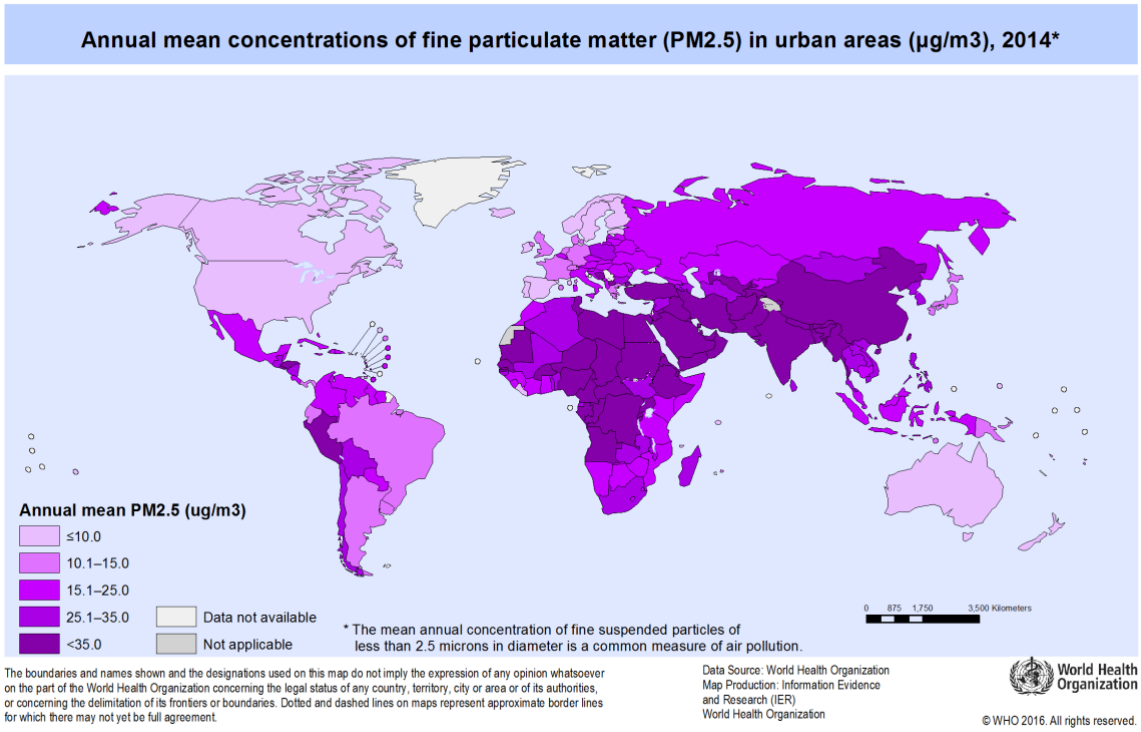
Data: The World Bank

2.4 Air pollution with serious health consequences

Air pollution is recognized as one of the leading causes of death. In 2012, the World Health Organization (WHO) ranked air pollution as "the greatest environment-related health risk". 88% of deaths are related to exposure to air pollution occurs in low- and middle-income countries,. The WHO estimated that each year 176,000 deaths are due to air pollution in Africa. In Accra, consultations for acute respiratory infections were the second leading cause of outpatient visits in 2014[19]. In many capital cities, the increase in the number of patients coming in for respiratory problems is evident[20].

[19] Akumu (2014), Improving Air Quality in African Cities, https://wedocs.unep.org/bitstream/handle/20.500.11822/16824/Overview_AirPollution_Africa.pdf?sequence=1&isAllowed=y

[20] https://www.lemonde.fr/afrique/article/2017/08/20/les-abidjanais-victimes-des-particules-fines-a-qui-la-faute_5174414_3212.html



In response to the environmental and public health challenges posed by the growing and aging vehicle fleet, governments are stepping up their initiatives. Two distinct strategies are emerging:

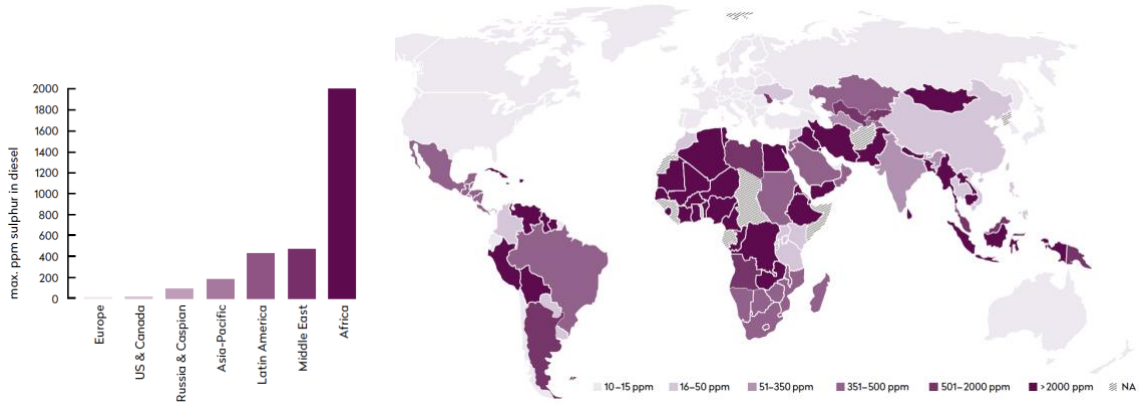
- **The development of the automobile industry in parallel with an increase in import taxes on used vehicles**. In Rwanda, regulations introduced in 2016 doubled the purchase price of vehicles, while an assembly plant was set up in Kigali. In Kenya, regulations will evolve in the coming years towards limiting the age of vehicles and developing a local automobile production industry. Nigeria is also focusing on the development of an automotive industry with the launch of the New Automotive Industry Development Plan (NAIDP) in 2014.
- **Renewal of the vehicle fleet** (particularly for freight and public transport vehicles). In Côte d'Ivoire, a mechanism has recently been put in place, supported by the Road Transport Development Fund (FDTR), which provides for the renewal of 50,000 vehicles over five years (over the 2014-2019 period) - an ambitious project but one that is hampered by budgetary constraints. This measure was accompanied by the implementation, in 2018, of two decrees limiting the age of imported second-hand vehicles and setting operating periods for vehicles used for the public or private transport of passengers and goods. Additional measures such as the introduction of a scrapping premium, setting thresholds for pollutant emissions, etc. are also in the pipeline. The objective of this policy is to reduce the number of imported second-hand vehicles in order to renew the fleet in the medium term. It stems from the commitments made in the Paris agreements in 2015, which aim to: "facilitate the purchase of low-emission vehicles and scrap the most polluting ones through standards, incentives or obligations". In Senegal, the government has been investing since 2005 in a program to renew and professionalize paratransit operators. The entire fleet of minibuses operating in Dakar must be renewed by the end of 2019. This program even extends to several secondary cities, but only concerns minibuses.

2.5 Low fuel quality

Much more than the age of vehicles, fuel quality has a major impact on air pollution in African cities. Poor-quality fuels inhibit emission control technologies. For example, particulate filters *are* effective for fuels *with* a sulfur content of 10-15 ppm. As a report by the Swiss NGO "Public Eye" points out, it will not be possible to combat air pollution in African cities without improving the fuel quality, particularly by reducing sulfur content.

This report highlights the fact that in most African countries, sulfur limits in fuels are much higher than in other parts of the world. In some countries, the limits are 10,000 ppm for diesel and 1,000 ppm for gasoline. On the African continent, only the countries of the East African community (Kenya, Tanzania, Rwanda, and Burundi) and Morocco had adopted sulfur content standards of up to 50 ppm in 2016. Following the publication of this report, Nigeria, Togo, Benin and Côte d'Ivoire announced in 2017 that they would align their legislation to the same standard.

Figure 14 - Diesel sulfur container limits (December 2015)



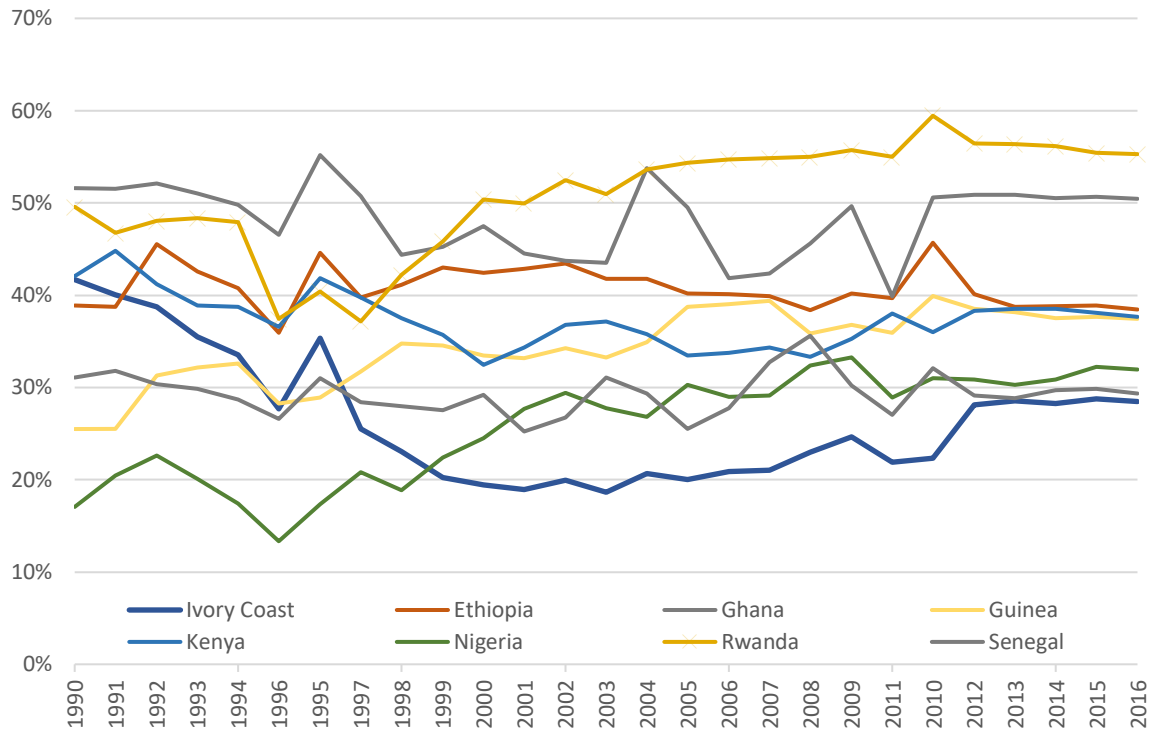
Source: Public Eye, 2016

In African cities, a large number of two-wheelers are powered by two-stroke engines that sometimes use adulterated fuels. Studies have shown that to consider the impact of two-wheelers on air quality in African cities, estimates of traffic emissions need to be multiplied by a factor of 10 to 30.

2.6 Very high emissions from the transport sector

Transport accounts for a significant share of fossil fuel energy consumption in the various countries studied. Due to the low level of industrialization in Sub-Saharan African countries, the transport sector is generally the largest emitter of energy-related greenhouse gases. Economic growth gives the sector an increasingly important role in national emissions. In 2016 it accounted for a minimum of 29% of energy-related emissions in Côte d'Ivoire and 55% in Rwanda. With the exception of Ghana (51%), the other countries were between 30% and 40%.

Figure 15 - Share of transport sector in CO_2 emissions, by country (1990-2016)



Data: The World Bank

While uncertainties persist around volumes, trend analyses confirm the rapid and widespread growth of motorization in all Sub-Saharan African countries. The low motorization rates point to strong fleet growth, which presents a major risk for the functioning of cities where the vehicle fleet is concentrated. The already high saturation of urban road networks in cities will tend to worsen in the coming years with the expected growth in motorization. This may lead to an increase in negative externalities (pollution, road safety, etc.).

3. Urban mobility issues in the eight pilot countries

3.1 Unequal and saturated big cities

3.1.1 Cities in expansion and restructuring

As we have seen in the previous section, African cities have grown considerably in recent decades, both economically and demographically. This development is reflected in an often-uncontrolled urban expansion, a cumulative effect of demographic growth, a massive rural exodus and the development of road infrastructures that provide easier access to peripheral areas.

The densely populated informal settlements have traditionally been located as close as possible to the city center to reduce travel distances. However, newcomers are settling in increasingly remote areas. Much less dense single-family housing neighborhoods for motorized households (often the wealthy or middle class) are also developing on the outskirts of cities. Finally, some cities, such as Addis Ababa, have developed social housing areas on the outskirts.

The cities are organized in a monofunctional manner, concentrating a large part of the economic activities in the center of the urban area. Even if the historical center is sometimes very difficult to access for the peripheral territories because of natural borders (Cape Verde peninsula in Dakar, Kaloum peninsula in Conakry, the lagoon in Abidjan and Lagos, etc.), this is where the formal economy and administrative life are concentrated. Some capitals are trying to create new economic hubs on the outskirts in order to relieve congestion in the city center

and rebalance the commuting patterns (the Diamniadio urban hub in Dakar, the Special Economic Zones in Kigali and Addis Ababa).

In coastal cities, the industrial center remains close to the port, which is often located on the outskirts of the historic city. The port relocation projects in Dakar and Conakry, and the logistics platform in Abidjan thus represent an opportunity to relieve congestion in the city center, where the transport of goods by heavy goods vehicles only adds to the flow of traffic. They also present opportunities to have access to highly valuable land resources.

The rapid growth experienced by cities is sometimes guided by public actors who have adopted planning documents and an urban development strategy. However, some capital cities, and the vast majority of secondary cities, have not formalized any strategic vision in terms of urban planning, and their control over land remains very limited. As mentioned in the first part of this report, they risk experiencing very rapid urban expansion on the periphery and a concentration of economic activities in the center, reinforcing the monofunctional logic and commuting movements, and generating chronic congestion.

3.1.2 Increasing numbers of necessary trips

In the main cities of the pilot countries, with the exception of Kigali, the preparation of urban mobility planning documents has led to the implementation of household travel surveys of varying scope. In contrast, none of the secondary cities in the countries studied appear to have conducted such surveys. The different sampling and survey methods used in each city do not allow for comparisons between cities[21]. However, we present the results for different cities to in order to provide a transnational view and continent-wide trend.

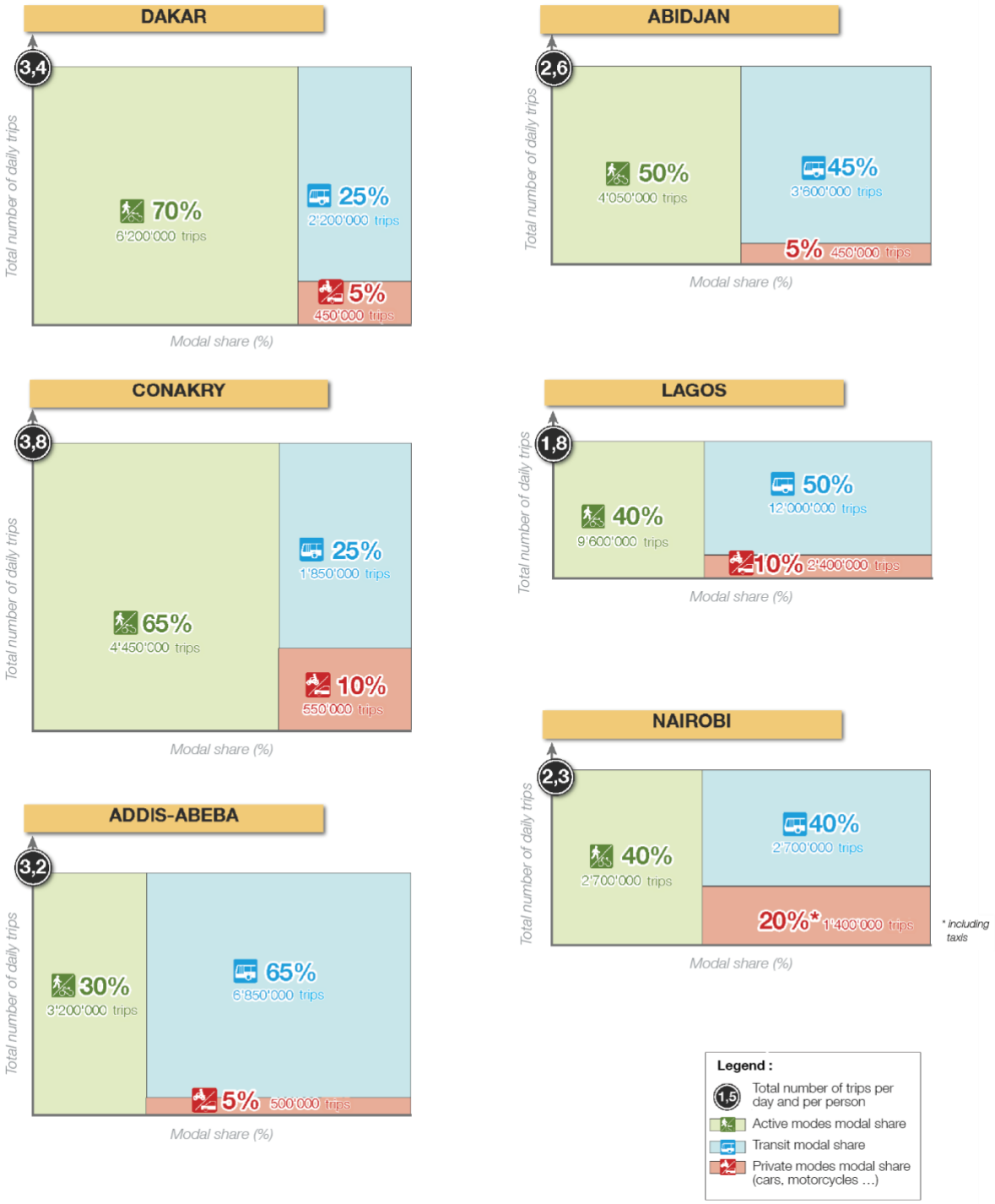
In all the major cities studied, travel demand continues to grow, in line with their economic and population growth. Personal mobility remains relatively low on a global scale and varies greatly depending on the country and survey methods: 1.8 trips per person per day in Lagos, 2.3 in Nairobi, 2.6 in Abidjan, 3.2 in Addis Ababa, 3.4 in Dakar and 3.8 in Conakry. In Conakry, home-to-work and home-to-study reasons account for 60% of daily trips, a necessary and indispensable travel demand for the continued economic growth of cities and countries alike. Due to the low level of household motorization, the demand for travel is primarily met by walking and public transport. Active modes account for between 40% and 70% of daily trips. The following graph illustrates the predominance of active modes and public transport against the low share of private vehicles in the main cities of the eight pilot countries (Figure 16).

Motorized travel is mainly served by public, commercial and institutional transport. In Abidjan, Addis Ababa, Conakry, Dakar and Lagos, public transport accounts for 5 to 15 times more daily trips than individual motorized transport (private cars, motorcycles, etc.)[22].

[21] The surveys conducted in each country differ in their sampling (age of the population surveyed, sample size), the type of data collected and the indicators chosen (consideration of non-motorized trips, consideration of short-distance trips, classification of travel modes, consideration of non-mobility in the adjusted values, etc.), the complexity of multimodal and multi-motive travel chains, and even the definition of trips themselves (distance, motives, etc.). Moreover, the orders of magnitude presented above are based on the values presented in the summaries of the results of the various surveys, with the limits of approximations.

[22] In Nairobi, the comparison is not obvious because of methodological bias: cab trips (collective or not) are counted together with trips by private car.

Figure 16 - Modal shares and trip volumes in Dakar, Abidjan, Conakry, Lagos, Nairobi and Addis Ababa



Source: EMTASUD 2014 in Dakar for the population aged 11 years and older, EMD 2014 in Abidjan for the population aged 6 years and older (EMD figures were used in relation to the adjusted values presented in the SDUGA diagnostic), EMD 2004 with adjustment based on a 2017 OD survey and 2017 INS population estimates in Conakry, EMD 2016 in Lagos, EMD 2014 in Addis Ababa prior to LRT, EMD 2013 in Nairobi for population 5 years and older.

The evolution of individual mobility is difficult to quantify in the pilot countries, as most of them have only one household survey to date. The figures presented above provide only a partial view of mobility practices, without reflecting recent developments or current the dynamics in African cities. Nevertheless, the feedback seems to converge towards a dynamic of increasing motorized mobility of people, which is intrinsically linked to poverty reduction and an increase in household purchasing power, with motorized transport becoming more affordable and allowing better access to the various urban services. In Dakar, between 2000 and 2014, the mobility rate remained stable, while the share of motorized modes increased significantly: from 0.88 to 1.05 daily trips per person. This is mainly due to the growth in household motorization and the need to make longer-distance trips.

3.1.3 Growth of the vehicle fleet concentrated in large cities

The rapid growth of the motorized vehicle fleet observed at the national level in Sub-Saharan Africa is exacerbated in major cities. Indeed, the fleet of four-wheeled vehicles is concentrated primarily in urban areas and particularly in the main economic centers of the various countries.

Despite the unreliability and inconsistency of data on motorization, common trends emerge from an analysis of national data: in Ghana, Nigeria, Kenya, and Rwanda, motorization rates in the main cities are 2-4 times higher than national averages (Table 4). In Ethiopia, the national motorization rate is the lowest in the world. In 2016, there were 6 vehicles per 1,000 inhabitants in the country, but 130 vehicles per 1,000 inhabitants in Addis Ababa, and more than three-quarters of the fleet was registered in the capital[23]. The main cities of the eight pilot countries did not experience a proliferation of motorized two-wheelers, unlike other countries (Benin, Togo, Burkina Faso, Cameroon, etc.). However, in Kigali and Nairobi, motorcycles are developing as a form of transport service, partially relieving traffic congestion and allowing access to areas not accessible by car or public transport.

Table 4 - Motorization rates at the national level and in the main city of the eight pilot countries

	Motorization *(veh / 1'000 inhabitants)*	
	National	Main city
Senegal	n/a	40
Cote d'Ivoire	n/a	21
Guinee	n/a	36
Ghana	70	240
Nigeria	60	250 in Abuja
Kenya	26 à 28	96
Ethiopia	6	130
Rwanda	15	40

Source: National data

Declining poverty and rising income levels of the population are contributing to the rapid growth of motorization in African cities. In Dakar, car ownership more than doubled between 2000 and 2015, from 17 to 40 vehicles per 1,000 inhabitants[24]. In Nairobi, the situation is similar[25].

This meteoric growth is driven by the motorization of the most affluent households. In a situation where getting around is particularly difficult, acquiring a car considerably increases the accessibility of family members to the urban area. Through the benefit of the vehicles made available by their company or administration, or access to car loans, motorized households gain enormously in accessibility, even if they often find themselves stuck in chronic congestion.

[23] In 2015, the national fleet numbered 552,000 vehicles, of which 426,500 vehicles were registered in Addis Ababa

[24] CETUD (2001 and 2015)

[25] In line with national trends, motorization rates increased by 67% in Nairobi between 2004 and 2013 (World Bank, 2016)

On the other hand, all the others who can only move around on foot or by bus, are strongly affected by this increase in traffic: the bus goes even slower in traffic, and trips on foot are increasingly long.

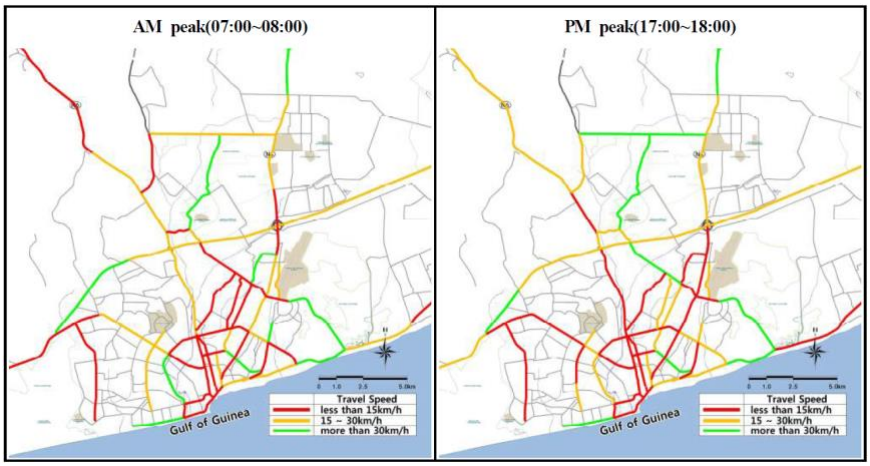
Longer journey times lead to significant loss of time in the daily lives of residents, reducing their level of access to basic public services and employment. Motorization generates social inequalities: motorized households waste less time than others.

3.1.4 The development of the automobile, a threat to the development of cities

The increase in the number of vehicles results in increased congestion, an invasion of public space for parking, a decline in road safety for all users, an increase in pollution, etc.

The economic losses incurred, or the potential gain, for both local and national authorities are difficult to quantify in the absence of monitoring of congestion, air pollution, or even quality of life indicators for residents. Nevertheless, some indicators, collected on an ad hoc basis, make it possible to assess the level of saturation and congestion of the city's road network, and the associated impact on accessibility and travel conditions on the population: in Conakry, the average speed of a car is 15.4 km/h, that is an average travel time of 75 minutes for less than 20 km travelled. In Accra, the entire road network in the metropolitan area is congested during morning and evening rush hours (Figure 17 – Speed of motorized travel during peak hours in Accra). The findings are similar in all the main cities of the eight pilot countries, with situations that can be particularly problematic at times, given that the road network is not organized to accommodate a growing flow of vehicles.

Figure 17 – Speed of motorized travel during peak hours in Accra (2015)



Source: MoT, KOICA. (2016). The Transport Master Plan Project in Greater Accra Region. Traffic Filed Survey, September-October 2015.

In the end, the quality of life in the city is severely degraded by the uncontrolled growth of the vehicle fleet and the attractiveness of cities is threatened. The performance of the mobility system and the attractiveness of the city are essential criteria for cities seeking to be part of the globalized economy. For multinational companies, quality of life is an increasingly important factor in determining the location of new establishments. Thus, as congestion represents a direct brake on the economic development of the city (which has been quantified in Dakar as equivalent to a loss of 3% of urban GDP), it is clearly a threat to the competitiveness of cities.

3.1.5 Road infrastructure struggling to keep up with demand

In most large cities, the road network is sparse and poorly interconnected in relation to the size of the urban area. Routes are highly constrained and concentrated on major roads and paved roads. The latter are still very few in number according to the figures available. In Addis Ababa, for example, the city's road network in 2014 comprised about 2,900 kilometers of classified roads, of which only 26% are paved[26]. In Kigali in 2013, the city's road network consisted of about 1,000 km, only 15% of which was paved. In light of this, most cities are choosing to invest heavily in road infrastructure.

[26] According to a World Bank paper (2014)

However, the investments do not always correspond to a metropolitan coherence. Believeing that they can solve congestion problems simply by increasing the capacity of road infrastructure, large cities sometimes build very costly, disproportionate projects that exacerbate dysfunctions because of the resulting bottlenecks.

Project-based approaches prevail, and road investments are rarely the result of an action plan resulting from multimodal planning integrating an urban-transport vision. Investments are concentrated on new infrastructure and maintenance of roads is lacking, to the detriment of maintaining their capacity. In Addis Ababa, the municipality spends about USD 260 million on road construction, or 35% of its annual investment budget, and only USD 6 million on road maintenance.

This is often due to the institutional structure in place in the countries studied. In Accra, for example, the Ministry of Roads and Highways defines its investment program through a very road-oriented vision without necessarily identifying the possibilities for optimizing the existing network. In Senegal, although there is a dialogue between the state agencies, Ageroute's investments in roads do not include all the urban dimension desired by CETUD or the local authorities. In Côte d'Ivoire, two separate ministries are responsible for infrastructure construction, maintenance and operation.

Moreover, few cities are implementing traffic management strategies to serve metropolitan multimodal accessibility (optimization of infrastructure operation and traffic plan, traffic regulation strategy, etc.). When the infrastructure is owned by one entity, it is not always involved in traffic management.

3.1.6Lack of parking policy

Parking is organized in an anarchic manner in the main cities. Faced with the explosion in motorization and the number of vehicles on the road, the existing supply is not sufficient to absorb all the demand. Parking garages are often considered, but their cost can be prohibitive in many cities. However, there are significant numbers of such facilities in some business districts, particularly in Accra.

In most of the cities studied, vehicles generally park in the available public spaces, along roadsides or on sidewalks, to the detriment of traffic flow and other users of the public space, especially pedestrians. The lack of appropriate pricing and enforcement also leads to increased use of parked spaces by vehicles. In Nairobi, an occupancy and turnover survey conducted in 2016 in the business center showed that 20% of vehicles parked for more than 8 hours, occupying half of the parking supply.

Although identified in planning documents, parking policies are often non-existent or not integrated into the overall mobility strategy. They do not serve as a lever for action on traffic demand and modal shift. In Nairobi, the city plans to increase the number of parking spaces in the central business district from 12,000 to 20,000, while at the same time reducing parking charges, a project that is inconsistent with a vision of reducing the use of cars and promoting alternative modes. Kigali is an exception among the cities studied. The municipality has had paid parking in place for several years. The service has been modernized, with officers collecting parking revenue by notifying the amount on a smartphone. The city is considering restricting on-street parking to reduce growing congestion in the city and banning cars from the city center altogether to make it a pedestrian-only zone.

As in the case of traffic management, the lack of a clear division of responsibilities for parking management does not facilitate the implementation of a metropolitan policy integrated with the urban and mobility strategy. In Dakar, recent changes in the division of powers have hindered the implementation of the parking program initially envisaged by the central city. The municipalities of the urban area are beginning to install parking meters, but without overall consistency, with the sole objective of collecting a fee.

3.1.7An inefficient dual public transport supply

In Sub-Saharan Africa, public transport relies mainly on bus and minibus services. Currently, few cities have functional capacity rail transport infrastructure and services. In Conakry and Dakar, for example, current rail service accounts for less than 1% of daily trips. In Addis Ababa, although the infrastructure is recent, the size of the tramways and the number of vehicles do not allow for a structuring rail service.

Public transport is thus provided primarily by paratransit operators and institutional public transport companies. In many cities these two systems, with very different origins, coexist without combining their networks. The proliferation of paratransit operators responds to the growing demand for travel with somewhat

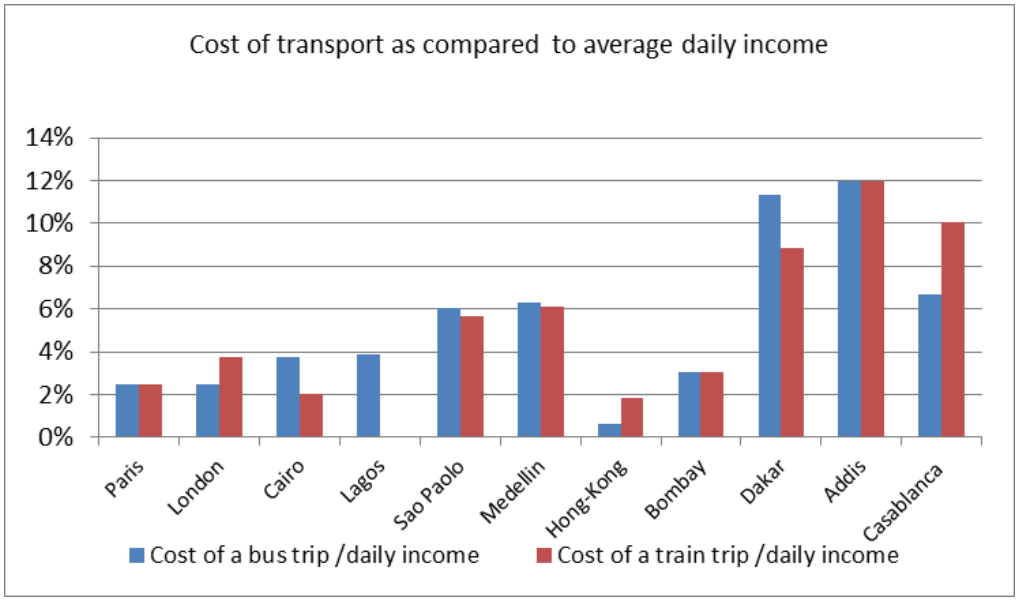
regulated fares that allows them to profit from this activity. As congestion increases, these services tend to use smaller and smaller vehicles that also serve outlying areas where larger vehicles cannot go. Institutional public transport companies, on the other hand, are generally dependent on fare policies or subsidies that do not allow them to break even. In the capitals studied, the institutional transport companies (Dakar Dem Dikk in Dakar, SOTRA in Abidjan, Ambessa in Addis Ababa, etc.) experience ups and downs depending on the fare policy and the financial support provided at the highest level of government.

In Abidjan, for example, the institutional operator has endured despite the financial and political crises. SOTRA accounts for 5% of passenger trips, compared with 40% for paratransit (including taxi cabs). In other countries, this rate is much lower (less than 1% for Dakar Dem Dikk in Dakar and SOTRAGUI in Conakry, for example). SOTRA, whose expertise is recognized throughout West Africa, has experienced a long period of decline in favor of the development of paratransit: while it provided 24% of trips in the capital in 1998, it provided just 11% in 2013. Today, SOTRA operates about 600 buses on 65 routes, whereas it operated 1,200 in 1987. The company's decline can be explained by its financial fragility, which hinders the proper operation of the network and the maintenance of rolling stock. However, fare revenues have been declining in recent years, with SOTRA fares remaining unchanged since 1994. In 2011, the company had 944 buses, of which only 351 were operating, and 27 boats, of which only 5 were operating. The reduction in the number of operational vehicles has a direct impact on the company's mileage output and the number of passengers carried. As a result, revenues are decreasing while operating costs remain more or less the same (the payroll being almost constant). Under these circumstances, the financial compensation paid by the authorities generally becomes insufficient.

In a context of increasing congestion, the performance of public transport is rapidly deteriorating in the absence of dedicated facilities (dedicated lanes, priority systems at junctions, etc.). Travel times are proving less and less competitive with private individual modes. In addition, the lack of an integrated vision and structuring of the network, the lack of performance and quality of the services offered (frequency, punctuality, comfort, etc.), the age of the vehicles and the lack of funding dedicated to the operation of the service, as well as lack of investment for its optimization, are all obstacles to the performance and competitiveness of public transport.

In Addis Ababa, the Household Travel Survey revealed that lack of transport supply was the main reason for users' reliance on walking, ahead of transport costs, even in poorer neighborhoods. Cost seems to be a secondary criterion in the choice of transport mode even for the poorest populations, while punctuality, frequency, and overcrowding are mentioned as the main criteria for not using the bus. However, as shown in the figure below, the cost of transport by bus and tramway in Africa represents a significant proportion of the household budget compared with other cities in the world.

Figure 18 – Cost of transport compared to daily income in different cities[27]



[27] Source: Nodalis benchmark

Of the cities we studied, only one has institutionalized the entire public transport service: Kigali, which in 2013 signed contracts with three companies, each operating a zone. One such company comprises most of the pre-existing small-scale operators . Without giving subsidies to these companies, however, the Rwandan authorities have managed to renew the fleet and increase the number of buses.

3.1.8Mass transit projects

To overcome the scarcity of multimodal transport supply and to meet the growing demand for travel, governments and municipal authorities are developing mass transit projects. This process began in the 2000s with the introduction of Africa's first Bus Rapid Transit (BRT) system in Lagos in 2008. Thus, all of the major cities in the eight pilot countries have mass transit projects in advanced stages of study or under construction; with the exception of Accra, where the project studied a few years ago has been abandoned (Table 5). These projects are part of ambitious programs developed either in the planning documents of the cities or in national plans for economic development.

In spite of the strong political backing that such projects enjoy because of the image they convey both nationally and continentally, their implementation is often hampered by a lack of adequate governance or sustainable financing. In Lagos, the first metro line, initially scheduled for 2011 and for which work began in 2009, will not be put into service until 2022, due to lack of funding. Similarly, in Abidjan, the construction of the first metro line has been delayed several times due to governance and financing difficulties: dissolution of the historical AOT, institutional conflicts that delayed the creation of a new authority to carry the project, the first PPP contract signed with an unfinished Franco-Korean consortium and then reassigned to a consortium of French companies etc. The metro, the first in West Africa, is currently scheduled to open in 2023.

Table 5 – Mass transport projects in the main cities of the eight study countries

	Strategic planning	Feasability studies	Under construction	Operational
Dakar, Senegal			Train - 38km (2021)	
		Train - 19km (2024)		
		BRT - 18km (2022)		
Abidjan, Cote d'Ivoire			Metro - 37km (2025)	
			BRT - 20 km (2024)	
	Metro - 49km (2030)			
	Ferry - 51km (2030)			
	BRT - 45km (2030)			
Conakry, Guinee				Train - 36km (2010)
	BRT - 122km (2030)			
Accra, Ghana				
Abuja, Nigeria				LRT - 45 km (2018)
Lagos, Nigeria				BRT - 22km (2008)
			MRT - 27km (2022)	
	RT & MRT - 215 km (2032)			
Nairobi, Kenya	BRT - 94km (2030)			
	LRT (post 2030)			
Addis-Ababa, Ethiopia				LRT - 31 km (2015)
			BRT - 16 km (2022)*	
	BRT (2030)			
Kigali, Rwanda			BRT - 50km (2024)*	
	BRT - 42km (2040)			

Source: national data (* = to be updated)

Note: In Conakry, the urban train uses the rail infrastructure used primarily for freight transport. It does not offer a quantity of service that meets the definition of mass transport.

The construction of these mass transit lines raises important issues in the organization of mobility and accessibility in African cities, which urban mobility stakeholders must now address: Governance and financing of these large-scale projects, planning integrated into the city's urban development strategy, integration into a hierarchical and meshed public transport network to best serve the population, inter-modal and multimodal connections (including fare integration), competition with public companies and paratransit operators and social acceptability, etc.

Box 1: Feedback on the implementation of BRT systems around the world

BRT systems have developed steadily over the last 2 years throughout the world. The in-depth study of **Transmilenio in Bogota** (Colombia), **MyCiTi in Cape Town** (South Africa) and **Transantiago in Santiago de Chile** (Chile) provides some useful insights for cities wishing to set up such a system:

- **Creating a BRT is a long and complex process**. Transmilenio was born after a 10-year project. The phased development of MyCiTi progressed slowly. In Santiago, Chile, the relatively rapid creation of the BRT system led to a major crisis (competition with individual operators, financing problems, inadequate infrastructure and equipment at the beginning of the operation resulting in low commercial speed, etc.).
- **Negotiations with existing transport operators should not be neglected**. In all three cities, the small-scale operators competed with the project (by illegally continuing their activities) and/or strongly opposed it through demonstrations, traffic blockades, etc. The situation was resolved only by taking their interests into account and reaching a compromise to integrate them into the BRT system.
- **BRT operators will often try to avoid bearing the commercial risk of a new BRT system** (unpredictability of demand, significant impact on the financial equilibrium of the system). In Bogotá, Cape Town, and Santiago the authorities have failed to transfer a significant share of the commercial risk to BRT operators.
- **A strong and competent transport authority must lead the project**. In all three cities, it has been necessary to concentrate all responsibilities within a single entity. Whether it is a full-fledged transport authority, a government agency, or a ministry, this entity must be able to oversee mobility and traffic studies, manage procurement, raise funds for the project, have a strong political voice, and so on.
- **Fares should be defined in accordance with the objectives of the transport policy**. Several options are possible: per trip, per distance, with additional payment for certain modes or connections, subsidized or unsubsidized for certain categories of users.
- **Complex/heavy ticketing systems can create problems**. Cashless ticketing systems have had many problems in Bogotá and Santiago (complex implementation, compatibility problems between technologies, etc.). Simpler ticketing systems can provide better value in many situations.
- **The physical integration of other operators at the stations, as soon as the BRT is commissioned, is important for the success of the operation**. The infrastructure must be designed to allow for the physical integration of other transport operators at BRT stations as soon as the BRT is commissioned and in operation, and adapt to future developments in the system (which should tend towards better integration of modes, including tariff integration).

It is difficult to assess *a posteriori* the conditions for the financial equilibrium of a BRT system; the authorities must be flexible and reactive in case of error. It is therefore necessary for the authorities to anticipate institutional adjustments to finance a potential deficit (without being in a weak position vis-à-vis the operators).

3.1.9 Insufficient consideration of active modes

Despite the context of economic growth and rising household incomes, transport is one of the major expenditures in household budgets, and many individuals are unable to afford motorized transport. In Addis Ababa, for example, the cost of a daily round trip by public transport (60 trips per month) is estimated to account for more than half (53%) of the monthly expenditure of the poorest quintile of the population. Non-motorized or active modes, especially walking, remain the only affordable alternatives for the poorest. Walking is therefore not limited to short-distance trips or to short portions of a complex trip chain (walking to and from a public transport stop or parking space, walking to basic and local services, etc.), but constitutes a mode in its own right for trips of all purposes. Travel time on foot is long; in Conakry, the average walking distance is about 10 km, with an average time of 1 hour and 40 minutes. However, walking conditions are difficult in cities, and public spaces are rarely used to the advantage of pedestrians. In most of the cities considered, pedestrian facilities are lacking or, if they exist, are poorly maintained, unsafe and congested (street vendors, parking, plants and trees, etc.). In Addis Ababa, for example, more than 65% of the road network is without sidewalks.

Transport projects also benefit little from active modes, due to a lack of ambition in the qualitative treatment of public space. These projects would benefit from better integration of the urban planning-transport vision, partly relayed in in planning documents, as well as a systematic multimodal approach.

Currently, walking accounts for the bulk of active mode travel, with little representation of other modes. Bicycle lanes are almost non-existent in the main cities, with the exception of Accra, where bicycle lanes have accompanied the road investments made in the 2000s, and Kigali, which has more recently attempted to do the same. However, these investments are still very localized and, due to the low number of cyclists, are quickly diverted from their intended use by pedestrians, parking, or street vendors.

Nevertheless, active modes represent a strong potential for improving accessibility to basic services at lower cost for households and public authorities alike. For example, bicycles can be used to cover intermediate distances between walking and motorized transport modes, either as the sole mode of transport or as a feeder to public transport, with undisputed environmental and public health benefits. Among the cities studied, Kigali is an exception in the consideration of alternative modes and has initiated a range of actions to promote walking and cycling.

For many years, new road infrastructure built in the urban area has been accompanied by sidewalks and sometimes even bike lanes. In 2016, a pedestrian zone was created in the city center. For a few hundred meters, a street was cut off from traffic to give pedestrians the opportunity to wander freely. Finally, once a month, the city organizes a Car-Free Day. For a few hours on Sunday mornings, major roads are closed to traffic to accommodate those who wish to come and walk or cycle. Sports activities are organized during these days, and health services offer to measure blood pressure, etc. These monthly days are an opportunity to communicate the health benefits of regular physical activity.

3.2 Neglected secondary cities

There are two types of secondary cities: those that are already large metropolises with their own economic dynamism, and the many more modest ones whose economy depends primarily on local agricultural activity and trade.

While in the first case data has been collected, in the second case there is a lack of collection and sharing of data on mobility demand and practices. Government data collection efforts, where they exist, are concentrated in the major cities, and none of the secondary cities sampled in this study have their own household surveys. The analysis presented here is based primarily on discussions with local stakeholders and the field experience of various international experts.

3.2.1 Growing cities, diffuse and long journeys

As discussed in the previous section, secondary cities are often growing even faster than the main cities. Urbanization is progressing without being controlled or planned by the competent authorities, sometimes even

beyond their administrative boundaries. The development of low-density residential areas on the outskirts of cities on land that is still rural contributes to the low density of these cities and the increase in travel distances.

Some so-called secondary cities are really large regional metropolises that have already exceeded one million inhabitants (Kumasi, Bouaké, Kano, Mombasa, etc.) and have an economic dynamism that is specific to their territory, in particular due to the existence of an industrial base. However, most secondary cities have simply developed around major transport routes, as places of exchange between rural areas and large cities, or as strategic points of passage along national or international transport corridors. They generally do not have their own industry or a major economic and business center, but they are points of convergence and diffusion of flows of people and goods, both nationally and internationally.

Thus, commuting is proportionally less important, due to the low economic activity, and is dominated by home-to-school trips. The proportion of less regular trips from the surrounding countryside is greater. In addition, the demand for travel becomes more diffused over time, and is concentrated around activity and service centers: the markets in particular. National economic development and poverty reduction strategies often target these areas to develop activities and economic dynamism.

The population growth of secondary cities, as well as their economic development, points to an increase in travel demand, similar to what is occurring in major cities. The type of economic activities (agricultural, industrial, services, etc.) in these areas will structure mobility in significant ways.

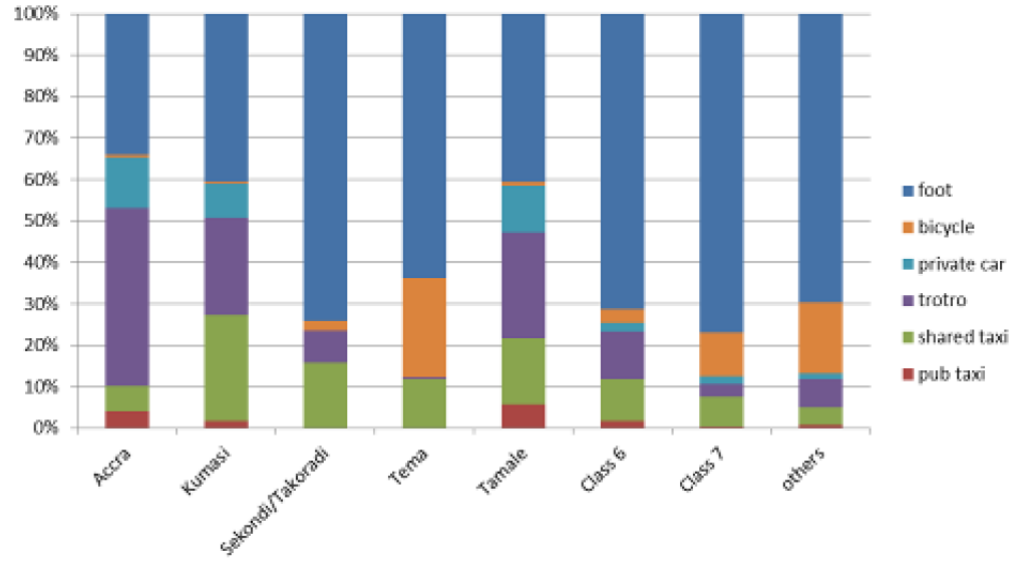
3.2.2Slower motorization, more walking

Secondary cities also experience growth in motorization, although less dynamically than the main cities. This is partly due to the lower economic dynamism and income levels than seen in the main cities. The increase in the number of vehicles on the road generates negative externalities (noise, pollution, road crashes, etc.) that are not nearly as critical and damaging as in the principal cities, and there is still less congestion. However, in a few years the situation in the main cities should plausibly be observed in the most dynamic secondary cities. In Bouaké, on the A3, the main urban road and the only asphalt throughway, traffic – primarily motorcycles – increased by an average of 5% per year between 2013 and 2018. If the trend continues, traffic could double within 15 years, raising real environmental, economic and social issues (accessibility of populations to urban services and employment).

In most countries, the growth of motorization in medium-sized cities is driven by two- and three-wheel vehicles. The use of motorized two- and three-wheel vehicles (particularly in Kenya and Ethiopia with Indian rickshaws) is expanding widely for both passenger and freight transport activities as well as for personal travel. Indeed, these modes of transport, which are more affordable and manageable than a car, guarantee better accessibility in neighborhoods where the state of the roads does not allow cars to circulate. In Bouaké, motorized two-wheelers are widely preferred among the population and account for 55-75% of traffic on paved roads and up to 100% of traffic on unpaved roads.

Despite growing motorization, walking remains the principal mode of travel in these cities, in much higher proportions than in the main cities. In Ghana, the modal share of walking for commuting is about 35% in Accra, 40% in Kumasi, and 65-75% in the medium-sized cities, with the exception of Tamale (Figure 19). Cycling, which is exceptional in the main cities, is much more developed in the medium-sized cities. In Ghana, it accounts for up to 20% of commuting in Tema.

Figure 19 – Modes of transport to and from work in Ghanaian cities (2007)



Source: The World Bank (2014). Ghana Urbanization Review.

3.2.3Limited individual and public transport services

The secondary cities have a very poorly meshed and serviced road network, often structured radially by regional, national or international roads converging in the city center. These roads are among the only paved and serviced roads, most of the road network being made up of dirt roads serving the various neighborhoods. The maintenance of the road network is often lacking and the existing infrastructure remains dilapidated. This limited infrastructure network is sufficient to absorb the traffic demand, without significant congestion. This trend could quickly be reversed in view of the evolution of the motorization of households. The sharing of public space between the different modes of transport and between different activities remains unorganized.

Transport services are also very limited and are operated almost exclusively by paratransit operators. The modes of transport used vary from one country and city to another according to local conditions: these can include motorcycle-taxis, bicycle cabs, motorized three-wheelers, cars, etc. The public transport offer is more oriented towards inter-urban and regional connections. With a few exceptions, urban public transport networks are rare, unstructured, and operated without coordination by a number of paratransit operators. The processes of professionalization emerging in the main cities have not yet reached the medium-sized cities, and the authorities are trying to regulate the anarchic development of transport by unsafe and polluting vehicles. However, these efforts are not enough to halt the trend and illegal transporters are pervasive. In Bouaké, only 4,000 motorcycle taxis were licensed in 2018 out of the estimated 8,000 vehicles in circulation[28].

Even though walking is predominant and cycling is much more developed in the secondary cities than in the main cities, just as in the main cities, facilities for active modes are lacking: lack of dedicated facilities, uncontrolled use of sidewalks and public space for parking, commerce, etc.

3.2.4A structural lack of state support

Local authorities are gradually becoming aware of the challenges of urban mobility in secondary cities, but they are still not very active in implementing projects, in the absence of a clear strategy and the technical, human and financial means to implement it. Few cities have an urban planning document, and even fewer still have a strategy that includes a transport vision. National investments are mainly concentrated on the main cities or on projects that give priority to international and inter-urban road infrastructure, to the detriment of local interests. In Côte d'Ivoire, for example, investments are concentrated on Abidjan and only two national

[28] City of Bouaké and Regional Directorate of the Ministry of Transport. (2018)

programs benefit the main regional capitals. In 2017, nearly 85% of transport infrastructure investments were concentrated in the greater Abidjan area, with the remaining 15% devoted to intercity projects.

Investments in secondary cities therefore represent a small portion of investment budgets for projects that do not really respond to urban issues and a mobility strategy. One of the challenges is to be able to use investments in inter-urban road infrastructure to create bypasses that can free the city center from transit traffic (especially heavy goods vehicles) and creates an urban center that concentrates commuter flows, which could give a larger place to active modes and public transport. Without an urban development strategy, the risk in some urban areas that are still heavily dependent on transit is that economic activities will leave the city center and settle along the new inter-urban road infrastructure.

3.2.5 Problems to anticipate

Since secondary cities are not under immediate pressure to improve urban mobility, they have the opportunity to anticipate and plan their spatial and population growth to avoid the problems faced by larger cities. Thus, they can initiate planning processes that integrate urban planning and transport, reserve the land needed for transport infrastructure development, organize and professionalize personal transport services, control the development of individual motorized modes, and improve accessibility, safety, and comfort for the most vulnerable. On the other hand, secondary cities are dealing with limited human and financial resources, greatly reducing their ability to prepare for the future of mobility. National authorities play a key role in supporting local authorities in their efforts to build their capacity and take charge of issues related to mobility and urban accessibility.

3.3 Urban mobility, a vector of inequalities

The African city generates inequalities by distorting accessibility based on transport mode, socio-professional categories and gender. The low density of cities, the monofunctional urban configuration, the dynamics of urban expansion, the cost of motorized modes of transport in relation to household income, and the dependence on walking are all factors that contribute to exacerbate social and gender inequalities in the accessibility of basic services.

3.3.1 Unequal access to transport modes and urban services

African roads are among the most dangerous in terms of the number of vehicles on the road. In urban areas, accident data is relatively scarce or poorly consolidated. In Côte d'Ivoire, the agency in charge of road safety (OSER[29]) monitors crashes only in terms of incidents and does not monitor accident victims after they have been treated in hospital, which leads to an underestimation of the number of road victims. Despite the lack of data consolidation, the observation is unanimous: pedestrians, although in the majority in African cities, are the first victims of road crashes. In Ghana, pedestrians account for nearly 40% of road accident-related deaths, and in Nairobi they account for about 60%.

Road safety exacerbates social and gender inequalities. Walking is over-represented among the most disadvantaged and vulnerable populations (women, children, people with reduced mobility), who are therefore more susceptible to road crashes. Improving travel conditions for active modes is therefore essential, not only in terms of sustainable mobility, but also in terms of social inclusion, to increase access to jobs, services and opportunities for all.

3.3.2 A situation suffered by the poorest

In African cities, freedom of movement and accessibility to basic services varies greatly according to income level. In Dakar, while transport accounts for 11.4% of average household expenditure, it represents only 9% of the monthly budget for the richest quintile of the population and more than 17% for the poorest quintile[30]. The cost of transport is thus a barrier to mobility for the most disadvantaged populations. In Dakar, it was found that the mobility of residents changes between the beginning and end of the month as a result of the reduction

[29] Office de Sécurité Routière

[30] CETUD, CUREM. (2015).

in available household resources. In Nairobi, a survey of informal settlement dwellers found that the majority could not afford any of the city's motorized transport options[31]. They manage by limiting travel outside their place of residence and, if they must travel, often "choosing" to walk.

The poorest people have relatively little access to either individual or collective motorized transport, and if they do it's at the expense of a large share of their budget. In Addis Ababa, for example, the cost of a daily round trip by public transport (60 trips per month) would represent more than half (53%) of the monthly expenditure of the poorest quintile of the population. Walking is therefore the only alternative for many people to get around. In 2014 in Addis Ababa, 33% of the poorest residents (representing 21% of the capital's population) used walking as their primary mode of travel, compared to 4% for the wealthiest residents (representing 1% of the capital's population) and 19% of the Addis Ababa population on average. Reliance on walking significantly reduces the ability to access basic urban services and jobs.

In addition to its cost, the lack of transport provision, particularly the most affordable modes, is a major obstacle to improving mobility and people's access to public services. In Nairobi, recent accessibility studies[32] show that urban minibus services (matatus) improve access to services, although with varying degrees of success in different residential, employment, and service areas (Table 6).

Table 6 Number and share of Nairobi's population with access to public services within 30 minutes by foot or matatu

Destination	30-minute walk		30 minutes by matatu	
	Population with access	Share (%)	Population with access	Share (%)
Hospitals	2,955,473	74.8	3,387,962	85.7
Schools	3,335,202	84.4	3,942,722	99.8
Existing park	2,528,747	64.0	3,193,028	80.8
Proposed park	3,528,392	89.3	3,743,169	94.7

Source: Hospital locations, Google Maps; park and school locations, Columbia University CSUD (2005); population density, WorldPop; 30-minute accessibility calculated by Conveyal.

Source: Campbell et al (2019)

In addition, the dynamics of urban expansion into segregated residential neighborhoods is contributing to longer distances and travel times and a lower level of accessibility for new, disadvantaged urban dwellers. In Nairobi, despite the emergence of a middle class, more than 50% of the population resides in informal settlements. These residents are willing to live in substandard housing in exchange for better accessibility.

3.3.3 The lower mobility of women

The treatment of gender inequalities in Africa is often obscured or circumvented by generalist approaches. This is partly due to the lack of data on women's travel practices or their role in the transport sector, and the failure to address their specific needs. Yet mobility shows gender imbalances, with men and women having different travel needs and motives because of their different responsibilities and activities within the household. Commuting to and from work is prevalent among men, while women travel for a wider variety of reasons (domestic and commercial activities), in more complex trip chains and throughout the day. Increased domestic responsibility coupled with limited access to household income significantly reduces women's access to transport, and thus to public services. The lower the household income, the less freedom women have to travel. They travel more on foot, reducing their accessibility to services and increasing their vulnerability (crashes, pollution, aggression, etc.).

[31] Salon, D., & Gulyani, S. (2010). Mobility, poverty, and gender: travel 'choices' of slum residents in Nairobi, Kenya. Transport Reviews, 30(5), 641-657.

[32] Avner, P., & Lall, S. (2016). Matchmaking in Nairobi: the role of land use. The World Bank.

Campbell, K. B., Rising, J. A., Klopp, J. M., & Mbilo, J. M. (2019). Accessibility across transport modes and residential developments in Nairobi. *Journal of Transport Geography*, *74*, 77-90.

In addition, women are the first victims of moral, physical or sexual harassment in the public space. This major problem particularly affects urban mobility, as a significant proportion of incidents occur around stopping areas or vehicles. The risk of assault is a factor in reducing women's mobility, as some women seek to avoid public spaces. In Nairobi Flone Initiative, a women-led organization, works to eradicate violence against girls and women in public spaces, instill behavioral change and advocate for tolerance. The organization has developed an online platform and a hotline for victims to report their attacks. The association has also launched a training program and certification for transport service providers on customer service, gender equality, sexual harassment prevention, and professional and personal development. As of March 2018, 554 public transport operators had received this training nationwide.

In Africa, discrimination between men and women in the labor market is pervasive, both in access to employment and in salary claims, including in the transport sector. Women are therefore poorly represented in companies as well as in the relevant public institutions. This phenomenon is exacerbated by unequal access to education and training. Often unrepresented in decision-making bodies, their own travel needs are overlooked in planning and implementation. As a result, their own travel needs are not considered. In Nairobi, Flone has also initiated a program to develop the skills of women in the transport sector and improve their working environments.

4. The EASI conceptual framework and continent-wide recommendations

There is an urgent need for African policymakers to act and address the environmental, social, and economic challenges posed by urban mobility and accessibility issues. Drawing on the lessons of international expertise, SSATP Working Paper No. 106 proposes a set of policy recommendations, structured around the EASI conceptual framework as presented below.

ENABLE: Establish an efficient and responsible governance system, capable of anticipating needs, guiding action and ensuring integrated management and development of urban transport systems.

P1	Définir, adopter et mettre en œuvre, au niveau de l'administration centrale, une **stratégie nationale des transports urbains** qui permette de développer et de gérer durablement les systèmes de transport urbain.
P2	Veiller à ce que les principales responsabilités en matière de transports publics urbains aux niveaux de la commune et de l'agglomération soient attribuées et exercées.
P3	Mettre en place une **entité chargée de planifier les transports urbains** et de guider et coordonner l'action publique en vue de mettre à disposition des citoyens un système multimodal de transport urbain.
P4	Doter toutes les institutions et toutes les parties prenantes du secteur des transports urbains de **ressources humaines** adéquates.
P5	Accroître **les moyens financiers** alloués aux systèmes de transport urbain et veiller à la disponibilité à long terme de financements pour le secteur.
P6	Créer les conditions préalables à une participation durable de la **société civile** au développement des systèmes de transport urbain.
P7	Associer davantage le **secteur privé** à la fourniture d'infrastructures et de services de transport.

AVOID: Minimize the need for individual motorized travel through adequate land-use and transport planning and management.

E1	Planifier les formes urbaines et l'usage des sols de façon à réduire au minimum le besoin de transport individuel motorisé et à favoriser les modes de transport public et de transport non motorisé.
E2	Déployer les services et les infrastructures de transport de façon à encourager des formes urbaines et une occupation des sols rationnelles.
E3	Renforcer la gestion de l'usage des sols.

SHIFT: Maintain or increase modal shares of public and non-motorized transport modes such as walking and cycling.

R1	Adopter et introduire systématiquement, à tous les niveaux et à toutes les échelles, une approche multimodale du développement et de la gestion des systèmes de transport urbain.
R2	Mettre en place et préserver, dans chaque ville, un réseau piétonnier continu, sûr et accessible par tous à tout moment de la journée, et mettre en place et préserver des pistes cyclables ayant des caractéristiques analogues.
R3	Assurer un système de transport public intégré et hiérarchisé qui soit efficient, fiable et capable de répondre aux besoins de populations en constante évolution et à ceux de l'économie urbaine.
R4	Planifier et mettre en place des systèmes de transport en commun de grande capacité fonctionnant sur des infrastructures dédiées qui peuvent être la clé de voûte du système de transport public urbain.
R5	Améliorer le service assuré par les opérateurs de transport artisanal par leur intégration totale dans le système de transport public, ce qui nécessite de les restructurer, les moderniser et d'en faire la promotion.

IMPROVE: Improve the efficiency and safety of transport modes while minimizing their environmental footprint.

A1	Améliorer la planification, l'exploitation et l'entretien des voies urbaines en prenant en considération les besoins de tous les modes de transport urbain de façon égale, et en maîtrisant l'usage des véhicules individuels motorisés.
A2	Définir et appliquer des règles réalistes et de plus en plus contraignantes régissant la composition du carburant, le rendement énergétique et les émissions de polluants.
A3	Encourager un comportement sans danger et respectueux de l'environnement de tous les acteurs du transport urbain en renforçant le contrôle technique des véhicules et en tenant le public au courant des externalités négatives des transports individuels motorisés.

As noted in SSATP Working Paper No. 106, implementation of these policy principles will require overcoming barriers to change: lack of sound governance; lack of political will; limited organizational capacity at national and municipal levels; lack of a holistic, long-term vision for urban development; lack of data and expertise on urban mobility issues; and the predominance of short-term individual interests over the longer term interests of the general public.

Based on the EASI conceptual framework and the know-how developed in each pilot country, a number of key elements for a more sustainable transport system can be identified:

- Strong leadership to serve a long-term vision.
- An adequate institutional structure and a clear division of responsibilities.
- Rigorous data collection to provide evidence-based mobility planning and governance.
- Urban and transport development integrated into the planning and implementation stages.
- Optimization of human resources and development of know-how for good projects and good management.
- Specific funding mechanisms for investment and operations.
- Private sector development for a stronger local economy.
- A commitment from civil society through the participation of users, residents and citizens.

These elements define the necessary conditions for the implementation of sustainable urban mobility and accessibility policies on which stakeholders should focus.

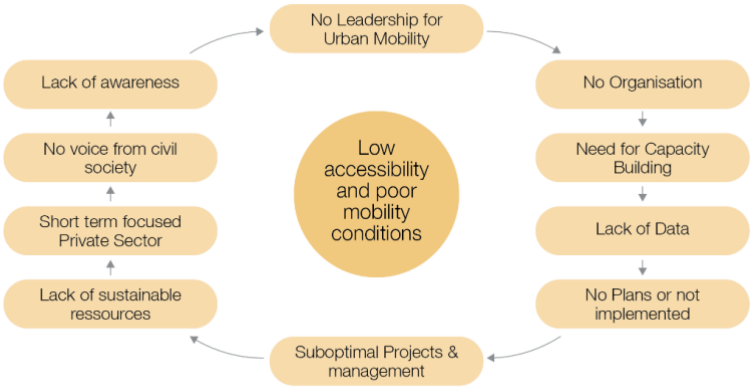
5. Conditions for the implementation of a sustainable urban mobility policy

In the different countries of the world where ambitious mobility policies are implemented, we note that a set of elements must coexist to allow for a real transformation. In the capital cities considered in this study, we have seen that the level of development of these different components is relatively different. Some benefit from a long-term dynamic that has structured the institutional landscape and enabled the mobilization of funding for a coherent urban mobility policy and relevant transport projects. Others have more recently begun to address mobility issues, sometimes taking a different path from the pioneering cities on the continent.

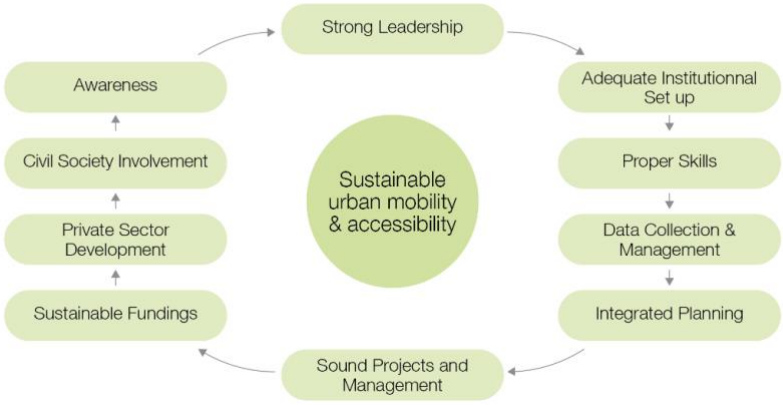
Given the need to see action on the ENABLE pillar in all the countries and cities studied, we note that the approach may be different in each case. Here we have listed ten main elements for effective governance of urban mobility. They are shown in the figure below, highlighting the shortcomings in African cities on the one hand, and the objectives for each component on the other.

Figure 20 - From a pessimistic to an optimistic approach in the cities studied

A pessimistic approach to urban mobility in Africa



An optimistic approach to urban mobility in Africa



As some cities have already initiated a change in certain components, we have chosen to highlight in this last section those experiences that can become real sources of inspiration for other cities on the continent.

In addition, for each of the themes, we recall the recommendations that emerged in the framework of the support provided by SSATP at the national level to the ministries in charge of urban mobility over the 2017/2018 period.

5.1 Strong leadership with a long-term vision

The assertion by political decision-makers of a willingness to transform the urban mobility system has always been the trigger for an ambitious policy. By noting the inefficiency of their city's mobility system and referring to international examples, presidents, ministers or mayors of major cities who have initiated a transformation process have always had a long-term vision.

In assessing the risks and the economic, social and environmental costs of a transport system centered on individual motorized modes, these decision-makers quickly turned to a multimodal urban mobility policy that, by combining the benefits of all modes of transport, makes it possible to shape the city around a sustainable trajectory.

5.1.1 Urban mobility as part of national development policies

Most of the pilot countries have put in place a national strategy for economic emergence. Taken to the highest level of the State, these national strategies have a horizon of 2020 in Rwanda (Vision 2020) and in Ethiopia (Growth and Transformation Plan II), 2030 in Kenya (Kenya Vision 2030), 2035 in Senegal (Plan for an Emerging Senegal), etc. Urban development and transport are generally among the sectors with high ambitions.

Some of these national strategies are directly linked to the commitments made in the December 2015 Paris climate agreement. In this case, the transport ambitions are even greater. For example, Ethiopia aims to limit its net greenhouse gas emissions in its Nationally Determined Contribution (NDC) by accelerating the shift to modern, energy-efficient transport technologies (using clean, renewable energy). The Intended Nationally Determined Contribution (INDC) also emphasizes the transition of urban planning to mixed, compact and polycentric cities, resulting in shorter travel distances to reduce travel-related GHG emissions. The authorities plan to reduce emissions by 255 $MtCO_2e$ or 64% from the business-as-usual emissions in 2030, including 10 $MtCO_2e$ from transport.

5.1.2 The definition of an urban mobility policy

The political vision is reflected in major projects, particularly mass transit projects. This was the case, for example, with the Addis Ababa tramway, the Dakar Regional Express Train and the Abidjan metro, which quickly became symbols of an asserted political will. However, these should only be the tip of the iceberg. The long-term political vision is expressed above all through a coherent strategy that mobilizes all the actors concerned, but also through the establishment of an appropriate institutional framework, the definition of a clear decision-making process and the mobilization of adequate human and financial resources.

In some countries, urban mobility policy has been defined in a document that proposes a strategic vision, ideally based on quantitative objectives and accompanied by a description of implementation methods. In some countries, urban development policies, such as the *National Urban Development Policy (NUDP)* in Nigeria and Kenya, both published in 2015, or the *National Urban Policy Action Plan* in Ghana (2012), aim to provide guidance for improving mobility conditions in urban areas.

Beyond that, a *National Transport Policy* may also be issued to provide national guidance to the transport sector. Nigeria reviewed its National Transport Policy in 2017 to provide general guidance on transport. The policy states that an urban transport policy should be developed (Box 2).

Box 2: National Transport Policy in Nigeria (2017)

The draft National Transport Policy was submitted to the Federal Ministry of Transport in 2017 for approval. It is the revised version of the 2010 draft National Transport Policy. The National Transport Policy aims to establish a framework to guide the sustainable planning and development of an integrated transport system for the social and economic development of Nigeria. The policy addresses the country's need for an integrated, modern and efficient transport system.

The policy also aims to promote the creation and strengthening of key institutions that are essential for the financing, planning, and implementation of an integrated multimodal transport system. Previous urban transport strategies and interventions appeared to be primarily infrastructure-based without clear coordination.

The fundamental objective of the Revised National Transport Policy of 2017 is to "develop an adequate, safe, secure, efficient, affordable, preferred and integrated transport system within the framework of a progressive and competitive market economy. Among the objectives and strategies of the National Transport Policy are the following:

- Assist states, the federal capital, and local governments in developing and promoting urban transport systems and connectivity to rural communities;
- Increase capacity and improve quality and productivity through technology and modernization of transport infrastructure;
- Increase the generation of internal resources and other financing mechanisms, particularly for the financing of transport infrastructure;
- Create and strengthen the institutions and agencies that will set standards, enforce, monitor, and manage the transport system;
- Promote collaboration and cooperation at all levels: intergovernmental, public-private partnership, transport operators and users, and other key stakeholders in the sector;
- Encourage private sector participation in the development, provision, maintenance, operation, and modernization of transport infrastructure and services.

The draft National Transport Policy also includes a chapter on urban transport. At present, the majority of urban populations depend on private cars, taxi cabs, and minibuses, controlled mainly by the private sector, for their transport needs. The policy objectives for addressing urban transport challenges are as follows:

- Develop an efficient, affordable, self-sustaining and reliable multimodal public transport system that meets the needs of the growing population of Nigerian cities;
- Develop a national urban transport policy to standardize and facilitate implementation;
- Improve the infrastructure and institutional framework for the provision of public transport services;
- Develop an affordable, accessible, attractive and efficient public transport and non-motorized transport system.

A National Transport Commission was created in March 2018 to promote the implementation of the National Transport Policy. It will be responsible for regulating the operation of public transport in the states. In addition, the federal government intends to establish a new independent body to advise the government on the implementation of an integrated transport policy, to monitor developments in transport, environment, health, and other sectors, and to track progress toward policy objectives.

While such policies can define a vision and specify a mode of organization to meet established objectives, they are sometimes criticized for (i) focusing on the development of transport infrastructure without taking into account all the components of urban mobility; or (ii) being limited in scope because the modalities of implementation are undefined, or vague.

The Kenyan government, for example, issued an *Integrated National Transport Policy* in 2009 that recognizes the importance of improving public transport and non-motorized transport to reduce air pollution, meet the mobility needs of the poorest, and improve the health of the population at large. However, this has not been translated into practice.

Urban mobility policy is sometimes defined at capital-city level. Examples include the Transport Policy of Addis Ababa (2011) and the Dakar Urban Transport Mobility Letter (1996, 2015). In Dakar, it should be noted that the first letter had a major impact on the organization of the sector, while the second has not yet fully borne fruit (see Box 3).

Box 3: The two urban transport letters of Dakar

The main texts governing the urban transport sector in Senegal are the result of a process that began in the early 1990s. The crisis in the urban transport sector, linked to shortcomings in the governance system and the uncontrolled urban development in Dakar, prompted the Senegalese authorities to organize a seminar under the SSATP program.

The discussions at this seminar and those pursued by the Monitoring Committee led, in 1996, to the formalization of an Urban Transport Sector Policy Letter laying the foundations for a reform designed to "reform the urban transport sector in Senegal with a view to improve its efficiency in a sustainable manner". The letter focused on the institutional and legal framework, the financial framework, the restructuring of public transport (*Cars Rapides*, SOTRAC and PTB) and the development of human resources.

This text, co-signed by the Minister of Public Works and Land Transport and the Minister of the Economy, Finance and Planning, was followed shortly thereafter by a law establishing CETUD in 1997, which stabilized the institutional and legal framework by grouping together the competencies and coordination of sectoral policy under the umbrella of a single institution for the Dakar region. A decree was issued in 2001 to refine the power, structure and function of CETUD.

An update of the 1996 Urban Transport Sector Policy Letter was published in 2015: the Dakar Urban Transport Policy Letter (LPDUD). It is the framework document for urban transport policy in the Dakar region for the 2015-2020 period. It is based on the standards defined in the PDUD and is divided into 5 strategic pillars:

- Integrated land use and transport planning for sustainable mobility;
- The construction of an integrated public transport network, with priority over the automobile, combining modern and paratransit sectors and promoting active modes (walking, cycling, etc.) and the development of a sustainable fare policy;
- The development of the road network and the improvement of traffic and parking management in order to reduce congestion, accident risk and air pollution;
- The establishment of a simple and effective institutional framework;
- Securing, increasing, diversifying and sustaining funding for mobility.

Finally, the vision for urban mobility might not be written in a specific document but it may exist in practice. Some cities rely primarily on their planning documents to determine a shared policy vision. In Kigali (Rwanda) and Abidjan (Côte d'Ivoire), national and local authorities recognize the strategic dimension of the urban development plan and its mobility component. In Kigali, actions are being taken to promote non-motorized transport to the general public.

For example, in three pilot countries (Ethiopia, Nigeria and Ghana), it was recommended that a national urban mobility policy be drafted at the national level, or that an existing document be updated and made as operational as possible.

Due to the size difference between Addis Ababa and the regional capitals, and the relatively recent phenomenon of rapid growth in secondary cities, Ethiopia has not yet developed a national urban mobility policy. The National Urban Mobility Forum has identified the need to make this a priority.

A national urban mobility policy, in the case of secondary cities, will allow the federal government to guide regional and local authorities without being intrusive (with regional and local authorities remaining responsible for political decisions related to the implementation of the policy). It would thus act as a policy framework specifying the strategic axes to be developed according to the specific contexts of the regional and federal cities. It was recommended that detailed and quantified objectives be included to allow monitoring of implementation. The setting of shared quantitative objectives also encourages cooperation between the various institutions, departments, and agencies to work together on concrete actions.

Country	N°	Recommandations
Senegal	SN_S4	Adopt a national strategy for motorized two-wheelers
Ethiopia	ET_E1a	Prepare and adopt a national urban mobility policy with quantitative targets
	ET_A3b	Address the issue of the most vulnerable (disabled, elderly, youth, etc.)
	ET_A3a	Assess the specific mobility needs of low-income urban households to inform the design of sustainable urban mobility plans
Ghana	GH_E1	Update the 2008 National Transport Policy and establish a comprehensive national urban mobility strategy
Nigeria	NI_E2	Establish a clear federal policy framework and action plan (including legislative, resource, and implementation guidance and technical support) to assist state governments in establishing urban transport authorities
	NI_A2	Address the needs of low-income households in mobility planning

Table 7: Recommendations from the National Urban Mobility Forums to strengthen leadership.

5.2 An adequate institutional framework and a clear distribution of competences

In order to implement a strategy to transform urban mobility in African cities, it is essential at the national level to put in place a clear and appropriate organization. This includes the distribution of responsibilities at the ministerial level; the existence of a framework law on urban mobility; a fair distribution of competences between national organizations and local authorities; and sometimes the creation of institutions dedicated to the metropolitan governance of urban mobility.

5.2.1 Responsibilities at the departmental level

In the eight pilot countries studied, we found that the ministry in charge of urban mobility could have very different responsibilities. In most countries, the ministry responsible for urban mobility is the ministry responsible for transport, except in Ghana, where the ministry responsible for urban mobility is the ministry responsible for local government (Table 8). This is because urban mobility is one of the decentralized responsibilities of the municipalities. However, local authorities do not act on a metropolitan scale and there is a serious lack of mobility policy.

Country	Energy	Water	Air transport	Maritime and river transport	Rail	Roads / infrastru-cture	Public transport	Urban mobility	Local authorities	Rural development	Urban development
Senegal					■	■	■	■			
Côte d'Ivoire						■	■	■			
Guinea						■	■	■			
Ghana								■	■	■	
Nigeria						■	■	■			
Rwanda	■	■	■	■	■	■	■	■			
Kenya						■	■	■			
Ethiopia						■	■	■			

Table 8 - Competences of the ministries in charge of urban mobility

In Rwanda, the Ministry of Infrastructure (MININFRA) is responsible for urban mobility. It is responsible for all modes of transport (including air and lake transport), but beyond that it is also in charge of energy and water. This "super-ministry" provides an overall view of all urban, inter-urban and rural infrastructure. In the other countries, it is the ministries of transport that are responsible for urban mobility. These ministries are generally in charge of road and rail transport infrastructure and services (Senegal, Côte d'Ivoire, Kenya, Ethiopia). In Guinea and Nigeria, rail transport is the responsibility of another ministry.

The effectiveness of public policy on mobility does not depend solely on the list of responsibilities assigned to the ministry. However, it often determines the political and budgetary weight of the ministry in the government, including the place given to urban mobility issues at the highest level of government. In addition, the distribution of ministerial functions can be a source of dysfunction. In Nigeria, for example, roles are not clearly defined between the Ministry of Transport and the Ministry of Energy, Public Works and Housing. There is overlapping responsibility, duplication, and lack of coherence between road projects and urban transport policy.

5.2.2The existence of legislation and transport policy

In the eight countries studied, the legislative context of urban mobility presents very different levels of maturity. In some countries, a law governing the transport sector defines the responsibilities of the actors in the sector. For example, Senegal, in 2003, and Côte d'Ivoire, in 2014, introduced a transport "organization law" that fully integrates urban mobility. On the same model, Guinea adopted a Law on the Organization of Internal Transport and Transport Intermediaries (LOTRIT) in 2018. In other cases, urban mobility is governed by decentralization laws (Ghana, Kenya, Ethiopia, Nigeria, Rwanda).

In general, most countries are seeking to adapt the legal framework for urban mobility. Three contexts can be distinguished according to the level of maturity of the national legislative frameworks as well as the dynamism in the structuring of the sector:

- Some countries, such as Senegal and Kenya (and Nigeria in the case of Lagos), have already established legal frameworks and policies for urban mobility. Governments are (or should be) now in the process of reform to enable them to enter a new phase of urban mobility policy development.
- In Rwanda, Ethiopia and Côte d'Ivoire, numerous initiatives have created a momentum for structuring the sector, which now calls for a strengthening of the legislative framework and the definition of national urban mobility policies.

- Finally, in Guinea, Ghana, and Nigeria (with the exception of Lagos), the legal framework does not seem to be a sufficiently strong basis for governments to initiate a transformation of urban mobility.

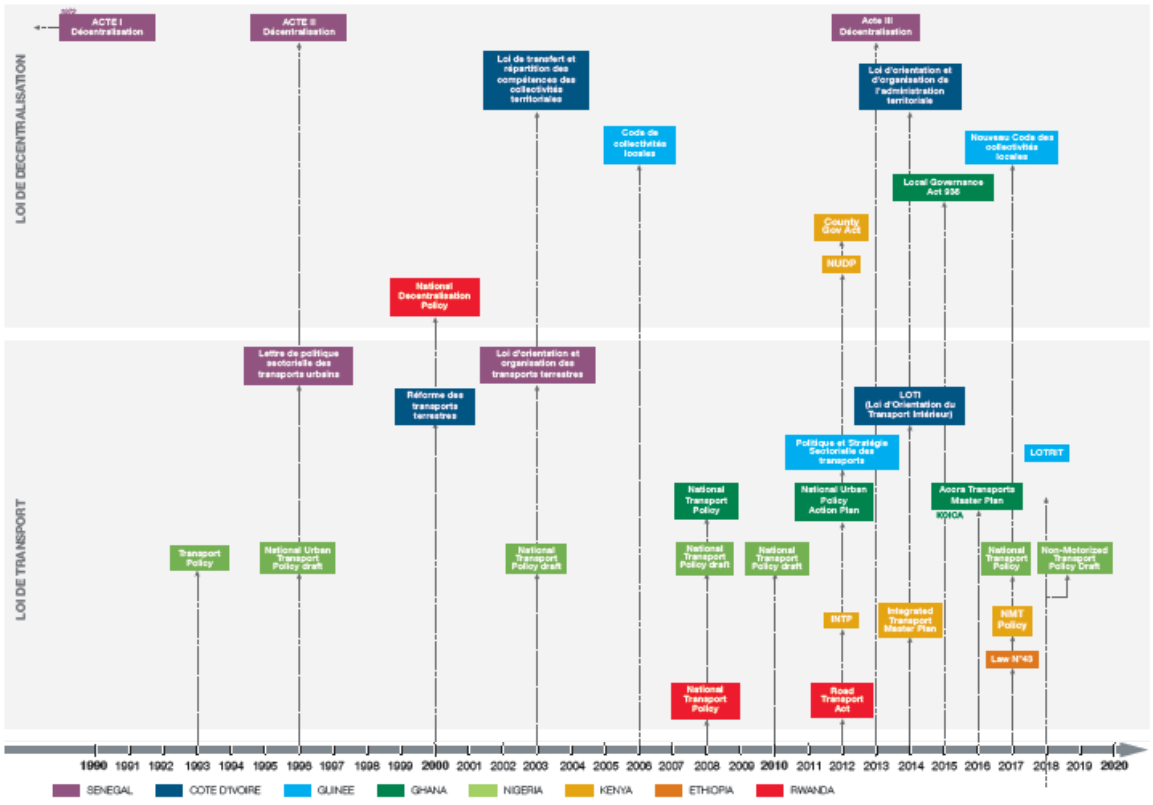


Figure 21 - Timeline of urban mobility policy and legislative developments in the study countries (1990 - 2020)

5.2.3 Distribution of competences between national and local organizations

The division of powers between the national and local levels is a recurrent issue. In fact, countries with a centralized government structure struggle to provide local authorities with the legal and financial means to fully pilot an urban mobility policy. In federal countries (Ethiopia, Nigeria), beyond the capital cities, local authorities (particularly in secondary cities) are relatively powerless to take charge of a local policy. Three situations have been observed:

- While urban mobility is managed by an institution (local authority or specialized agency), an ambitious project, supported by the State, disrupts the established operating mode. This situation has been observed in particular for rail projects in Addis Ababa or Dakar, but also for BRT projects in Accra or Nairobi. In these cases, by creating an institution dedicated to the ownership and operation of a mass transit system, the government is creating institutional complexity that can impede the success of the project, and of the urban mobility strategy as a whole. The creation of an ad-hoc governance mode for a specific project may be counterproductive.
- In addition to this project-specific situation, there are also situations in which the powers of local authorities are claimed by national agencies that are much better endowed with financial resources (due in particular to donor support). While this overlapping of responsibilities between national agencies and local authorities is generally accepted in secondary cities where the capacities of the services are rather weak, it can lead to inefficient public action in large cities, or even to its annihilation. This situation, in a context of decentralization, is generally based on the institutional fragmentation of metropolitan territories. When the capital is divided into a large number of municipalities, the State justifies its intervention by the inaction of the municipalities. This situation has been observed in Dakar, Conakry and Accra, where political rivalries can also play a role in the creation of national agencies claiming metropolitan functions.

- Finally, in some circumstances, certain powers are hardly exercised at all. In the context of decentralization, road and traffic management is naturally a municipal responsibility. However, because of limited financial resources, they are unable to plan and organize mobility in their areas.

5.2.4 The establishment of metropolitan transport or mobility authorities

In order to respond as effectively as possible to the challenges of urban mobility, institutions have sometimes been set up to carry the ambitions of political decision-makers and to accelerate coordination with other actors. These institutions are metropolitan in scope, and their primary purpose is to plan and organize public transport. They are then called Transport Organizing Authorities (TOA). However, their role may extend to other areas such as traffic management, parking or active mode policy. They are then called Mobility Organizing Authorities (AOM) (Figure 22).

Figure 22 - The scope of competence of the Organizing Authorities

The Dakar Executive Urban Transport Council (CETUD), created in 1997, and the Lagos Metropolitan Area Transport Authority (LAMATA), created in 2002, are among the African benchmarks in urban mobility governance. The impact of these institutions can be measured over the long term. For many years CETUD's role has been primarily one of public transport regulation and mobility planning, while LAMATA was, from the outset, given extensive authority over the main corridors where BRT lines were to be built (see Box 4 and Box 5).

Box 4 : Lagos Metropolitan Area Transport Authority (LAMATA)

Lagos Metropolitan Area Transport Authority (LAMATA) in Lagos, Nigeria, is a semi-autonomous agency of the Lagos State Government. It was established in January 2002 as part of the Lagos Urban Transport Project (LUTP) with technical and financial support from the World Bank, after a long process that began in the 1990s. Its very broad mission covers all modes of urban transport systems, including public transport and road networks:

- Planning, development, coordination of transport policies in Lagos ;
- Construction and maintenance of main roads and road junctions;
- Collection of taxes paid by road users that are allocated to finance the transport budget.

For the infrastructure works under its responsibility, LAMATA uses different forms of contracts with operating companies: for the Lagos BRT, inaugurated in March 2008, the BRT Cooperative, which is part of the powerful transport union, is the operator; for the metro's red line, designed to carry more than a million passengers a day, a concessionaire finances the construction and operation; for the metro's blue line, the State finances the infrastructure, and the concessionaire finances the rolling stock and operations.

Box 5: CETUD, Dakar's urban transport organizing authority

The restructuring of public transport provision in Dakar has been achieved through the revision of an institutional framework that was previously marked by the dispersion of powers and responsibilities among several institutions. In 1997 the creation, by legislation, of the **Dakar Executive Urban Transport Council (CETUD)** was an important step in the establishment of sustainable planning, monitoring, coordination and financing mechanisms for urban transport in Senegal. CETUD, a professional public institution, has the role of planning, regulating and supervising the transport system in the Dakar metropolitan area. At the dawn of Act 2 of the decentralization policy, which took place in 1996 and was marked by the adoption of a new code (Act 1996-06) and the transfer of powers to the said authorities (Act 1996-07), CETUD was conceived as a framework for tripartite partnership between the State, local authorities and the private sector. It is placed directly under the authority of the Ministry of Land Transport and Opening-up (MITTD).

The responsibilities related to this law are specified by Decree No. 2001.557 of July 19, 2001 and relate to:

- Determination of the routes to be served, the corresponding public transport authorization quotas and their technical operating procedures;
- The drafting of specifications, terms of reference and tender documents, the signing of agreements with approved carriers and the monitoring of the execution of contracts;
- The proposal of tariff policies to the competent authorities;
- The identification of public service constraints and the determination of possible financial compensations;
- The development of criteria for access to the profession of the public transportation of persons;
- Studies and training, information or promotion of urban public transport in the Dakar region;
- Coordination between different modes of public transport, including revenue-sharing arbitration in the case of fare integration;
- Development and support for the implementation of action and investment programs to improve the level of service of infrastructure, traffic and road safety;
- Improving the condition and quality of the vehicle fleet to contribute to the fight against noise and air pollution generated by motorized transport.

CETUD, which currently has about 40 employees, has become a key player in all projects related to urban mobility. It is the project manager for the BRT and is involved in the TER steering committee.

These two ad-hoc institutions, supported from the outset by the World Bank, should not be considered as a single model. Copying and pasting can also be problematic. In Nairobi, the government-created transport authority, Nairobi Metropolitan Transport Authority (NAMATA), has taken over the jurisdiction of local authorities. The legitimacy of this new institution has been weakened by the opposition of the Nairobi City Council. In Côte d'Ivoire, the urban transport agency, AGETU, created in 2000 by the Ministry of Transport was also challenged by local elected officials. This defiance has never allowed it to play its role as the organizing authority for transport in Abidjan.

Two other lesser-known examples should be cited here to show the diversity of models. In Addis Ababa, the municipality has been able to concentrate mobility-related competencies in a single department, the Addis Ababa Road and Transport Bureau (AARTB), which has four departments in charge of road construction, transport, traffic management, and driving permits and licenses. (see Box 6).

Box 6: Addis Ababa Urban Transport Authority and financing mechanism for urban mobility in Addis Ababa

In Addis Ababa, since 2014 (Law No. 43 November 13/2014), the municipality has placed all the powers of an urban mobility authority in the Addis Ababa Roads and Transportation Bureau (AARTB). The AARTB is a separate municipal department under the authority of the mayor of Addis Ababa and is managed by a director with a current annual budget of approximately ETB 8 billion (about USD 290 million). The AARTB is organized into four separate departments:

- The Addis Ababa City Roads Authority (AACRA), in charge of the maintenance and extension of the road network (currently managing ETB 6.5 billion per year, the largest budget of the AACRA, but also of the municipality itself);
- The Addis Ababa Transport Authority (TA), which organizes the public transport sector in Addis Ababa, regulates all public transport routes and fares and provides facilities for freight vehicles;
- The Traffic Management Agency (TMA), responsible for reducing congestion and emission levels and improving road safety in Addis Ababa ;
- The Driving Vehicle and Licensing Authority (DVLA), which regulates and registers all driving licenses in Addis Ababa, including freight and public transport drivers.

On December 6, 2017, the AARTB announced the creation of the Transport Fund Office (TFO) to which all transport fines and penalties, road-user levies, and bus shelter advertising revenues will go, representing an annual budget of ETB 1.2 billion to ETB 1.6 billion (approximately between USD 43.5 million and USD 58 million). The fund is intended to finance the urban mobility sector.

In Kigali, the political will has not been expressed through the establishment of an institution dedicated to mobility management. Instead, it is expressed primarily through coordination between the various actors: the Rwanda Utilities Regulatory Agency (RURA), the City of Kigali, which primarily has a planning role, the Rwanda Transport Development Agency (RTDA) and the Ministry of Infrastructure (MININFRA). The political vision and the transport master plan provide a common perspective to these different actors who are working in a concerted manner to develop the public transport network, build new bus stations and put in place infrastructure for active modes. It should also be noted that for several years, the city of Kigali has been promoting active modes like nowhere else in Sub-Saharan Africa by organizing a monthly car-free half-day on the city's main arteries.

City	Lead Agency	Strategic planning	Transport Policy planning	Fare Setting	Planning		Common Facilities (terminal, bus stops, depots)	Public Transport operations	Infrastructure construction and Maintenance	Driver Licensing / Vehicle Registration	Traffic Managament and Enforement	Parking	Walking and Cycling
					Infrastructure Planning	Service planning							
Dakar	CETUD			Advice to Ministry			Conflict with municipalities		Except TER				
Lagos	LAMATA												
Addis Ababa	Addis Ababa Transport Authority												
Kigali	City of Kigali			RURA				RURA	RTDA				

Figure 23 - Responsibilities of different metropolitan transport authorities in different countries

In conclusion, as shown in the table above, different models of mobility or transport authorities exist in the different capitals studied. The sharing of responsibilities may be different, depending in particular on the degree of decentralization. Other capitals besides those mentioned in this table are seeking to create an institution responsible for urban transport. In Abidjan, the Organizing Authority for Urban Mobility in Greater Abidjan (AMUGA) was recently created and should help coordinate the many projects under way in the city. In contrast, when it comes to urban mobility, very few of the secondary cities surveyed are subject to such attention from the State or local authorities.

Also, as mentioned in Table 9, it has been regularly recommended to establish metropolitan governance of urban mobility in several capitals, but also – and above all – to promote this institutional structuring in secondary cities, by relying as much as possible on local authorities.

Country	N°	Recommendation
Guinea	GU_E1	Clarify the role of the ministries involved in the field of urban mobility while promoting coordination between these institutions and specifying the human, material and financial resources required
	GU_E2	Establish an Urban Transport Organizing Authority (AOTU) in Conakry under the Ministry of Transport
Côte d'Ivoire	CI_E1	Ensure that all competencies related to urban mobility are exercised at the Greater Abidjan level, by creating an Urban Mobility Organizing Authority
	CI_E2	Provide the municipalities, in the interior cities, with the legal, human and financial means to ensure the exercise of competencies related to urban mobility on a metropolitan scale
Senegal	SN_E1	Strengthen the role of CETUD and provide it with the necessary means to accomplish its missions as the Mobility Organizing Authority in Dakar
	SN_E2	Strengthen metropolitan communities in regional capitals to address transport issues and improve mobility
	SN_E3	Define and assign competencies related to roads, traffic and parking to the mobility organizing authority on mass transit corridors and to the municipalities on other roads
Kenya	KN_E2	Support the establishment of metropolitan transport authorities
	KN_E4	Strengthen the role of the Transport Licensing Appeal Board
Ethiopia	ET_E4	Assist the States of the region in reforms to clarify the institutional framework for urban mobility
Rwanda	RW_E1	Adopt legislation on passenger transport
	RW_E2	Avoid inappropriate consolidation of authority and functions with specific reference to regulations and contracts
	RW_S3	Establish the appropriate role of the motorcycle cab in the multimodal system and regulate accordingly
Ghana	GH_E2	Prepare and adopt national legislation on land transport
	GH_E3	Reaffirm GAPTE's mandate as a metropolitan mobility agency
Nigeria	NI_E1	Mandate the Department of Road Transport and Transit Administration (DRT and MTA) of the Federal Ministry of Transport to lead and coordinate integrated urban transport planning, including policy development, urban transit strategy development, and urban transport institutional strengthening
	NI_E8	Expand policies to allow major state agencies and paratransit operators to come together and cooperate to mitigate and control traffic problems

Table 9 - Recommendations from the National Urban Mobility Forums for a clear distribution of competences

5.3 Data collection: basing knowledge on data

African cities finally have some quantitative decision-making tools. Data is generally generated from infrastructure projects and offers a fragmented view of urban mobility.

5.3.1 Data collection is still insufficient

In the eight main cities, surveys are carried out on an ad hoc basis, depending on the needs of infrastructure projects or planning processes: household travel surveys (HTS), user surveys, road or public transport counting campaigns, etc.

Only public transport data is collected regularly in all countries, often by institutional operators, so this data does not cover the entire public transport network.

Road traffic counts are frequent, but limited to project-related needs, without monitoring changes in demand. Non-motorized modes are rarely surveyed. Accident data is collected regularly in most countries, but is rarely available in digital format. Analysis is therefore relatively limited.

Moreover, data is not systematically shared among the various urban mobility actors within a country, and even more rarely with the public or universities. Their formats can also be difficult to use (in the form of summary reports). Thus, the data collected could be better used to represent urban mobility issues, monitor the implementation of planning strategies and continuously improve mobility conditions.

Table 10 - Availability of urban mobility data in the main cities of the eight pilot countries

	Mobility needs	Public transport	Traffic	Parking	NMT	Model	Externalités		
	Modal split, origin-destination, trip purpose, etc.	*Operational data (route itineeraries and stops, level of service, etc.)*	*Traffic counts and surveys*	*Rotation and occupation data*	*Pedestrian / bicycle counts and user satisfaction*	*Multimodal model (traffic and public transport)*	*Road Safety*	*Air quality*	*Gender issues*
Dakar, Senegal	2000 and 2015	●	●				●	●	●
Abidjan, Cote d'Ivoire	2014	●	●	●		●	●		
Conakry, Guinee	2004	●	●						●
Accra, Ghana	2007 and 2012	●	●						
Lagos, Nigeria	2016	●			●	●	●	●	
Nairobi, Kenya	2013	●	●	●	●		●	●	●
Addis-Ababa, Ethiopia	2014	●	●				●		
Kigali, Rwanda		●	●				●	●	

Legend
- No data available
- One-time data collection
- Regular updates
- Regular updates and public availability

The survey and data collection process is relatively recent in Sub-Saharan Africa and, to date, does not allow for monitoring changes in travel practices. Among the eight pilot countries, Dakar is a pioneer with its household survey conducted in 2000 and updated in 2014 (Box 7). Only Accra and Dakar have updated household surveys that allow for the evaluation of long-term behavioral changes in urban areas.

Box 7 - The Dakar Household Travel Survey

In 2014, with a vision to update the Dakar urban mobility plan , CETUD commissioned a large-scale survey of the Dakar region to qualify and quantify the travel practices of Dakar residents: the Survey on Mobility, Transport and Access to Services in Greater Dakar (EMTASUD).

This comprehensive survey, with a total budget of 250 million CFA francs, made it possible to quantify and qualify the characteristics of the population, their access to basic services and transport, their daily mobility (motive, temporal, spatial and modal distribution of trips) and household spend on transport. The survey covered a sample of 13,415 people aged 11 years and older throughout the Dakar Region, or 3,176 households. The detailed questionnaires (for each household and person) were supplemented by qualitative interviews to identify users' assessments of their access to facilities, their daily mobility needs, mobility expenditure in their budget, their perceptions of transport modes, and their restrictions and obstacles to mobility.

EMTASUD echoes the first household mobility survey conducted in 2000 in Dakar and makes it possible to assess changes in demand (according to income, gender, place of residence, etc.) and mobility practices within the urban area. In the longer term, it is part of the process of creating a mobility observatory. The data collected on accessibility to basic facilities and on household equity is also used to assess and quantify the precise impact of planned transport projects on the mobility and accessibility of Dakar residents.

In terms of traffic management, we can cite the efforts made by Ouagadougou (see Box 8). The analysis made possible by regular counting campaigns has helped to strengthen the skills of municipal services and optimize infrastructure spending in the center of the city.

Box 8 - Traffic management in Ouagadougou

In the context of the Ouagadougou Mobility Support Project (PAMO), the Ouagadougou City Council took steps to improve traffic conditions and improve access to the city center. The first step in this process was the development of a simplified traffic plan, capable of predicting the city's future traffic plan, and designed to allow for the most urgent improvements to be implemented in the short term. The Traffic Improvement Scheme was designed in several phases:

- Brief pre-diagnosis of current traffic and access conditions in the downtown area, including a major component of road traffic surveys (section and intersection counts);
- Definition of the strategic and technical guidelines for optimizing access conditions to the city center, , while simultaneously taking into account objectives such as traffic flow, user safety, quality of public spaces, etc. ;
- Identification of the main measures to be taken in the short term (2015) to improve access to the city center, as a precursor to the development and implementation of a more in-depth traffic plan. The improvements proposed as a result of this work were based primarily on optimizing the operation of the existing road infrastructure (excluding some heavy-duty solutions).

In 2014, as part of the same program, the City Council undertook a second counting campaign, using the same protocol, but this time piloted directly by the municipal services and staff trained in 2011. The objective of this second phase was to:

- Feed the "Urban Transport Observatory" currently being set up, in order to acquire a better knowledge of travel practices and ensure regular monitoring. This observatory will eventually become a decision-making tool for road infrastructure management and investment planning;
- Asses the impact of the measures taken to date on road traffic, and refine the avenues for optimization, particularly in terms of regulating junctions with strategic traffic lights.

The whole process has allowed, first, the capitalization of data and the strengthening of the capacity of municipal services. In addition, it has enabled the local authority to provide technical arguments to avoid road investments in the city center recommended by certain partners. The two counting campaigns showed that if the traffic on the main roads increased, it was shifting to the ring roads rather than going into the city center. Priority actions to be undertaken were identified to optimize the infrastructure (regulation of traffic light intersections, specific developments at intersections, etc.) and inform the implementation of the overall traffic management strategy, which went under study in 2018.

Figure 24 - Evolution of daily traffic in downtown Ouagadougou between 2011 and 2014[33]

It should also be noted that comparisons are difficult, as the surveys do not follow standardized methodologies. In Abidjan, Addis Ababa, Dakar, Lagos and Nairobi, household surveys based on interviews with a representative sample of households in the city were conducted to determine their mobility practices: socioeconomic characteristics of households, motives, modes, time and space distribution of trips, weight of trips on the household budget, etc. In Conakry, the household survey dating from 2003 was not updated for the 2018 urban mobility plan, but a city-center-wide origin-destination survey was conducted to measure changes in behavior. In Accra, the 2012 transport survey only covered only home-to-work trips, making the approach unrepresentative of complex and multi-purpose travel chains and incomparable with data from other countries. Despite their similarities in approach, the choice of sampling in household surveys differs from country to country. For example, the population aged 5 years and over is considered in Nairobi, 6 years and over in Abidjan, and 11 years and over in Dakar (given that more than 20% of the population is under 11 years old in Dakar), which has a direct impact on the survey results (average number of trips per person per day, number of trips in a day, etc.)

Finally, the data gap is particularly large in secondary cities. Urban mobility issues are rarely assessed qualitatively. Most of the time, local decision-makers can only make decisions about urban mobility based on the perception of the terrain and local expertise.

Among the recommendations made for the eight pilot countries, the need to establish data collection systems to better understand mobility and its consequences in the country, and to guide public action, was often mentioned.

5.3.2 The definition of SMART objectives and indicators

The objective for African cities is simply to set up SMART objectives and indicators in the field of urban mobility to intelligently guide public action. Thus, data collection must be carried out in order to set up indicators that can inform objectives with the following characteristics:

- Specific: supported by an institution and simple to understand for all actors so that the associated objective is legitimate in the eyes of all;

[33] City of Ouagadougou. (2014).

- Measurable: data collection must allow for the evaluation of public action and the definition of objectives based on acceptance thresholds, targets to be achieved, etc.
- Attainable: the objectives must have the support of the actors in the sector. They must be action-oriented, and represent a source of motivation by being both ambitious and achievable.
- Relevant: goals must be realistic so that they are not abandoned as the goal progresses;
- Time-based: it is essential to have a deadline with possible intermediate dates.

Figure 25 - The principles of SMART indicators

5.3.3 The Smart Cities perspective

Digital tools can allow for an in-depth rethinking of the tools used to define and evaluate public policies. In the era of Big Data, a lot of data can be collected in real time at a lower cost. Whether it is for traffic using cameras or for public transport with vehicle geolocation, it is quite possible to have data to optimize the action of the authority in charge of mobility. However, given the profusion of data that can be generated, it is essential to think carefully about how to use it.

In the field of public transport, data collection campaigns have been carried out in recent years to map paratransit service networks with the aim of optimizing operations and improving the passenger experience (see Box 9). This type of campaign, initiated for analysis purposes, is beginning to be implemented at the initiative of transport authorities or start-ups that see real market potential through passenger information and and service modernization.

In some countries, modern ticketing systems have emerged. On public initiative in Kigali, a *smartcard* is used for more than two-thirds of the trips made on the urban transport network. In Dakar, small-scale operators have equipped themselves with an electronic ticketing system that also serves as an aid to the management of their business. In addition, some start-ups have developed, in Dakar for example, passenger information systems. There is certainly great potential for the development of these solutions, which should be piloted by the authorities in charge of urban mobility.

In the field of traffic, few African cities are currently referenced by global digital players. However, real-time traffic data is available on the main arteries of major cities (Google Traffic); and the streets of some cities (Accra, Lagos, Dakar, Nairobi) have been filmed in their quasi-totality to feed Google Street View.

Box 9 - Leveraging digital technologies to map paratransit: The examples of Digital Matatu and Accra Mobility

Developing countries face a common challenge in optimizing the organization of their transport systems: they lack accurate, spatially based information on existing transport networks. Without a clear picture of the existing networks, it is difficult for local authorities to improve transport services and for users to move around their cities efficiently. Innovative approaches to addressing this problem have recently been implemented in Nairobi, Kenya and Accra, Ghana, using digital technologies.

In both cities, surveyors equipped with GPS-enabled *smartphones* were dispatched to paratransit routes to collect various types of data on transport services. The use of *smartphones* made data collection relatively inexpensive and more convenient to implement than paper surveys (by simplifying transmission and limiting the need for manual data entry and processing). This data was used to produce the first maps of the public transport network to be distributed in these two cities. In addition, the standardized GTFS databases

describing the transport services were compiled to allow developers to use the data for web or *smartphone* applications (e.g., for route calculation).

The *Digital Matatu* project in Nairobi led the way for this type of initiative in Africa, using a *bottom-up* approach based on consultation with users and operators, as well as strong involvement of academic partners. Conversely, *Accra Mobility* was implemented directly by the municipality (with the support of external partners) to produce data to assist the Department of Transport in the exercise of its competencies in the planning and regulation of transport services. Several African cities are currently involved in similar projects (e.g., *Transport for Cairo* in Egypt), and an international coalition of actors is emerging to share tools, methods, and data on a common platform (http://digitaltransport4africa.org).

5.3.4 The need to structure data collection and resulting analysis

First of all, at the national, regional or even continental level, there is a need to standardize certain data collections in order to facilitate comparisons over time and between cities. *Benchmarking* between African cities is very difficult because of the lack of standardization of data collection protocols.

Moreover, cities should be able to initiate a reflection on the ownership and access to the data collected. While some cities in the world are increasingly turning to *opendata*, African cities could see it as a way to boost the contribution of academic actors through their research, or of the private sector, which can develop solutions based on the data collected. It should be possible for transport organizing authorities and ministries to conduct this reflection in order to define a modus operandi

Finally, data collection should be part of a public policy evaluation process. In Rwanda, for example, it has been noted that many actions have been taken in recent years to improve the mobility conditions of the population. However, the measures taken have not been accompanied by posteriori analyses. These should be a means of confirming progress and defining new perspectives. In order to boost local expertise, they can be carried out by the academic sector.

Country	N°	Recommendation
Guinea	GU_I4	Launch a program to collect accident data after finalizing the National Road Safety Plan and the creation of a National Road Safety Agency
Kenya	KN_S3	Improve the use of ICT in urban mobility
Ethiopia	ET_I2a	Measure pollution locally
	ET_I1	Improve the efficiency and organization of public transport with new and adapted technological solutions
Rwanda	RW_S2	Leverage existing investment in information and communication technologies for urban mobility to further improve planning and management processes
	RW_I4	Evaluate the impact of various initiatives undertaken to date
Ghana	GH_I4	Set up a public digital portal to centralize transport information
Nigeria	NI_S1	Strengthen the revenue mobilization mechanism through digitization and electronic payments to optimize revenues from road fees and levies

Table 11 - Recommendations from the the National Urban Mobility Forums to base knowledge on data

5.4 Human resources: improving skills at all levels

The implementation of urban mobility policies relies, above all, on competent and well-trained people, mobilized in their field of expertise. Professionals in the sector do not always have the appropriate academic background for a sector of activity that is by nature complex. It is therefore essential to provide both the vectors for enriching their knowledge in order to improve their practices from a technical and organizational point of view and to offer more appropriate university training. In several countries, this dynamic has been initiated through continuing education and initial training projects.

5.4.1 Continuing education for government and corporate executives

In government departments, most of the people working in the transport sector are trained as engineers, mostly in civil engineering. This type of training in Africa does not generally address the complexity of mobility issues, but rather the infrastructure component of transport issues. However, planning and organizing mobility at the scale of a city requires a good level of knowledge on technical issues, of course, but also on economics and management, law, urban planning, and so on.

Many training courses exist to enable these decision-makers to strengthen their skills. On the one hand, development partners (World Bank, AFD, GIZ, SECO, etc.) regularly provide training for African executives in charge of urban mobility. These one- or two-week courses help to increase the knowledge of technical managers and policymakers.

However, it is necessary to develop this type of training on a national scale in order to provide secondary cities with competent technicians. Some cities with several hundred-housand inhabitants may not have a single person in their department dedicated to transport and mobility issues (see Box 10). In Kenya, for example, the decentralization policy raises the question of the effective transfer of responsibility for urban mobility planning and regulation to the local *county* level.

Box 10 – Mobility advisors: A project in Belgium to strengthen institutional capacity in urban mobility planning and management

In the late 1990s, after a significant increase in car ownership, most Belgian cities experienced increasing congestion, deteriorating public transport provision and a degradation of the urban environment. Regional and municipal authorities had difficulty in dealing with these problems because of a lack of expertise at all levels of government.

Wallonia, one of the three regions that make up the Kingdom of Belgium, was the first to set up a training program for mobility advisors in public administrations in 1998. The basic training covers the main technical areas related to mobility planning and management. The role of the advisor in public administrations is to act as a bridge between the different stakeholders (politicians, technical departments, interest groups, users, operators, etc.). This program is part of the "Mobility Charter", in which all stakeholders commit to a municipal or inter-municipal master plan for public and non-motorized transport, focused on improving the quality of life and the environment. Among the conditions that must be met for the region to fund communal mobility projects (investments in roads or public transport networks) is not only the adoption of a mobility plan, but also the training and appointment of at least one mobility advisor in the local administration.

Since 1998, more than 1,000 mobility advisors have been trained and appointed in Wallonia, plus 300 advisors in the Brussels-Capital region. This network forms a community of practice. It is reinforced by periodic publications, in-depth training, workshops, an annual conference, and regular technical visits.

5.4.2 Training for the professionalization of the paratransit

Beyond the capacity of institutions, an entire ecosystem must be built around competent people at all levels of involvement. It is therefore important to be able to think broadly about human resource issues from the point of view of both the managers of a transport authority and the bus or minibus drivers, who also need training

to improve the quality of their work For example, with a view to transforming the paratransit sector, driving and business management training can be offered to minibus owners (see Box 11).

Box 11 - Capacity Building: The example of paratransit in Cape Town, South Africa

The City of Cape Town implemented the first phase of its *MyCiTi Integrated Rapid Transit System* project between 2007 and 2015. One of the key lessons learned from this first phase of planning and implementation was the integration of paratransit companies into BRT operations. Owners and operators were insufficiently prepared for the radical change from operating a small-scale minibus business to collaboratively managing bus operations on an expensive 12-year contract. To its credit, the city mobilized funding to provide the owners with legal, financial and structural advisors. However, these advisors were only involved during the transitional negotiation phase. At the end of this phase, the operators were left to their own devices to strengthen their managerial capacities and make long-term decisions. They empirically learned how to manage large-scale scheduled bus services, a major challenge for most operators, even experienced ones.

In 2013, the City of Cape Town embarked on the second phase of the *MyCiTi* project by promoting a more gradual approach to the transition. The first step was the launch of a pilot express bus service in mid-2014. This service was initially to be operated for 3 years by a new entity, *N2 Express Joint Venture Vehicle Operating Company*, combining the institutional bus operator and the paratransit operators. The 3-year pilot contract included a budget for a technical and managerial training program for paratransit operators within the scope of the Phase 2 contract. It was planned that the beneficiaries from the paratransit sector would then manage the bus operating companies set up at the end of the 3-year contract.

In order to select candidates for the training course, each of the 28 operator associations involved in the first phase of the Phase 2 contract negotiations was invited to nominate three of its members. Thus, during the first year of the training (2014-2015), about 90 candidates participated in specially prepared short sessions on transport management and planning delivered by the University of Cape Town *Centre for Transport Studies*. At the end of the first year, all candidates were evaluated and interviewed. During the years 2015-2016 and 2016-2017, 46 candidates selected from the initial group went on to receive more in-depth and focused training and were split between a managerial or professional track. *N2 Express Joint Venture,* with funding delivered by the City of Cape Town, commissioned the University of Cape Town to provide the transport company management program. Other professional training organizations were asked to provide training in administrative management, bus operation and maintenance, and facilities management.

The beneficiaries of the trainings said that they had changed some of their management practices in their transport companies, stimulated by the lessons learned from the capacity building program. The changes observed include: the institution of written, rather than verbal, employment contracts between owners and drivers, detailed monitoring of vehicle routes and efficiency of use, and information sharing between different companies and associations. Information sharing is an important step, as most applicants said they had never collaborated with other companies or associations before.

The capacity building program ended in mid-2017, but the operating companies that should have recruited the training beneficiaries have not yet been established, due to complex operating contract negotiations. While the training beneficiaries are therefore waiting, some of them are applying to other public transport operating companies.

5.4.3Technical assistance to secondary cities

Mechanisms are sometimes proposed at the national level to strengthen the teams in place. This is the case in Senegal, where CETUD supports representatives of local authorities in other urban areas in their learning about mobility issues (Box 12). Given the differences in skills between the administrations in charge of urban mobility, it is essential that this transmission of knowledge and know-how be made between the capital and other cities in the country. This has been recommended in particular for Nigeria, where LAMATA in Lagos could largely accompany capacity building in other cities in the country.

Box 12 – CETUD : Technical assistance for transport modernization in secondary cities

In light of the satisfactory results obtained in the implementation of the public transport fleet renewal program in Dakar, the State of Senegal decided to devote the resources from the repayment of loans made

to operators to the continuation of the operation. This was extended from 2015 to the inland cities whose traffic warranted the establishment of a public transport system: Kaolack, Louga, Saint-Louis, Tambacounda, Thiès and Ziguinchor.

To ensure the management and monitoring of the activities, the Monitoring Committee for the financing of minibus fleet renewal operations was created by order of the Minister of the Economy and Finance. The Monitoring Committee authorized the Executive Council of Urban Transport of Dakar (CETUD), the program's implementing agency, to sign a program execution mandate with the *Association de Financement des Professionnels du Transport Urbain* (AFTU). Under the terms of this mandate, AFTU will be assisted by a firm that will mobilize, as is already the case in Dakar, the human, technical and organizational resources needed to ensure the administrative, financial and accounting management of the leasing mechanism in the regions.

The legal and institutional framework of the project is articulated as follows:

- The formation of MSEs: one to three MSEs have been formed in each region. It participates in the census of vehicles to be renewed by providing the files of transporters wishing to participate in the project (copy of approval, registration and license of vehicles);
- The establishment of a Regional Project Monitoring Committee: with the support of the Governor assisted by the Regional Director of Transport, makes it possible to supervise the smooth running of the project. An agent recruited by CETUD and placed at the disposal of the Regional Director of Transport after specific training, ensures the daily monitoring of the operation. The Regional Monitoring Committee includes the mayors of the urban transport perimeter determined by the Governor based on the feasibility study conducted by CETUD. The heads of the decentralized technical services concerned and the Regional President of the Transporters are also members. It is made up of:
  - A **Credit Committee** that validates the operator applications according to the established eligibility criteria. It is composed of representatives of the Ministry of Economy and Finance, which chairs it, the Ministry of Transport, the operators and CETUD. The administrative, accounting and financial office of AFTU provides the secretariat;
  - A **Commission for the reform and scrapping of vehicles** in charge of evaluating the vehicles and determining the amount of the premium to be granted. It then supervises the operator who carries out the physical destruction of the vehicles with regard to the process that is put in place to carry out the operation: the scrapping must be effective and comply with the provisions prescribed by the specifications. It is composed of representatives of the ministry of the environment, who chairs it, the regional director of transport (secretariat), the receiver of State property, the minister in charge of industry, the judicial agency of the State, the Directorate of Material and Administrative Transit, CETUD and two transporters.

Thus, CETUD is only mobilized at very specific times: studying the feasibility, launching and, if necessary, solving problems that go beyond the Regional Monitoring Committee. In the latter cases, the rule is to resort to external consultants, using a DIY approach. The costs of CETUD's assistance are intergrated into the program.

5.4.4 Improving initial training on urban mobility

Traditional academic courses (engineering, urban planning, etc.) rarely take into account the complexity of urban mobility issues. It is therefore essential to integrate this subject into the teaching. It is also necessary to develop specific courses to bring out a new generation of leaders dedicated to accessibility and mobility issues, to the various transport services and integrated planning, and to the development of urban transport management programs and tools (development and operation, infrastructure and services, public and individual transport, urban planning and development, etc.).

Many countries are beginning to adapt their training to the evolution of the sector. In Senegal, for example, the prospect of the Regional Express Train (TER) requires hundreds of people to be trained in new professions that do not exist. The future operators of the TER have formed partnerships with a university to train young professionals. In other countries, development partners have invested in similar programs. In Côte d'Ivoire, the initial and continuing training courses on transport and urban planning offered by ENSTP will be strengthened with support from MCC to train managers with mobility skills. In Ghana, SECO is proposing support to KNUST in

the framework of the Ghana Urban Mobility and Accessibility Project to create a master's degree in urban mobility that can train future transport managers in municipalities, or future managers of operating companies.

Some initiatives have also emerged on an international scale. As initial training in urban planning and mobility is scarce in West Africa, a master's degree specializing in urban mobility has been created at the African School of Architecture and Urban Planning (EAMAU) in partnership with CODATU and the *Université de la Francophonie*. In order to train competent human resources, it would be advisable to integrate within the national universities courses dedicated to these fields and to reinforce the existing courses, to enhance the existing training.

5.4.5 Career management in the public service

Training efforts must be combined with an increase in the number of staff dedicated to urban mobility planning and management within government agencies. Awareness of the importance of mobility issues must in many countries be combined with recruitment within local authorities and ministries. However, in many countries it is difficult to find human resources with the required level of skills within the civil service due to salary levels. The training of civil servants can have the perverse effect of moving them to higher paying positions in the private sector.

In several countries, the development of ad hoc implementing agencies is also an opportunity to move away from the recruitment and remuneration framework of the civil service. Organizing authorities such as CETUD or LAMATA can thus recruit experienced people for remuneration levels equivalent to those in the private sector.

Country	N°	Recommendation
Guinea	GU_E3	Make the services in charge of urban mobility operational within the decentralized administration in the secondary cities and train their managers
Côte d'Ivoire	CI_E4	Develop existing capacities by creating training courses dedicated to urban mobility and by organizing continuous training sessions
Kenya	KN_E3	Improve the decentralization of urban mobility functions through institutional capacity building
Ethiopia	ET_E2	Design and implement a priority urban mobility management training program to build the capacity of regions and municipalities, with the participation of the Addis Ababa Municipality
Rwanda	RW_E3	Build the spatial planning and urban mobility skills required at the city and district level
Nigeria	NI_E9	Establish a platform for cooperation between cities to foster common problem solving, knowledge and information transfer, and replication of successes

Table 12 - Recommendations from the National Urban Mobility Forums to improve skills at all levels

5.5 Integrated city and transport planning

To be effective, travel planning must be part of broader urban planning. Mass transit infrastructure projects must be leveraged to increase density in urban areas to avoid overdependence on automobile travel. In addition, the creation of secondary centers should relieve congestion in the city center by generating shorter trips. Urban mobility planning is thus particularly effective when combined with city planning.

5.5.1 The existence of urban planning documents

Most large African cities have recent urban planning documents. The Master Plans finalized in the 2010s generally have a time horizon between the years 2030 and 2040. In the countries studied, these documents have had different fates. Some of them, even if they are not binding, have been taken up by the ministries, local authorities and implementing agencies. In Dakar, for example, the strategy identified in the Urban Development Plan is implemented by public actors, but the private sector can disregard its requirements, since the urban planning document is not binding for third parties.

On the other hand, in Kigali, the Master Plan has played a decisive role in urban structuring. The authorities have carried out a large part of the planned public investments, but they have also strongly encouraged private partners to join in this urban strategy.

In some countries, secondary cities also have urban planning documents. One example is Senegal, where the new legislation governing local authorities has required them to produce, with the support of the Ministry in charge of urban planning, an Urban Master Plan and an associated Priority Investment Plan. This is not necessarily the case in all the countries studied and strategic planning on a metropolitan scale is often lacking, particularly in cities where urbanization is outside the administrative boundaries, as in Nigeria.

5.5.2 Articulation of mobility and urban planning documents

The relationship between transport and urban planning depends primarily on the extent to which transport and mobility are included in urban planning documents. In several capital cities, it has been found that transport and mobility have been given an important place. In Dakar, for example, the urban master plan for the city was updated in 2016, with the support of JICA. It includes quantitative performance targets for the road network, traffic and public transport based on a transport-urban planning vision as well as an environmental assessment of the planned strategy. This is also the case in Abidjan, Kigali, Addis Ababa and Bouaké. In Abidjan, the 2030 urban planning and transport master plan for Greater Abidjan, produced in 2015, is a detailed chapter of the Master Plan. It has provided a common vision for all stakeholders in terms of both urban planning and transport and has defined an ambitious investment program. Box 13 recalls the essential objectives of this document.

Urban planning documents are sometimes supplemented by a mobility planning document on the territory in accordance with the previously established master plan. Two examples are given here, Kigali and Dakar. In Kigali, the transport master plan was completed in 2013, six years after the publication of the Kigali Conceptual Master Plan (KCMP). It provided an opportunity to clarify the multimodal mobility strategy (see Box 14).

In other cities, it has been found that many urban planning documents give limited attention to mobility, thus reducing the structuring dimension that transport can have on the city. This was found in the transport master plan for Kumasi, and to a lesser extent for Accra. In Ethiopia's secondary cities, the updated "structure plan" (urban master plan) does not incorporate mobility aspects either.

In many countries (Côte d'Ivoire, Guinea, Kenya, Ethiopia, etc.), it has been recommended that, in addition to existing master plans, urban mobility planning documents should be prepared to strengthen the transport-urban planning linkage. The objective in secondary cities is clearly to control urban sprawl and make the city less dependent on individual motorized transport modes.

5.5.3 From planning to implementation

Of course, the urban and mobility planning effort must be followed by implementation of the recommended actions. In too many cases, planning is an intellectual exercise that is not followed by the series of investments envisaged. In order to ensure the implementation of the action plan resulting from the planning process, ownership of the planning process is necessary. For this to happen, the mobility planning process must be

carried out by the entity that will then have the project management role for certain structuring infrastructures; it must be carried out in a concerted manner with the other public players involved in the projects in order to ensure their integration into the overall strategy. Finally, this planning process must remain pragmatic and propose projects that are consistent with available resources.

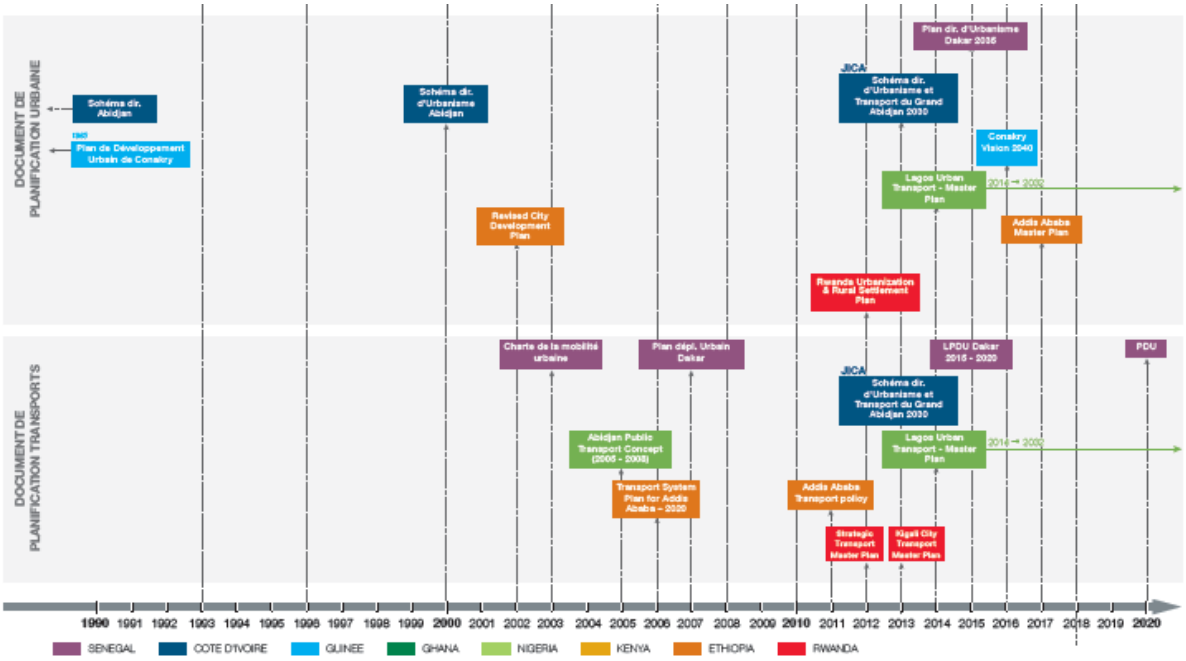


Figure 26 - Chronology of urban and transport planning documents (1990 – 2020)

Box 13 - Urban transport policies in Abidjan: SDUGA recommendations

Sector objective: To move towards a sustainable and energy efficient transport system that supports economic development, population growth and increased mobility within Greater Abidjan.

Policy Objectives: To provide a comprehensive and integrated transport network that is convenient, responsive and accessible; to ensure the mobility of all social classes, to serve all regions of Greater Abidjan in the transport of people and goods.

- **Traffic management system** objective: establish comprehensive measures to control private vehicle traffic in urban centers to a reasonable level, and to ensure smooth traffic flow:
  - TI1: Reduce the use of private vehicles;
  - TI2: Optimize traffic management;
  - TI3: Create Transit Oriented Development Areas (or "TODs");
- **Public transportation** objective: provide a comprehensive and integrated public transport network that is convenient, appropriate and accessible to all social classes to serve all urban centers, suburban areas, neighborhoods and sub-neighborhoods, employment centers, recreational centers and tourist sites;
  - TI4: Plan and develop a high-capacity mass transit corridor from Anyama to Grand-Bassam:
  - TI5: Develop a modern bus network;
  - TI6: Develop multimodal centers ;
  - TI7: Limit the number of taxi cabs and control their condition;

- **Freight transport network** objective: ensure an efficient and economically viable network for the international transport of goods from countries in the subregion to the Port of Abidjan, to reduce the amount of goods and merchandise transported by road through urban centers by promoting the use of railroads through the creation of a modern rail freight transport system serving the logistics centers:
  - TI8: Implement an efficient freight transport network;
  - TI9: Regulate truck access to urban centers;
  - TI10: Create a logistics center and decentralized distribution activity zones;
- **Parking** objective: regulate parking in order to reduce the number of parking spaces in city centers, reduce on-street parking, limit private vehicle parking in public spaces and promote parking outside the urban area:
  - TI11: Regulate and control parking in urban centers;
  - TI12: Relocate truck parking areas outside the urbanization perimeter;
- **Road network** objective: strengthen the road network in order to facilitate access to urban centers and meet the needs of the population in terms of intra-urban traffic:
  - TI13: Design and implement road network development programs (widening, reshaping, upgrading and construction);
  - TI14 : Improve Road Safety ;
- **Green transportation** objective: take comprehensive action to achieve green transport solutions, i.e., reduce fossil fuel consumption and greenhouse gas emissions, in order to promote healthy living environments for urban residents:
  - TI15: Develop bicycle and pedestrian networks;
  - TI16: Develop transport system-specific standards and rules to ensure access for all;
  - TI17 : Implement traffic calming devices ;
  - TI18 : Introduce pedestrian streets ;
  - TI19: Introduce the use of vehicles with a small environmental footprint;
  - TI20: Develop a quality and efficient public water transport system.

Box 14- Integrated transport-urban planning in Kigali

In Kigali, a conceptual master plan was published by the Government of Rwanda in 2013. The Kigali Conceptual Master Plan (KCMP) was completed in 2007 and adopted by the Rwandan Parliament in 2008. The KCMP presents an overall vision and guidelines for the city to guide planning at local and district levels. The plan aims to develop a conceptual transport master plan, infrastructure and land use planning, and an environmental management strategy for the entire city.

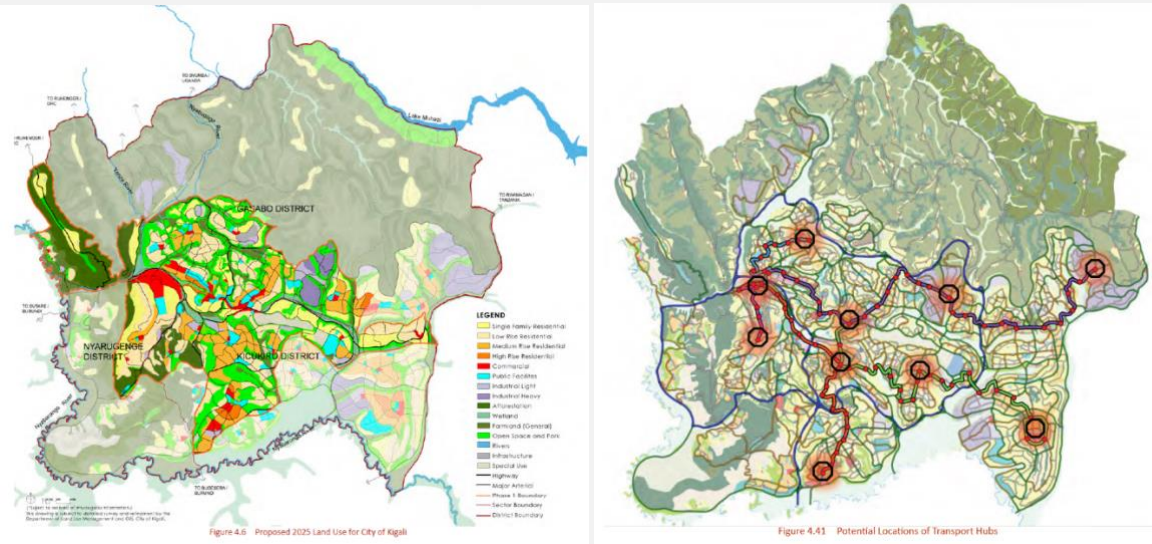


Figure 27 – Maps of the Kigali Master Plan and the Transport Master Plan

The Kigali Transport Master Plan (TMP) 2013-2020, commissioned by the Government of Rwanda, provides a framework for the long-term development and expansion of existing transport systems. The TMP presents long-term plans and proposals at both the strategic and network improvement levels for the 2040 design horizon, while preparing intermediate designs for short-term implementation. The vision report identifies several areas of transport improvement: becoming a transit-oriented city; establishing a comprehensive transport system, and; creating a sustainable transport network.

Country	N°	Recommendation
Guinea	GU_E5	Integrate transport and mobility project portfolios into Local Development Plans (LDPs) in dialogue with the relevant ministries (housing, public works, transport, territorial administration)
	GU_A1	Implement the Conakry urban mobility plan through the Urban Mobility Working Group (UWG) pending the creation of the Transport Organizing Authority
	Gu_A2	Update the urban master plans of the main secondary cities with special attention to transport plans
Côte d'Ivoire	CI_A1	Implement urban planning documents by turning them into detailed urban plans
	CI_A2	Establish project approval procedures that allow for a crossover between urban planning and transport visions

	CI_A3	Implement transport schemes consistent with urban master plans in secondary cities i
Senegal	SN_A1	Initiate urban mobility planning processes in the Dakar region and in regional capitals
	SN_A2	Ensure compatibility between urban planning documents and transport planning and compliance by third parties
Kenya	KN_A1	Integrate land use and multimodal planning in urban areas
Ethiopia	ET_S1	Generalize sustainable urban mobility plans at the metropolitan level to prioritize investments according to modeled quantified scenarios (Addis Ababa's Comprehensive Strategic Transport Development Plan would be the first)
	ET_A2	Develop and circulate methodological guides at the national level on the integration of urban mobility into local development plans
	ET_A1	Implement formal inter-institutional coordination mechanisms and procedures for land-use planning and transport planning and implementation (through building permit and infrastructure coordination in Addis Ababa)
Ghana	GH_A1	Strengthen public control of land tenure to allow for the development of transport infrastructure
	GH_A2	Prepare or consolidate integrated urban planning and multimodal transport master plans based on existing documents in Accra and Kumasi
Nigeria	NI_A1	Implement a long-term integrated approach between land use and mobility planning, particularly to capture the land value due to the development of urban infrastructure.
	NI_S2	Revitalize city centers with a focus on a multimodal, integrated transport planning system
	NI_I2	Improve inter-urban connectivity by facilitating inter-urban and interstate mobility planning and ensuring that cities have well-designed, context-specific inter-urban interchanges with good facilities and accessibility

Table 13 - Recommendations from the National Urban Mobility Forums for integrating city and transport planning

5.6 Good projects and management mechanisms: optimization of resources and development of know-how

Projects are a way to make planning more concrete. They can sometimes emerge upstream and then take a central place in the mobility system. In several cities, projects have been implemented or are in the pipeline and are expected to act as catalysts for change.

5.6.1 Many projects for public transport

These projects generally include public transport infrastructure projects such as in Lagos, or the various BRT projects under preparation in several other cities (Dakar, Nairobi, Addis Ababa, Abidjan, Kigali). Even in cities such as Accra or Kumasi, which do not yet have a BRT system. Moreover, it has been recommended that mass transit projects be developed in order to build significant capacity and help structure the city around major public transport routes.

Projects can also happen on a smaller scale, but they can enable a real improvement in day-to-day mobility conditions while contributing to the development of national expertise, and form part of a longer-term approach where projects are part of a global strategy. For example, programs to renew minibus fleets, as in Dakar (see Box 15), which has helped professionalize paratransit, deserve to be launched in several countries. In addition, there are many examples of the construction of bus stations in major cities (in Accra, Dakar, Kigali, etc.) which may be of great importance when it comes to the restructuring of public transport and the professionalization of paratransit.

Box 15 - AFTU, fleet renewal and professionalization of actors in Dakar

As part of the implementation of the Urban Mobility Improvement Program (PAMU, 2001-2008), the Senegalese government undertook to renew the vehicles providing public passenger transport in the Dakar area. The objective, beyond the desire to reduce the negative externalities (crashes, congestion and pollution) resulting from a very old fleet, was to organize and professionalize the small-scale operators. Supported by the World Bank, with funding of CFAF 8 billion, the first phase was launched in 2005.

The guiding principle was to exclusively target operators already working in the sector to professionalize them. A such, the latter agreed to group together to reduce the number of public service contacts. Fourteen economic interest groups (EIGs) of "fast bus" and "ndiaga ndiaye" operators were thus created and joined by the *Association de Financement des Professionnels du Transport urbain* (AFTU), established in 2001. Each EIG has autonomy over its administrative management.

AFTU was designated as the key player of the fleet renewal operation. A special dispensation was granted to it by the Ministry of Finance in order to authorize it to use *leasing*, which was considered the most appropriate method for financing the operation. Given the importance of the public resources involved, AFTU has been subject to a rigorous management system. The public services are represented in its governing bodies through the Ministry of Finance, the Ministry of Transport and CETUD, the urban transport organizing authority of the metropolitan area. In addition, a Monitoring Committee has been set up by an inter-ministerial order (Finance and Transport) to monitor the revolving fund. In addition to representatives of the Minister of Transport, CETUD and the Transport Directorate, it also includes the relevant economic and financial departments of the Ministry of Finance, the chairman of AFTU and the head of the firm recruited to manage the administrative, financial and accounting aspects of the leasing mechanism with AFTU.

Thus was conceived and set up the device which allowed:

- The replacement of 2,000[34] outdated minibuses that no longer meet the new technical specifications defined for public passenger transport vehicles;
- The strengthening of the technical and managerial capacities of small-scale operators through the training of transporters (management of a modern transport company) and staff (drivers, receivers, regulators, controllers, managers and line supervisors);

[34] Dakar (1600) and regions (400).

- The beginning of professionalization marked by (i) the contractualization of the operation of the network granted to the EIGs by CETUD, (ii) the creation of support entities, in particular a mutual savings and loan association (MECTRANS), a mutual health insurance company (TRANSVIE) and a framework for assisting EIGs with line management (CAPTRANS), and (iii) a significant market share that makes AFTU a key player, even with the public authorities' stated ambition to set up a hierarchical network based on mass transit (BRT and Regional Express Train).

The success of the operation, both from an operational point of view (network of 55 lines over 750 km, 50% market share) and in terms of the economic and financial profitability of the operation (nearly 99% repayment rate) has led to the extension of the program to secondary cities and other segments (large trucks, refrigerated vehicles, etc.).

5.6.2 Rarer traffic and parking management projects.

In addition to public transport, a few projects are emerging in the areas of roads, traffic and parking management. Through the recommendations made at the national level, it can be seen that many projects with this type of road improvement in a multimodal approach have been proposed, particularly because of their cost impact. In many cases, road investments are planned in cities with inter-urban road designs which do not correspond to the uses of the road network. By studying more suitable designs upstream,, and by by supervising public works companies, it is possible to propose an improvement in the travel conditions of the populations at a lower cost.

One example is the development of the road network in Kigali in recent years, which has been systematically upgraded with sidewalks and sometimes bicycle lanes. These infrastructures represent a significant achievement of a multimodal mobility strategy. This kind of achievement is a source of inspiration for many other cities.

Traffic management or parking management projects in city centers are still few and far between, yet this type of action, which can be implemented gradually over the territory while maintaining a long-term perspective, can have a structuring role.

5.6.3 Capitalization of know-how through the realization of projects

Generally speaking, it is important for the public authorities to capitalize on the know-how gained from these achievements and to maintain a regular pace of investment in order to ensure that the public and private players involved increase their skills and become more competent.

In addition, it is necessary to develop systems for evaluating projects once they are up and running in order to learn from their implementation. Some investments have had a limited impact in relation to the budgets mobilized. It is essential to set up evaluation mechanisms in order to optimize public spending, but also to avoid disrupting the pace of investment in the mobility sector.

Box 16 - The BRT in Dakar: An example of a mass transport project in Sub-Saharan Africa

The BRT project, which was scheduled to begin operation in 2020, will connect the city center – the Plateau commune – to the Guédiawaye commune in the north of the Dakar metropolitan area. With a total length of 18.3 kilometers, this future system will be able to carry 300,000 passengers per day.

CETUD, the transport organizing authority that is in charge of this project, hopes, through this BRT, to give public transport a central role in Dakar's mobility and avoid an uncontrolled increase in car traffic.

The Dakar BRT should considerably improve travel conditions for the population, which travels mainly by foot (70%) or by public transport (25%). Public transport users experience very long travel times due to the chronic congestion in the Senegalese capital. Thanks to dedicated lanes and high-capacity buses, the BRT will offer considerable time savings to the population along the corridor: a trip that took 95 minutes in 2015 will be twice as fast after the implementation. This estimate is supported by subsequent analyses and shows that, for some areas of Dakar, there would be a 15- or 21-minute reduction in time to reach the Plateau[35].

Using data provided by CETUD, the World Bank analyzed the improvements in accessibility that will result from the implementation of the BRT network. The Dakar BRT will increase the overall accessibility of the population to employment opportunities from 52% to 59%. Analyses also show an improvement in accessibility to health services: 60% of the population will be able to reach an additional health center compared to conditions without BRT[36].

In addition to the BRT, the Regional Express Train (TER) project, which is operational in 2022, will link the center of Dakar with the new urban hub of Diamniadio, located about 30 kilometers away. It will allow for the movement of 150,000 passengers per day. For CETUD, the linkage of this mass transit infrastructure with the existing bus network is the key to success. Preliminary studies show that the bus feeder rate for the BRT will be 60%, and that it will even be 90% for the TER. The transport authority has therefore planned a vast project to restructure the bus network in order to promote this intermodality.

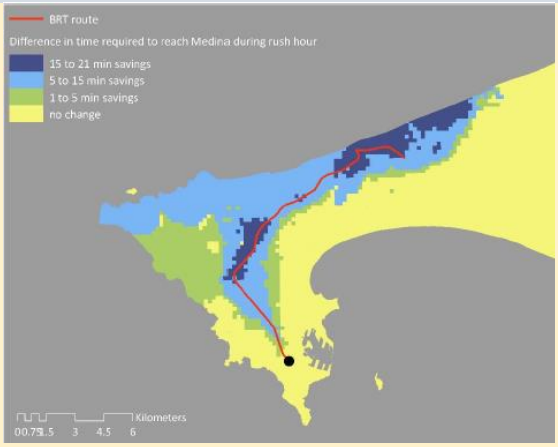


Figure 28 - Time savings to travel to the Plateau with the implementation of the BRT[36]

Figure 29 - Rendering of the future BRT axis of Dakar[37]

[35] This accessibility is calculated as the percentage of jobs accessible to residents with commutes of 1 hour or less.

[36] Stokenberga A. (2017).

[37] https://i.ytimg.com/vi/6G0/maxresdefault.jpg

Country	N°	Recommendation
Guinea	GU_E6	Create a public entity that will have a role of delegated project manager in the realization of transport infrastructures (roads and urban roads) and their maintenance
	GU_S1	Entrust the future transport authority of Conakry with the study of a mass transport system backbone of a hierarchical network
	GU_S2a	Adapt the regulatory framework and define the operating procedures
	GU_I3	Conduct a solid waste-cleaning program in the streets of Conakry, organize the collection chain and raise awareness among the population
Côte d'Ivoire	CI_S1	Place active modes at the heart of the multimodal strategy and public space development
	CI_S2	Define a parking policy with a specific focus on the Plateau in Abidjan
	CI_S3	Implement a public transport policy and network that promotes intermodality in Abidjan
	CI_I1	Optimize the operation and maintenance of existing infrastructure to serve all forms of mobility
Senegal	SN_S1	Develop intermodality by playing on the complementarity of modes and by placing the user at the center of concerns
	SN_S3	Redefine the role of Dakar Dem Dikk around a multi-year contract of objectives and a remuneration at the fair cost of the public service, defined by the CETUD
	SN_S5	Develop a vast program to improve the conditions of active mobility in Dakar and in the other cities in the country.
	SN_I1	Implement a policy of road, traffic and parking management to improve the performance of public transport and the safety of active modes
Kenya	KN_S1	Avoid the mistakes others have made in implementing BRT systems
	KN_I1	Improve Nairobi's traffic light system
Ethiopia	ET_S3b	Implement traffic and parking management programs with a particular focus on public transport routes in Addis Ababa
	ET_S3a	Increase LRT output with independently determined technical solutions to increase capacity during peak hours
	ET_S2	Develop national standards and technical programs to promote active modes, particularly in regional cities that still enjoy low rates of motorization
	ET_I2b	Develop a minibus fleet management program with incentives for vehicle scrappage, modification of the import tax system, and promotion of new technologies
Rwanda	RW_I1	Optimize the use of urban roads in Kigali through traffic management by introducing dedicated bus lanes to facilitate the development of Bus Rapid Transit
	RW_I2	Improve the design and operation of multimodal interchanges and bus terminals in Kigali

	RW_I3	Develop a network of pedestrian and cycle infrastructures specific to Kigali and the secondary cities
Ghana	GH_S2	Integrate active modes and paratransit in the development of transport infrastructure
	GH_S3	Develop mass transit systems in Accra and Kumasi
	GH_I1	Optimize the operation of the road network in metropolitan areas
Nigeria	NI_A3	Prioritize active transport, not just motorized transport, in the planning and implementation of urban mobility strategies.
	NI_S3	Expand and modernize the public transport network in major Nigerian cities and promote the integration of existing paratransit services into a multimodal urban transport system
	NI_I1	Help cities improve the efficiency of their road networks and combat congestion by enabling them to access and implement appropriate traffic management tools

Table 14 – Recommendations from the National Urban Mobility Forums for the optimization of resources and the development of know-how

5.7 Financing: Specific mechanisms for investment and operation

Resources for urban mobility are generally insufficient in the countries studied, and above all they are not oriented toward sustainable modes of transport. If one considers the fuel taxes paid by everyday motorists, urban transport is a revenue-generating sector for the government in most countries. Even large investments in road projects are not sufficient to generate the same amount of revenue. Under a multimodal approach, public transport and active modes account for minority shares of investment budgets, although some large infrastructure projects or bus recapitalization programs are beginning to raise significant funds.

The greatest difficulty is obtaining resources for the operation of the multimodal system: its administration (planning, organization, and regulation) and even support for the emergence and sustainability of services (public transport, etc.). In cities that have established a metropolitan transport authority, an urban transport fund has been created to channel financial resources.

5.7.1 The majority of funds mobilized in road investment

With regard to road investments, annual budgets are much higher than those invested in all other modes of land transport. In Côte d'Ivoire, for example, the Ministry of Transport and the Ministry of Economic Infrastructures invested 161.8 million CFA francs for roads, 4.7 million CFA francs for rail investments for the construction of infrastructure for the Abidjan urban train, and 0.17 million CFA francs for water transport in 2017. This disproportion is also observed at the metropolitan level.

While some road investments benefit all modes of travel (from walking, where there is a sidewalk, to driving, to public transport), road investments can be particularly significant in large-scale projects (highways, interchanges, engineering structures) that do not necessarily have a good return on investment.

5.7.2 Resources mobilized for major mass transport projects

In recent years, mass transport projects have been launched in most of the capitals of the countries concerned. These projects, generally developed with the support of international partners, mobilize budgets never before achieved for urban transport in the countries concerned. These metro, tramway or BRT projects are generally intended to transform the urban transport system through massive investment along a corridor. The first projects put in service have not always had the desired effect, partly because of the difficulties encountered in making these projects the catalysts for a broader transformation of the urban mobility system.

	Project	Length	Financial amount
Dakar	TER	38 km	USD 1,000 million
	BRT	18 km	USD 450 million
Abidjan	Metro	37 km	USD 1,700 million
	Metro	49 km	
	Ferry	51 km	
	BRT	66 km	
Conakry	BRT	122 km	
Accra, Ghana			
Abuja	Metro	45 km	USD 825 million
Lagos	BRT-Lite	22 km	USD 40 million
	Metro Blue Line	27 km	USD 1,200 million
	BRT & LRT	215 km	
Nairobi	BRT	94 km	
	LRT		
Addis Ababa	Tramway	31 km	USD 475 million
	BRT	16 km	USD 95 million
Kigali	BRT	50 km	
	BRT	42 km	

Table 15 - Amount of public transit projects in capital cities

5.7.3States invest in public transport operators

Investment in public transport is also made through programs to recapitalize the bus fleet of public companies. States are mobilizing large amounts of money to buy new buses, to expand the public transport service, or simply to maintain it. Because of the quality of the vehicles and the companies' skills in operating and maintaining them, the life expectancy of the rolling stock is sometimes very short and the capitalization effort must be renewed regularly.

City	Company	Number of recently acquired vehicles	Date
Dakar	Dakar Dem Dikk	400	2015
Abidjan	SOTRA	2,000 (500 per year)	2016 - 2020
Conakry	SOTRAGUI	100	2012
Accra	MMT	NC	
	GAPTE	245	2016
Abuja	AUMTCO	100	2014
Lagos	LAGBUS	NC	
Nairobi			
Addis Ababa	Ambessa / Sheger / Alliance	NC	2011
Kigali	KBS / Royal Express / RFTC	NC	

Table 16 Investment in bus fleets for public transit companies

In addition, support for public transit companies is not provided solely through recapitalization. The operating deficits of these companies are made up by allocations from the state budget. However, these allocations, which are rarely contractually agreed, can be uncertain and the fare policy applied by the authorities can have a disastrous impact on the financial equilibrium of operators. The example of SOTRAGUI in Conakry is unfortunately quite common in the history of African public transport (see Box 17).

Box 17 - Life and death of SOTRAGUI in Conakry

In 2012, a new bus company, SOTRAGUI, was created by the Ministry of Transport with the assets of the former SOGUITRANS (land, buildings, materials and equipment) and 100 buses donated by the People's Republic of China. It operated on four lines.

In 2013, SOTRAGUI carried 7.8 million passengers for urban transport in Conakry. However, the activity quickly declined after the first quarter of activity. In the delicate political context, buses were the favorite target of demonstrators who stoned some 30 buses, forcing operations to be halted on two routes. Bus operations then followed the pace of the country's political and economic life. In March 2015, the Ministry of Transport decided to lower fares by 40%, which put a heavy strain on the company's revenues. Strikes broke out in June 2015 and again in late December 2015. At the end of 2015, 15 to 20 buses were in operation. The number of daily passengers was divided by four from 2013 to 2015. The company's activity stopped in 2017 with a fleet of seven buses in operation. Its liquidation was initiated in early 2018.

5.7.4The creation of funds dedicated to urban transport

In Dakar, Lagos, and Addis Ababa, specific funds have been created to collect financing for urban transport. Managed by the Transport Organizing Authorities, they are intended to capture financial resources and allocate them directly towards financing the multimodal strategy developed by the transit authorities. These funds are particularly powerful when they have their own resources, as is the case in Lagos and Addis Ababa.

In Dakar, the Urban Transport Development Fund (FDTU) was created in 2005 to finance CETUD and urban transport development activities. According to the law, the fund was to be financed by contributions from the State, local authorities and the private urban transport sector. In reality, only the State contributes to the fund, to the tune of 400 million CFA francs annually, and the local authorities do not participate, preferring to concentrate their scarce resources as they see fit in their own areas. The private sector (public transport operators, insurance companies, etc.) has never contributed either. A reform of the FDTU is necessary to ensure the sustainability of CETUD's actions, while the mass transport projects will mean a significant effort for multimodality.

In Lagos, the Transport *Fund* was established in 2007, five years after the creation of the *Lagos Metropolitan Area Transport Authority* (LAMATA), to cover the cost of maintaining transport infrastructure in the Lagos metropolitan area. The Transport Fund is financed by revenues from licenses (including permits, license plates, and vehicle registration), bus concessions, and fees paid by operators (including toll revenues). The *Motor Vehicle Administration* (MVA) contributes a percentage of revenues from licensing, road taxes, driver's licenses, and vehicle registration, which is the largest single contributor to the fund. The resources of the Transport Fund have gradually increased from USD 2.27 million in 2007 to over USD 8 million at present. It now accounts for 60% of LAMATA's revenue, with the rest coming from Lagos State.

In Addis Ababa, the Road and Transport Bureau (AARTB), which already manages an annual budget of around USD 290 million, enacted in December 2017 the creation of the transport fund, to which all transport fines and penalties, road-use fees as well as advertising revenues from bus shelters will be paid, representing an annual budget of approximately between USD 43.5 million and USD 58 million. The funds are intended to be used in the urban mobility sector.

5.7.5A need to simplify financial flows

The analysis of financial flows in the different cities has shown that the relationships between the stakeholders are complex. In the absence of a transport authority, investment and operating expenses are not channeled into an "urban transport budget" that would allow a coherent strategy to be defined among the stakeholders (see Box 18). Secondly, as with the road maintenance funds (RMF) that have gradually become widespread in

African countries, the provision of dedicated financial resources makes it possible to ensure the sustainability of transit authority resources.

In addition, the indirect beneficiaries of urban mobility policies only contribute to the financing of urban mobility from the general budget of States and local authorities. The establishment of financing mechanisms based on the contribution of the private sector is necessary to increase the available resources.

Finally, beyond the capital cities, it is necessary for many countries to set up such a fund to finance the mobility of secondary cities. This recommendation appeared in many of the countries studied, considering that it could be a vector of incentive to set up urban mobility policies, as was the case in Morocco (see Box 18).

Box 18 - Morocco's incentive funding program for local authorities

The *Fonds d'Accompagnement des Réformes du Transport routier urbain et interurbain* (FSTR) is an incentive financing mechanism created in 2007 to promote the development of mass transport infrastructure in Moroccan cities. The fund subsidizes mass transit projects through infrastructure investment. It can also finance the operating deficit during the first three years of project operation, until the line becomes profitable.

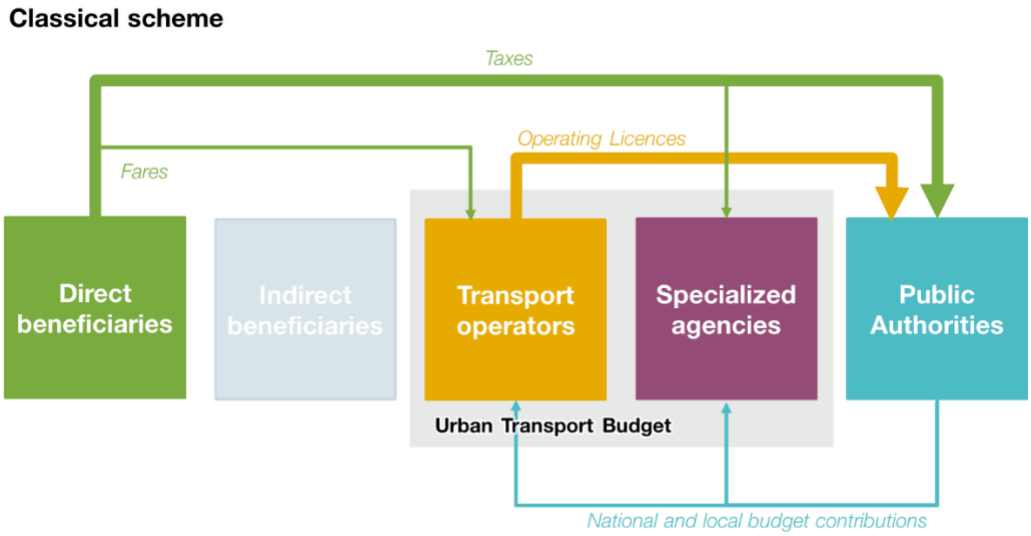
Based on an estimate of the structural needs of the 10 main cities of the kingdom, the RTSF foresees a total investment of about MAD 30 billion (USD 3.27 billion) until 2027. The fund's resources come from the state budget and a special account fed by the Value Added Tax (VAT) managed by the Ministry of the Interior.

Projects eligible for RSTF funding include:

- The construction of tramway and BRT lines (including coverage of the operating deficit up to three years after commissioning);
- The creation of dedicated bus lanes and/or equipment to improve their commercial speed (e.g. light control systems equipped with detection mechanisms to prioritize buses or streetcars).

The eligibility of projects is evaluated according to award criteria including:

- The relevance of the project in strategic, technical, financial and socio-economic terms;
- The project coordination, planning and implementation model and process;
- The urgency of mobility needs in the cities under consideration.



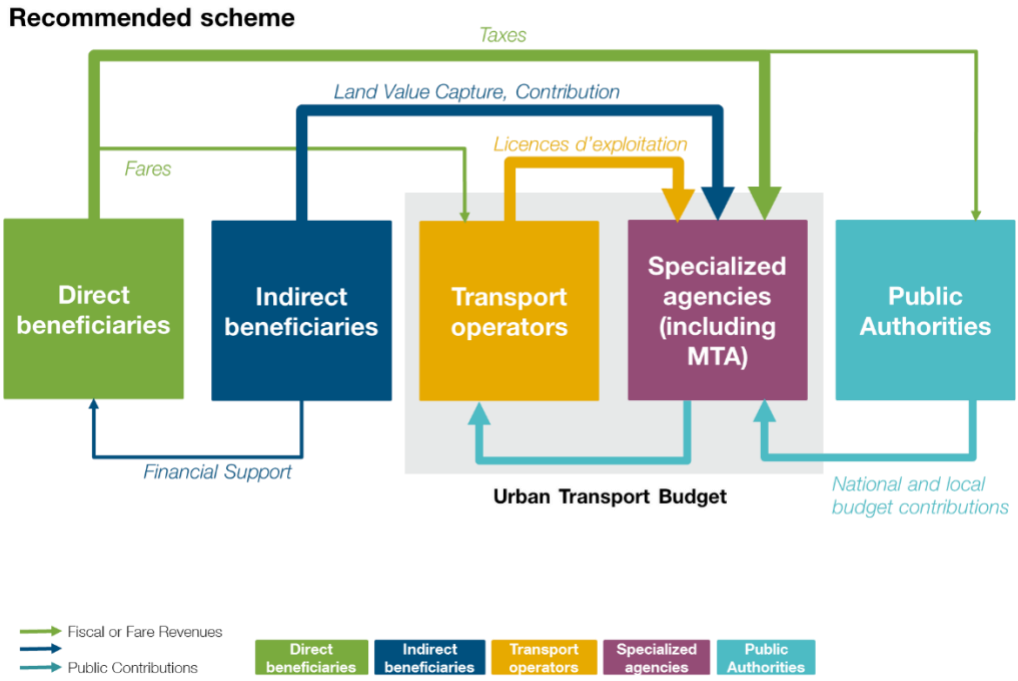


Figure 30 - Financing schemes for urban mobility

Country	N°	Recommendation
Guinea	GU_E4	Establish, in Conakry and in the secondary cities, the principle of an "urban transport budget" based on revenues collected by the public authorities, particularly those related to transport activities
Côte d'Ivoire	CI_E3	Guarantee sustainable financing for the investment and operation of the actions carried out to improve the urban mobility policy, based on clear communication with the direct and indirect beneficiaries
Senegal	SN_E4	Reform the Urban Transport Development Fund (UDDF) to ensure sustainable funding for urban mobility
Kenya	KN_E1	Develop a financial and fiscal framework for urban mobility
Ethiopia	ET_E1b	Develop a financial incentive program to support actions in regional cities
Rwanda	RW_E4	Develop a clear financial and fiscal framework for financing urban mobility
Ghana	GH_E4	Leverage new revenue streams to fund urban mobility and accessibility
	GH_E5	Ensure consistent budget allocations for urban mobility at both national and local levels
Nigeria	NI_E3	Create a legislative instrument that allows public transport agencies to access dedicated sources of transport funds
	NI_E4	Establish local urban transport funds
	NI_E5	Encourage sustainable investment by the local private sector

Table 17 - Recommendations from the National Urban Mobility Forums for the establishment of specific mechanisms for investment and operation

5.8 Private Sector Development: Strengthening the local economy

The business context is essential to enable the development of appropriate services. This business context corresponds both to the regulations and rules set up by the public authorities in terms of urban mobility, and to the contractualization model with service providers. In addition, the authorities must be able to support private sector stakeholders in the development of activities that contribute to the production of public transport services, but also to innovation..

5.8.1 The professionalization of paratransit

In many countries, paratransit dominates the supply of public transport services. This sector is made up of micro-entrepreneurs and micro-investors who do not necessarily have a structured approach to formally establishing and growing an economic activity. The reasoning is often associated with a search for short-term profitability, both for the people who buy a vehicle and wish to make it profitable, and for the drivers. For the authorities, the effort must therefore go beyond simple regulation of the sector. This has been done successfully in Dakar, as in Lagos, and deserves to be launched in other cities to enable the paratransit sector to become more professional and to allow companies with a financial base and significant capacity to emerge.

5.8.2 The development of public service delegation schemes

It is very difficult for private partners to invest in the public transport sector at their own risk. The context of African cities in terms of traffic, the standard of living of the population, and competition from paratransit makes it difficult to develop an independent service offer. There are, however, a few notable attempts that are worth mentioning: the Alliance company in Addis Ababa, which has positioned itself in a niche market by targeting home-to-work trips; the three public transport companies in Kigali (KBS, Royal Express and RFTC); and lagoon transport in Abidjan (STL, Citrans).

However, it is possible to create a business environment that is favorable to private investment. Various forms of public-private partnerships can help to strike a balance between the interests of public authorities and the intervention capacities of private stakeholders. However, they need to be structured and define rules and objectives in terms of service quantity and quality, attendance, pricing levels, and possibly financial compensation. This requires contractual sophistication, which is also recommended for public enterprises (Box 19).

Box 19 - Feedback on the implementation of Public Service Contracts in emerging economies

Public Service Contracts (PSCs) have been implemented to improve the performance of public services in many countries where the authorities have not chosen to delegate these services to the private sector. This approach has been particularly encouraged in the former socialist countries, where the authorities remain committed to the public management of services. Among donors, the European Bank for Reconstruction and Development (EBRD) is promoting PSCs to its municipal clients in the European Union, Central Asia, and the Caucasus.

PSCs have made significant contributions to improving services through:

- The definition of a stable long-term framework necessary to provide the most efficient transport services possible, including:
  - Planning for all costs related to the service provided during the term of the contract;
  - The definition of operational parameters and performance objectives to be achieved;
  - The definition of the pricing system and the organization of billing and revenue collection;
  - The definition of a basis for indexing variable costs over the duration of the contract (wage costs, consumer prices, energy costs, etc.);
  - A description of the municipality's obligations to provide quality services;
- The definition of the missions and responsibilities of both parties;

- The provision of the following benefits to authorities:
  - A clear definition of the public transport service provided;
  - Fixed budgets for public transport;
  - A quality/price ratio in transport operations;
- Bringing the following benefits to the operator:
  - A clear definition of the operator's compensation methods;
  - Long-term planning by guaranteeing payments over a given period of time;
  - Reducing political interference in daily operations and management;
  - Access to loans for investment financing;
  - Increased transparency and financial balance.

5.8.3 Mobilization of start-ups

All over the world, mobility is becoming a sector of innovation. Numerous start-ups are being created in African cities to contribute to the digitalization of transport services. They are developing solutions in many areas: passenger information (Talibi in Dakar, Digital Matatu in Nairobi), ticketing (AC Group in Kigali), assistance in the operation and management of paratransit companies (Amarante in Dakar), cab or motorcycle cab reservations (Yegomoto in Kigali, Taxijet in Abidjan), carpooling (in Accra), and the development of paid parking solutions (Abidjan, Kigali, etc.). These initiatives can become vectors for improving the quality of service for users, but they can also become future players in economic growth. The creation of start-up incubators, the opening of digital data and the promotion of the activities carried out by these young companies can help accelerate their development.

Box 20 - Increasing transport revenues through the implementation of a digital ticketing system: The case of Dakar

To improve revenue collection for AFTU operators, several local companies have developed ticketing solutions based on the use of digital technologies. A *smartphone* delivers the tickets, printed with a portable Bluetooth printer. Information on the number of tickets sold and revenue collected is regularly transmitted to the companies' servers via a Wi-Fi connection. This way, operators know exactly how many tickets have been sold and how much revenue they should be collecting each day from ticket collectors. According to one company that has equipped 400 buses[38], operators who have adopted this solution have seen a 40% increase in revenue, thanks to the accurate tracking of revenue collected by crews. Vehicle owners can track the performance of their fleet and employees on an online platform.

The increase in turnover and efficiency of operators through better revenue collection opens up new opportunities for reinvesting a larger share of the profits from their business in the public transport system, and thus for improving the service offered. In addition, the digitization of this process creates a wealth of data that can be used to improve the planning, operation, and regulation of transport services.

5.8.4 The development of vehicle assembly units.

The development of an urban mobility strategy at the national level and at the level of a country's capital city can create significant industrial opportunities. Given the need for public transport vehicles, the development of assembly plants is an important issue because it allows the development of a national public transport economy, which creates jobs and is a vector of innovation. The case of Senegal can be cited as an example: the minibus renewal program in Dakar has led to the creation of a vehicle assembly unit run by a private player, Senbus Industries. From 2003 to 2016, more than 1,850 vehicles were produced at the Thies plant for a total of 41 billion CFA francs. According to the company, this has created 300 direct jobs.

[38] Amarante equipped about 400 buses with this technology from 2015 to 2017.

In a country such as Rwanda, where public transport operators have a contract with the public transport regulatory agency for which fleet expansion targets are mentioned, the establishment of a privately financed assembly plant becomes possible. This can significantly reduce the cost of vehicle acquisition while promoting a certain homogeneity of the vehicle fleet that facilitates maintenance.

Country	N°	Recommendation
Guinea	GU_S2b	Organize and professionalize services through public transport service delegation agreements to improve the overall quality of services
	GU_S3	Renew the urban transit fleet as part of the professionalization of the paratransit operators.
Côte d'Ivoire	CI_S4	Ensure the contractual and operational monitoring of all institutional, contracted and paratransit, public transport stakeholders by the AOM in Abidjan
	CI_S5	Structure and professionalize small-scale public transport in secondary cities
Senegal	SN_S2	Continue the effort to professionalize the paratransit sector in Dakar and extend this program to secondary cities
Kenya	KN_S2	Invest in matatu sector capacity building and the city-matatus partnership
Ethiopia	ET_S4	Professionalize paratransit services so that they complement institutional transport, to meet the growing demand for urban mobility, rather than drive them out of the market
	ET_E3b	Define guidelines for contracting with the private sector in urban public transport
	ET_E3a	Implement public service contracts for public and municipal transport companies
Rwanda	RW_S4	Establish a local program for the assembly, maintenance and repair of public transport vehicles
Ghana	GH_S1	Support the improvement of existing transport services (trotros and taxi cabs)
	GH_I2	Design and implement a program to restructure the paratransit sector
Nigeria	NI_S4	Recognize the role of the paratransit sector in the system and encourage its professionalization through fleet renewal initiatives

Table 18 - Recommendations from the National Urban Mobility Forums to strengthen the local economy

5.9 Involvement of civil society

Generally speaking, few African cities have instituted mechanisms for consulting stakeholders representing civil society. However, associations of residents, users, etc. can play an essential role in planning as well as in providing feedback on the results. The example of KARA in Nairobi is worth noting (Box 21). The presence of consumer associations in the CETUD assembly in Dakar is also worth mentioning here.

Frameworks for civil society involvement should be established in order to better respond to users' expectations, to enable them to understand the political vision proposed by the public authorities and to raise their awareness of major actions such as road safety, etc.

Box 21 - Kenya Alliance of Resident Association (KARA) a constructive civil society engagement in the transport sector

Formed in 1999, the Kenya Alliance of Resident Association is an apex body representing residents. It advocates for improved and accelerated access to public service delivery and has been playing an increasing role in the transport sector given the widespread concerns of residents around congestion and road crashes. KARA is a membership organization that allows individuals and resident associations to join and attracts some corporate sponsorship, which gives it a strong base in the society it represents. While KARA tends to represent middle and upper-class neighborhoods, the organization also makes an effort to be inclusive and include poorer neighborhoods in its fora and activities.

KARA works most directly with counties as this is the level of government closest to residents. In 2016 KARA successfully worked with the Nairobi City County to pass the Nairobi City County Community and Neighborhood Associations Engagement Act which sets out a formal framework of cooperation between resident associations and the city to deliver services. The organization also engages in policy dialogues with national government and often plays an important coordinating role by bringing them together in forums with key civil society stakeholders to account for, and engage on issues.

In this manner KARA has worked over the years to improve public transport, engaging with Nairobi County, linking the County to residents and their concerns. KARA has conducted focus groups and forums on the Thika Highway Improvement Project and lobbied for the need for more footbridges and consideration to safety[39]. The association also served on the NCC Nairobi Transport and Decongestion Committee[40] which involved an inclusive, consultative process to determine a number of actions that could be taken to address Nairobi's severe traffic congestion. However, to date the recommendations from the report do not appear to have been implemented.

More recently, KARA successfully lead a collaboration with the city, UNEP, University of Nairobi and other key players to develop and pass through the county assembly a Non-Motorized Transport (NMT) policy which was adopted in 2017. This took two years of dialogue with both the Nairobi governor's office and transport committee of the city county along with public policy discussions to gather views from civil society and create engagement with policymakers. The NMT policy provides a solid framework for harmonization, prioritization and coordination of NMT infrastructure and facility development and maintenance in Nairobi,, and KARA is currently talking to NCC to follow up on implementation.

Overall, KARA has been helping to facilitate meaningful public participation in the transport sector in Kenya in line with article 10 of the Kenyan constitution which mandates such participation in governance. In this way, the resident associations are helping to bring the formulation of transport policy and implementation closer to the needs of pedestrians and public transport users. KARA is an exemplary case of how citizen participation in urban mobility matters can be allowed to evolve when government and civil society both value participatory decision-making.

[39] Kara. (2012).

[40] Nairobi City County. (2014).

Country	N°	Recommendation
Guinea	GU_I1	Implement information, education and communication (IEC) campaigns to raise public awareness of urban mobility issues
Guinea	GU_I2	Execute pilot initiatives of dialogue – in a few districts of Conakry, in well-defined areas, and in other cities – between the authorities and the population, with significant participation by the district residents, around the development of the space for the benefit of pedestrians
Côte d'Ivoire	CI_E5	Strengthen civil society participation by encouraging stakeholders to join forces and by implementing local participatory bodies
Senegal	SN_E5	Institutionalize the Territorial Conferences on Urban Mobility
Senegal	SN_I3	Implement an Information-Education-Communication (IEC) strategy for all aspects of urban mobility
Kenya	KN_E4	Strengthen the role of the Transport Licensing Appeal Board
Kenya	KN_I2	Formalize civil society bodies in urban mobility
Ghana	GH_I3	Promote the participation of civil society
Nigeria	NI_E6	Identify civil society stakeholders, understand their goals and create spaces where they can interact and coordinate their roles
Nigeria	NI_E7	Foster and support existing civil society stakeholders towards the expected standard and create a sustainable link with government agencies
Nigeria	NI_E8	Expand policies to allow major state agencies and paratransit operators to come together and cooperate to mitigate and control traffic problems

Table 19 - Recommendations from the National Urban Mobility Forums to involve civil society

6. Conclusion

While African cities are growing at an extremely rapid pace, governments in the eight pilot countries are seeking to address urban mobility challenges in major cities. These actions address the urgency noted in the major metropolises, but are rarely replicated in the secondary cities where governments could anticipate future difficulties.

In recent years, the measures taken by states have been moving in the right direction to improve urban mobility. However, in this particularly complex area, it seems essential to be able to pursue a coherent policy with a clearly established vision, and involving many partners.

The Urban Mobility Forums held in the eight pilot countries have undoubtedly shown national and local stakeholders the key elements to which they should pay particular attention in order to develop a safe, affordable, clean and efficient urban mobility policy.

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