



TECHNICAL BREAK N°5

THE EXPANSION OF URBAN PUBLIC TRANSPORT IN AFRICA

AN ASSESSMENT OF MASS PUBLIC TRANSPORT PROJECTS 10 YEARS AFTER COP21

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Mobility in the right direction

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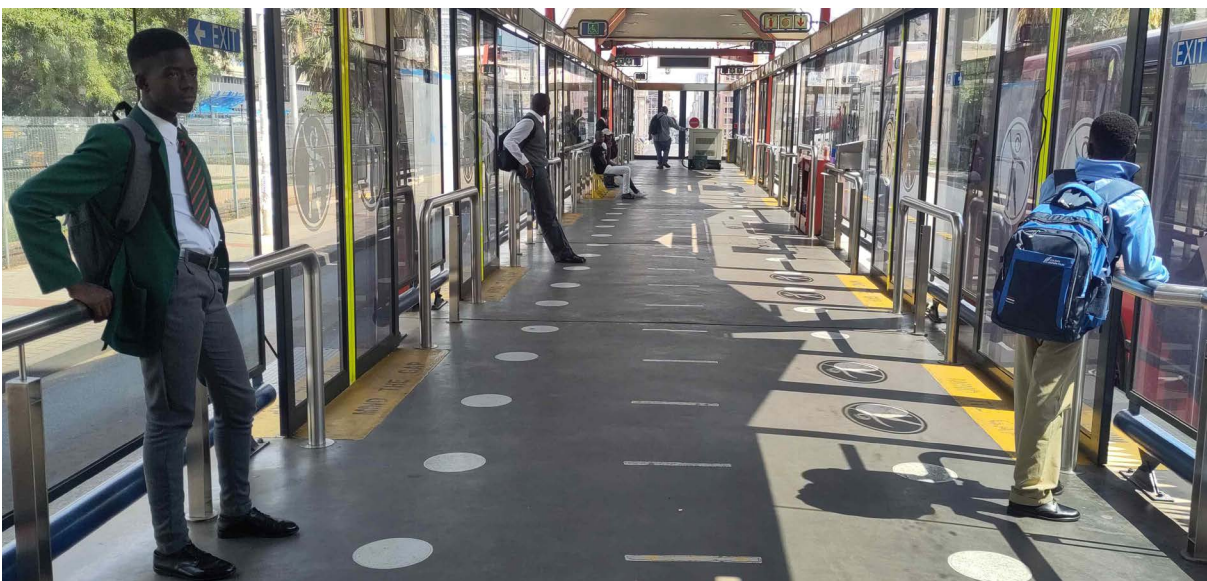
Summary

Transitec has analysed the expansion of urban public transport in Africa. By 2050, the continent's urban population is expected to double, reaching approximately 1.4 billion inhabitants, making it essential to rapidly structure efficient mobility systems to support this urban growth and limit dependence on private cars. To face this challenge, several encouraging developments have emerged over the past decade: many cities have established transport authorities, elaborated urban mobility plans, gradually integrated paratransit, and improved the performance of existing networks. Fleet electrification and the development of public-private partnerships are also contributing to the sector's modernisation.

Transitec sought to assess the momentum of public transport development in light of the implementation of mass transit systems, reviewing projects that are operational, under construction, or under study. As of January 1, 2025, just over 1,000 km of infrastructure is in service, largely dominated by rail-based modes (tramways, metro systems, and suburban rail). By 2035, this figure is expected to double, driven in particular by strong growth in bus-based systems (Bus Rapid Transit – BRT, and Bus with High Level of Service – BHLS), which are less costly and quicker to deploy.

Despite this progress, overall levels of provision remain insufficient considering the pace of demographic growth. The RTR indicator (kilometres of mass transit per million inhabitants) shows that Africa is only maintaining a low level of provision, well below international standards. A large majority of cities, including some megacities, still lack structured mass transit projects.

In conclusion, the authors highlight three key priorities: continuous investment in already equipped cities to prevent network saturation; improved speed in the launch of projects in major metropolitan areas that are lagging behind; and anticipation of the growth of secondary cities by structuring them today around high-performance public transport systems.



Johannesburg Rea Vaya BRT station (2024) ©Transitec



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Cairo Metro (2025) ©Transitec

1. The Acceleration of Urbanisation in Africa

According to a recent OECD report, the number of urban residents in Africa is expected to double by 2050, increasing from 700 million to 1.4 billion. Over the next 25 years, cities will absorb 80% of this demographic growth, and by mid-century, two out of three Africans will be living in urban areas. This transition represents a major challenge for national and local governments across the continent, but it should also be seen by African leaders as a significant opportunity to build sustainable cities.

In this context, the development of efficient urban mobility systems is a key issue. Cities are shaped

by the dominant modes of transport during their phases of rapid growth. To follow a sustainable trajectory, African cities must be able to, within a few decades, rapidly establish efficient transport systems that will form the backbone of their urban development.

Looking at trends over the past ten years, prospects appear encouraging. However, technical and organisational innovations will need to be deployed more rapidly to meet the scale of the challenge.

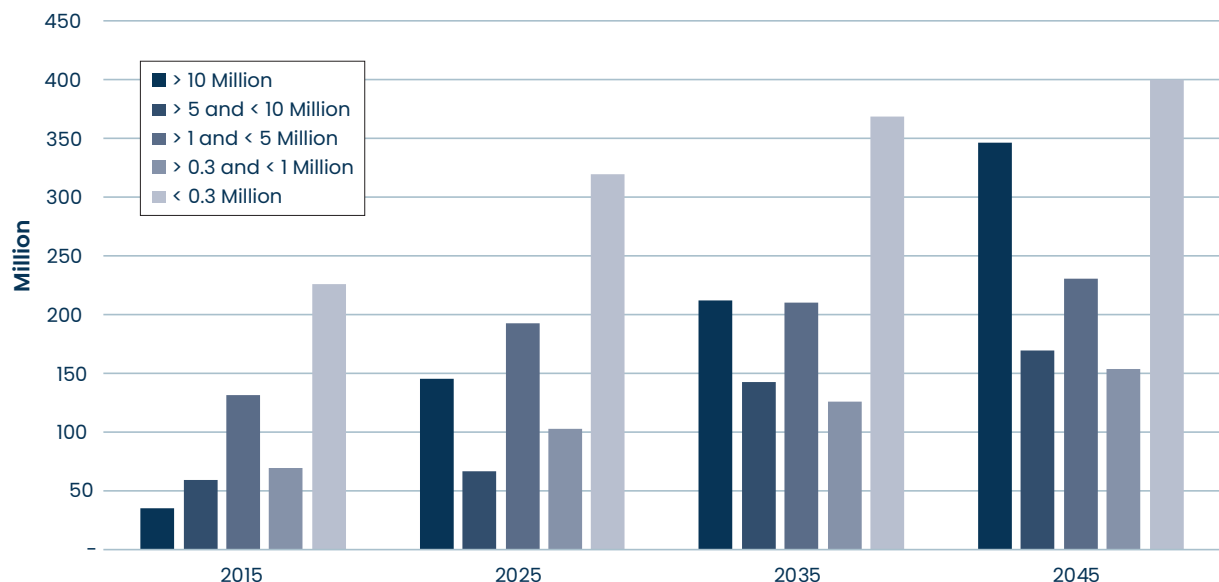


FIG. 1 URBAN POPULATION IN AFRICA BY SIZE OF URBAN AREA
source : africapolis.org



2. Growing Awareness and Positive Momentum

Africa is experiencing rapid growth in private motorisation, resulting in chronic congestion in major urban centres. In response, many cities have implemented public policies to improve mobility conditions. Six major trends can be identified:

THE EMERGENCE OF TRANSPORT AUTHORITIES

Many metropolitan areas have set up Transport Authorities. Institutions such as AMUGA in Abidjan or AMT in Maputo are tasked with planning urban mobility at a metropolitan level, developing key infrastructure projects, and regulating public transport services. In capital cities which are currently struggling to define an urban mobility strategy, the establishment of such dedicated institutions could effectively generate momentum.

RENEWED PLANNING APPROACHES

The number of metropolitan areas with recent planning documents has increased significantly over the past decade. The MobiliseYourCity programme, in particular, has enabled around fifteen metropolitan areas to undertake planning processes, making it possible to anticipate changes in mobility demand over the next ten years and to identify, through a coordinated multimodal approach, projects and measures to address urban growth and rising motorisation.

INTEGRATION OF PARATRANSIT

An increasing number of ministries and transport authorities are developing new approaches to paratransit. After long overlooking the role of these services – which, despite their limitations, meet the mobility needs of the population – new dynamics are now emerging. These initiatives are driven either by transport authorities or by national regulatory agencies (such as LATRA in Tanzania, for example), and aim to promote the professionalisation of operators, the reorganisation of bus terminal, network restructuring, and fleet renewal.

THE PURSUIT OF PUBLIC TRANSPORT NETWORK PERFORMANCE

Public transport networks in major metropolitan areas are currently experiencing a favourable period. Many operators have benefited from public investment to renew their fleet of vehicles. In several countries – from Morocco to Rwanda – partnership models with private sector actors are evolving to improve the quality of service. As primary victims of traffic congestion, public transport operators see their performance deteriorate rapidly when commercial speeds decline. As a result, several metropolitan areas are seeking to enhance bus network performance through traffic management measures. Initiatives such as Ecofleet in Kigali and, as lead by CETUD in Dakar, the Public Transport Restructuring project, are at the forefront in this development.

FLEET ELECTRIFICATION AS A CATALYST FOR CHANGE

Several African countries are seeking to renew their fleet of vehicles by promoting vehicle electrification. In East Africa, Egypt, and South Africa, hundreds of electric buses have been procured in recent years. This trend, driven in part by tensions in the Middle East, is expected to contribute to the modernisation of public transport supply while reducing pollutant emissions.

THE DEVELOPMENT OF MASS TRANSIT SYSTEMS

Lastly, several capital cities have chosen to invest in high-capacity public transport systems to meet the growing mobility needs of their populations. The most notable projects include the Lagos BRT-Lite, Johannesburg’s Rea Vaya, and more recently, the Dakar BRT, which was commissioned in 2024.

Further projects are set to follow, from Abidjan to Cairo, Dar es Salaam and Addis Ababa. Many metropolitan areas are currently under construction and are expecting the rapid commissioning of new BRT or metro systems. Elsewhere, dozens of projects are under study, as illustrated in Figure 2 and Figure 3.

These developments are encouraging for African cities: the modernisation of public transport systems is underway. However, given the pace of urban growth, will it be sufficient to meet the challenges of rapid urbanisation across the continent ?

CENSUS OF MASS TRANSIS SYSTEM IN AFRICA

Figure 2 and Figure 3 present the results of an inventory compiled by Transitec in 2024 of mass transit projects across the African continent. This census takes into account the mode of transport, the length of dedicated infrastructure, and the project development stage (operational, under construction, or under study).

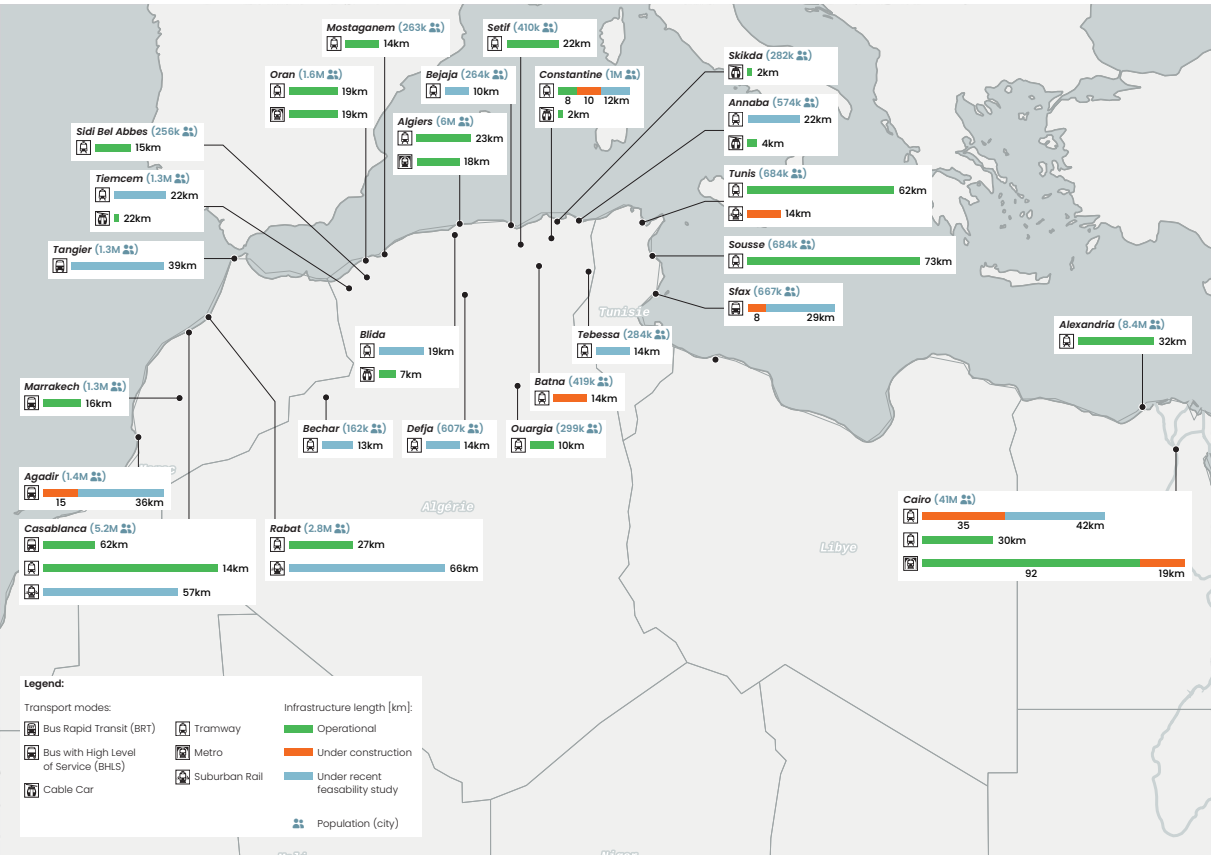


FIG. 2 MASS TRANSIT SYSTEMS IN NORTH AFRICA IN 2025

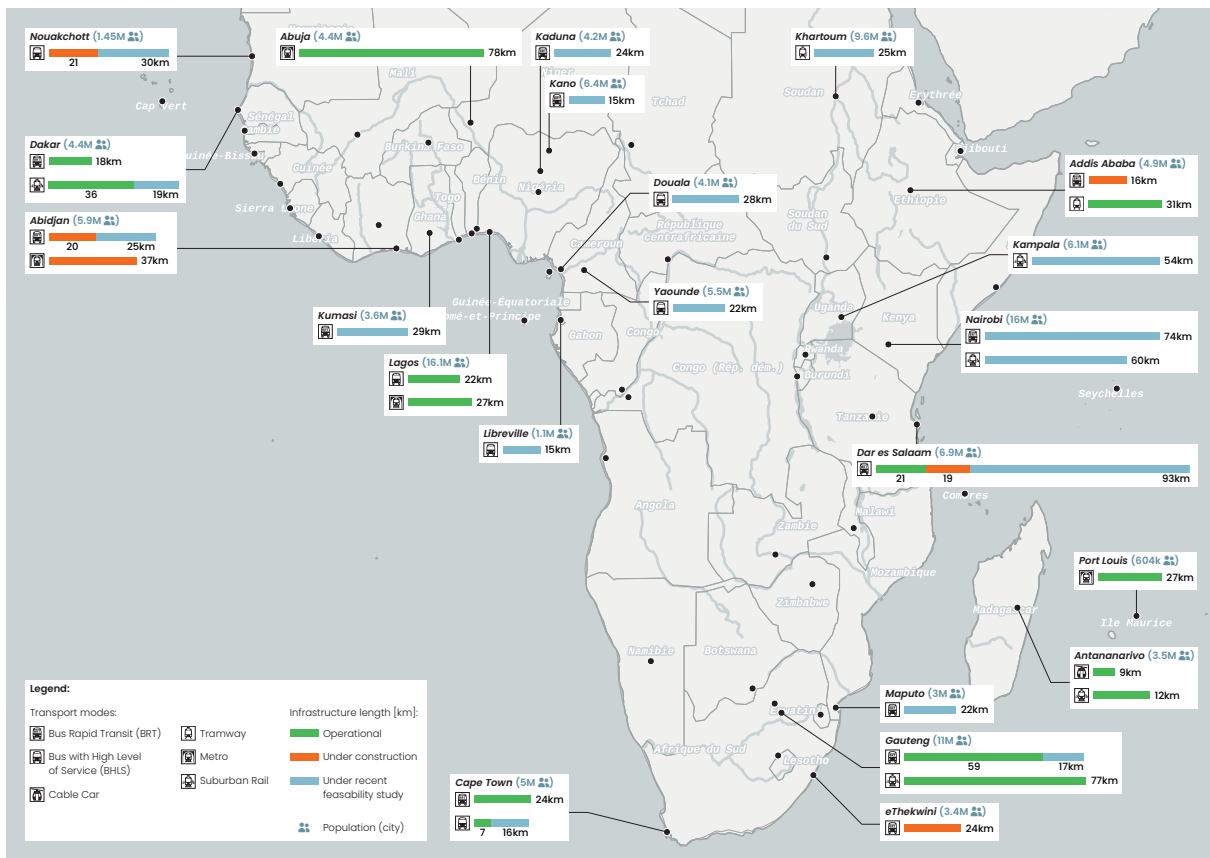


FIG. 3 MASS TRANSIT SYSTEMS IN SUB-SAHARAN AFRICA IN 2025



Dakar TER (2026) ©Transitec

MASS TRANSIT : ATTEMPTING A DEFINITION

All mass transit systems have technical characteristics (capacity, frequency, speed, space requirements, cost, etc.) that define their areas of relevance depending on demand, urban context, geography, and available financial resources.

Suburban Rail is a rail system that connects city centres to their urban areas. It uses existing rail lines, which are often modernised and sometimes shared with other services (freight, regional, national), but can also be developed on new infrastructure. Stations are more widely spaced than on metro or tramway lines, allowing for higher speeds. With a capacity of 10,000 to 30,000 passengers per hour per direction (pphpd), it mainly serves daily commuting flows between suburban residential areas and urban employment centres, or between major urban nodes. Examples in Africa include the Dakar TER, the Tunis suburban rail system, and the Gautrain in Gauteng.

Metro systems are heavy public transport systems, generally operating underground or on elevated structures. This segregation ensures high speeds, high frequency, and very high passenger capacity, ranging from 20,000 to 60,000 pphpd. Metro systems are particularly suited to large metropolitan areas where high demand requires fast, reliable, and intensive services. Examples in Africa include the Algiers Metro and the Cairo Metro.

Light Rail Transits (LRTs) are urban transport modes operating at-grade, on dedicated tracks or partially sharing space with road traffic. They offer capacities ranging from 2,000 to 8,000 pphpd, depending on train length, with good accessibility and high levels of comfort. Their integration into public space and their impact on urban development often make them powerful tools for transforming the neighbourhoods they serve. Examples in Africa include the Casablanca and Rabat tramways, and the Tunis light metro.

Bus Rapid Transit (BRT) is a high-capacity bus-based system that relies on infrastructure designed to deliver performance comparable to that of a metro (10,000 to 30,000 pphpd). It combines dedicated lanes, signal priority (and sometimes grade separation at intersections), well-designed stations, and high-capacity vehicles. Its objective is to provide fast, reliable, and attractive services, while offering greater flexibility and lower capital costs than metro or tramway systems. Examples in Africa include the Cape Town BRT and the Dakar BRT.

Bus with High Level of Service (BHLS) is a bus-based system with lower capacity than BRT (3,000 to 8,000 pphpd), with its own set of characteristics. It generally includes dedicated lanes over most of the route, intersection priority, frequent services, real-time passenger information, and modern fleet of vehicles. Less infrastructure-intensive than BRT, it nonetheless delivers a significant improvement over conventional bus services, whilst avoiding the creation of urban divides associated with BRT corridors. Examples in Africa include the Lagos BRT-Lite, the Casablanca BHLS, and the Nouakchott BHLS.

Cable Car refers to urban cable systems adapted for intra-urban travel, particularly where natural obstacles or space constraints make ground-based modes costly or difficult to implement. Reliable and largely unaffected by road congestion, these systems provide continuous cabin movement with limited ground footprint. They typically offer capacities in the range of 2,000 to 5,000 pphpd. Examples in Africa include systems in Algiers and Antananarivo.

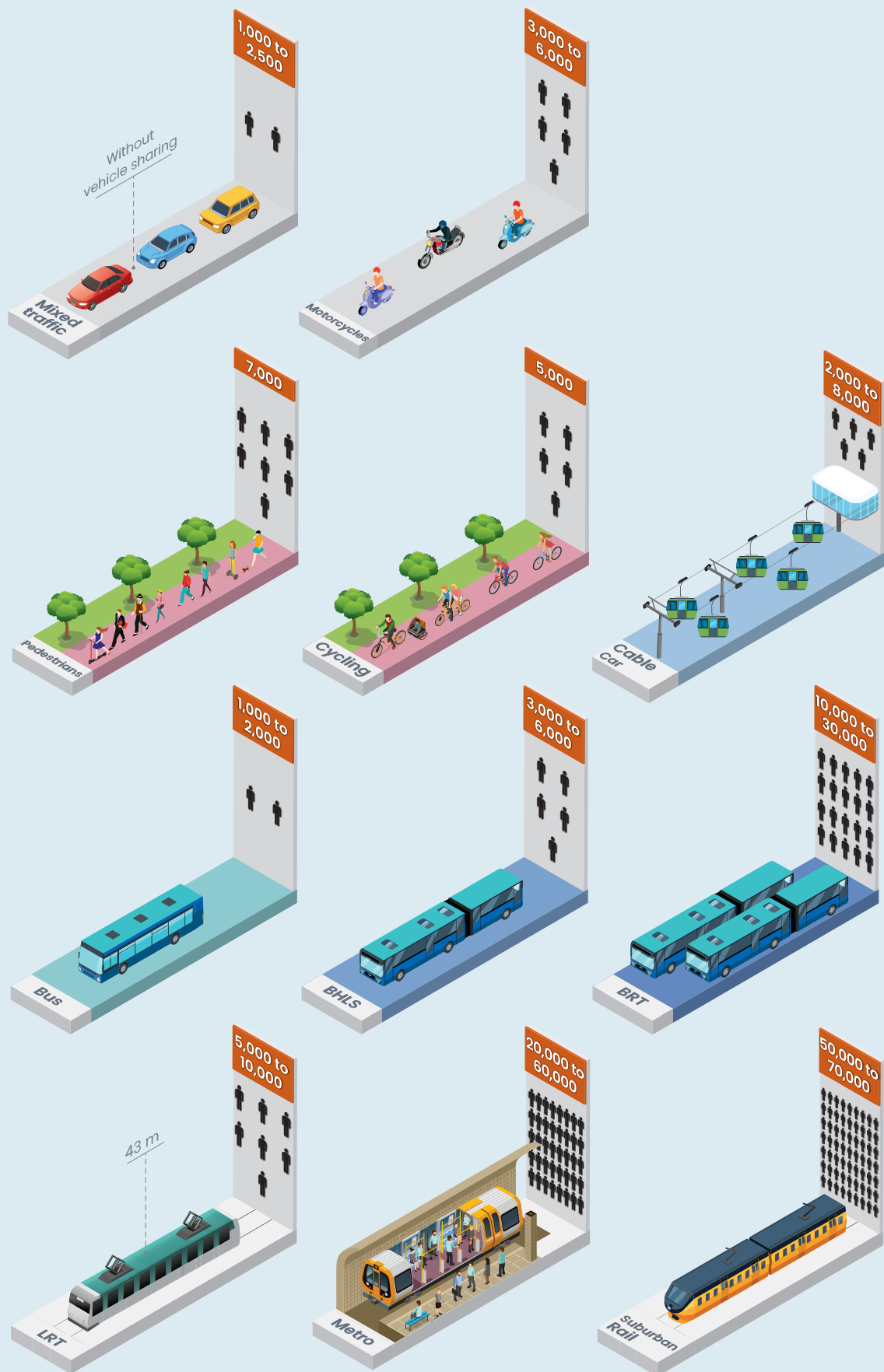


FIG. 4 THEORETICAL THROUGHPUT CAPACITY OF A TRANSPORT LANE
(PASSENGERS PER HOUR PER DIRECTION)

2.1 A Rapid Increase in Projects

To address this question, Transitec compiled an inventory of mass transit systems that are operational, under construction, or under study. At the beginning of 2025, just over 1,100 km of mass transit infrastructure were in operation. Rail-based systems largely dominated this inventory: Light Rail Transit, particularly widespread in North Africa (Morocco, Algeria, Tunisia), account for 35% of the total network length; metro lines (19%) are concentrated in a limited number of metropolitan areas (Algiers, Abuja, Cairo, and Lagos); and several suburban rail systems (24%) are also in operation in Tunisia, South Africa, and Dakar.

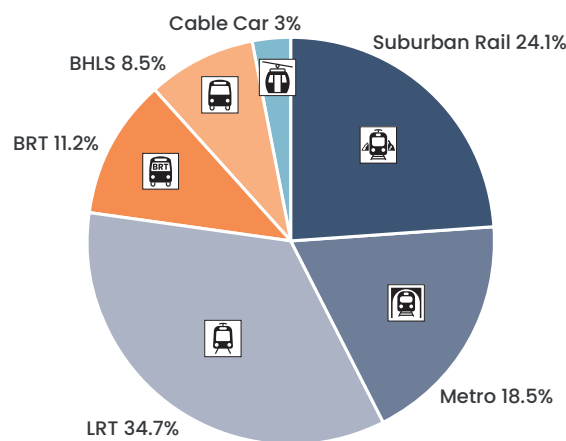


FIG. 5 NUMBER OF KILOMETRES OF MASS TRANSIT INFRASTRUCTURE IN OPERATION IN 2025

Bus Rapid Transit lines, which are designed to carry as many passengers as a metro thanks to dedicated corridors, currently account for only 11% of total network length. Known to be quicker to implement by requiring less capital relative to the number of passengers carried, BRT systems are nevertheless experiencing rapid growth across the continent.

The first BRT systems were commissioned in South Africa in 2009 in Johannesburg and in 2011 in Cape Town; these were followed by the system in Dar es Salaam, inaugurated in 2016, and the Dakar BRT, whose fleet of articulated buses is 100% electric, commissioned in January 2024 over a length of 18 km. More than 190 km of BRT were under construction at the beginning of 2025 (notably in Abidjan, Cairo, and Addis Ababa). There were also 336 km of BRT infrastructure under study

(notably in Kano and Kaduna in Nigeria, Douala and Yaoundé in Cameroon, and Maputo in Mozambique).

Lastly, Bus with High Level of Service (BHLS) lines –according to the established European terminology –have lower capacity, as they aim to carry nearly as many passengers in buses as a tramway line, and account for 8.5% of total mass transit kilometres. In 2025, 36 km of BHLS were under construction (in Nouakchott and Casablanca) and 122 km were under study.

Thus, in the coming years, rail-based modes could be caught up by bus-based systems (BRT and BHLS), which will account for twice as many kilometres of infrastructure as today (see Figure 6). They will nevertheless continue to carry a greater number of passengers due to their capacity.

Governments are investing, with the support of their financial partners (primarily the World Bank, the French Development Agency, and the African Development Bank), in the development of mass transit networks. At the beginning of 2025, projects under construction represented a total investment of approximately €3 billion, with an additional €2.5 billion allocated to projects under study. This is very encouraging. But to what extent will these projects be sufficient to meet the mobility needs of the population?

"At the beginning of 2025, projects under construction represent a total investment of approximately €3 billion, to which an additional €2.5 billion is allocated for projects under study."

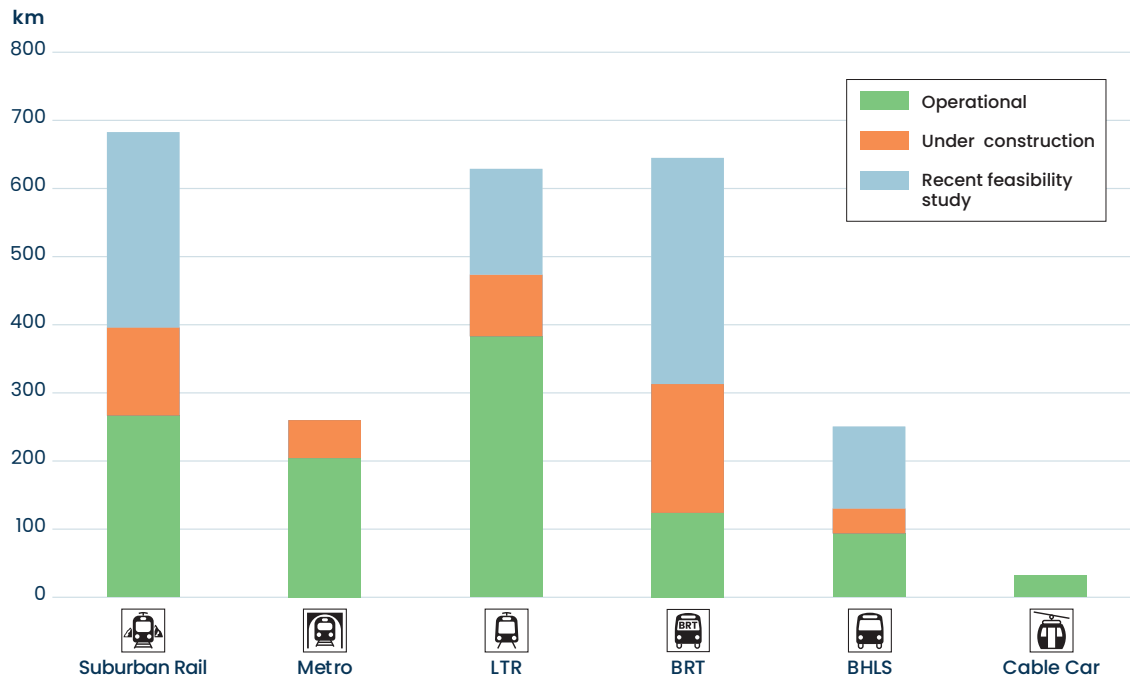


FIG. 6 MASS TRANSIT INFRASTRUCTURE IN OPERATION AND IN PREPARATION IN AFRICA IN 2025

2.2 Still Limited Mass Transit Provision

To further develop the analysis, we propose examining the "Rapid Transit to Resident" (RTR) ratio¹ which simply consists of measuring the number of kilometres of mass transit per 1 million inhabitants within a metropolitan area².

This indicator was used in a 2014 publication by the Institute for Transportation and Development Policy (ITDP) and UC Davis to promote an ambitious urban transport scenario ahead of COP21: the "High Shift Scenario"³. It identified the situation in 2010 for cities with more than 300,000 inhabitants across all continents and defined targets to be achieved under a scenario in which governments would take all necessary measures to reach levels of public transport provision aligned with the highest international standards.

Through substantial investment in public transport (BRT, metro, tramway, etc.) and cycling infrastructure, the authors of that publication demonstrated that it would be possible to save more than \$100 trillion in public and private capital and urban transport operating costs by 2050, while avoiding approximately 1.7 gigatonnes of carbon dioxide (CO₂) emissions per year, representing a 40% reduction in urban passenger transport emissions by 2050.

As shown in [Figure 7](#), all regions of the world were expected to expand their mass transit networks in order to reduce dependence on private vehicles emitting CO₂. In Africa, the RTR ratio stood at 2.9 in 2010. The baseline scenario projected an increase to 4 by 2050, while the "High Shift Scenario" set a target of 19.

¹ Rapid Transit Database - Institute for Transportation and Development Policy

² Metropolitan area with a minimum population of 500,000 inhabitants

³ (99+) A Global High Shift Scenario : Impacts and Potential for More Public Transport, Walking, and Cycling with Lower Car Use

Rapid Transit to Resident Ratio	2010					2050	
	BRT	Metro	Tram / LRT	Commuter Rail	Total	Baseline Total	High Shift Total
USA / Canada	0.4	5.4	5.1	21.0	31.9	30.7	60.5
Mexico	2.5	2.2	0.7	0.3	5.7	8.7	35.2
OECD Europe	0.4	7.5	20.0	56.2	84.2	84.4	117.8
OECD Pacific / other	0.9	7.8	2.6	66.6	78.0	81.0	106.6
Non-OECD Europe	0.0	2.1	39.7	3.2	45.0	50.8	79.9
Russia	0.0	4.6	34.8	4.7	44.1	51.0	77.8
China	0.8	3.4	0.4	0.1	4.7	7.6	43.3
India	0.3	0.7	0.2	4.1	5.3	6.1	37.5
Other Asia	0.5	1.0	1.1	2.2	4.8	5.1	19.3
Middle East	0.8	2.2	0.2	0.2	3.4	5.2	30.9
Africa	0.2	0.2	0.5	1.9	2.9	4.0	19.0
Brazil	1.7	2.0	0.0	4.4	8.0	10.8	32.4
Other Latin Am. /Carrib.	1.4	1.1	0.2	8.2	11.2	13.2	32.4

RTR Ratio 2014 and High Shift Scenario: Km per million residents by mode and region (averaged over all cities over 300,000 population)

FIG. 7 RTR RATIO BY WORLD REGION IN 2010 AND 2050 ACCORDING TO THE SCENARIOS ANALYSED
source : ITDP & UC Davis



Nouakchott BHLS (2026) ©Transitec

2.2.1 RTR : Diverging Trends in "Pioneer Metropolitan Areas"

To project current trends based on the compiled inventory, we assumed that all projects under construction will be operational by 2030, and that all projects under study will be commissioned by 2035. This allowed us to construct RTR ratio curves for metropolitan areas with at least one mass transit project. Taking demographic dynamics into account, RTR ratios may decline in cities that do not maintain investment in mass transit projects. Conversely, some cities show increasing levels of provision over the decade.

If we take a closer look at trends in cities with mass transit systems in operation or under development, several trends can be observed:

- The Maghreb stands out with relatively high levels of provision in 2025; however, with the notable exception of Casablanca and Rabat, investment levels in most major metropolitan areas are insufficient to stabilise or increase the RTR ratio given ongoing population growth.
- Projects in smaller cities (such as Agadir, Constantine, Nouakchott, etc.) are expected to achieve a high standard of infrastructure very quickly. These cities are therefore on a very favourable trajectory to structure their urban growth around BHLS or tramway corridors.
- Several large metropolitan areas (such as Dakar, Algiers, and Gauteng), which could be considered pioneer cities given their level of provision in 2025, are likely to experience a decline in the RTR ratio due to projected population growth.
- Some Sub-Saharan metropolitan areas have clearly set out on a path to catch-up (Abidjan, Dar es Salaam, etc.) and are likely to rapidly surpass the level of provision observed in pioneer cities.

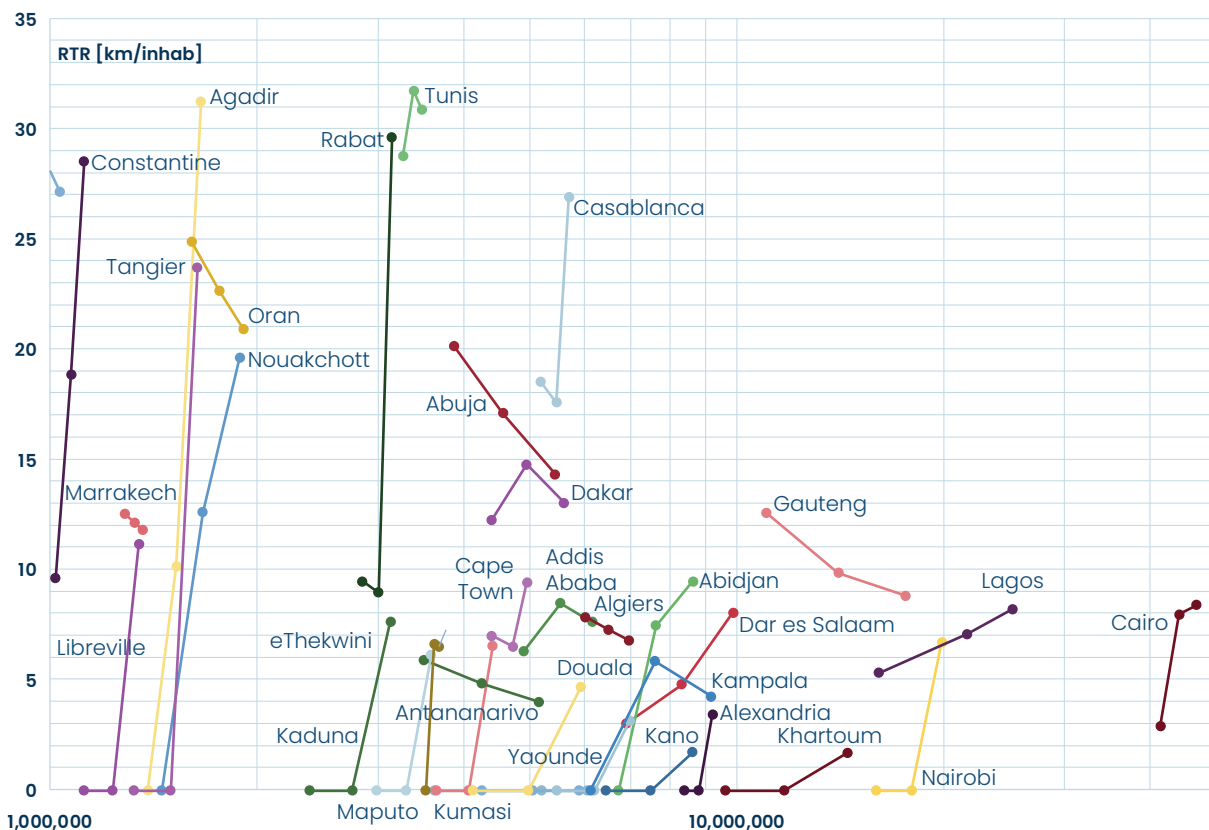


FIG. 8 RTR RATIO IN AFRICA, 2025, 2030 AND 2035 BASED ON THE COMPILED INVENTORY

2.2.2 RTR : an Insufficient Mass Transit Provision at the Continental Scale

If we now consider all cities on the continent with more than 300,000 inhabitants⁴, it appears that the numerous mass transit projects outlined above would set Africa on a more ambitious trajectory than the 'business-as-usual' scenario presented by ITDP and UC Davis at COP21. In an optimistic scenario where all these projects are implemented, the continent would manage to triple the mass transport coverage rate observed in 2010⁵ by 2035, and achieve a RTR of 4 by 2040.

However, this outcome is insufficient to meet urban mobility needs. Approximately twice as many projects currently under consideration would be required to align with the "High Shift Scenario".

This lag in the development of mass transport is largely due to cities that have no plans in place. Of the hundred or so urban areas on the continent with more than 1 million inhabitants, more than two-thirds have not yet made the necessary investments in mass transport.

Whilst 66 % of the 19 conurbations with more than 5 million inhabitants had no transport lines in operation, under construction or at the planning stage, only 21 % of the 87 conurbations with between 1 and 5 million inhabitants were equipped with such a system or had a project in place. This figure drops to 3 % for the 85 urban areas with a population of between 0.3 and 1 million.

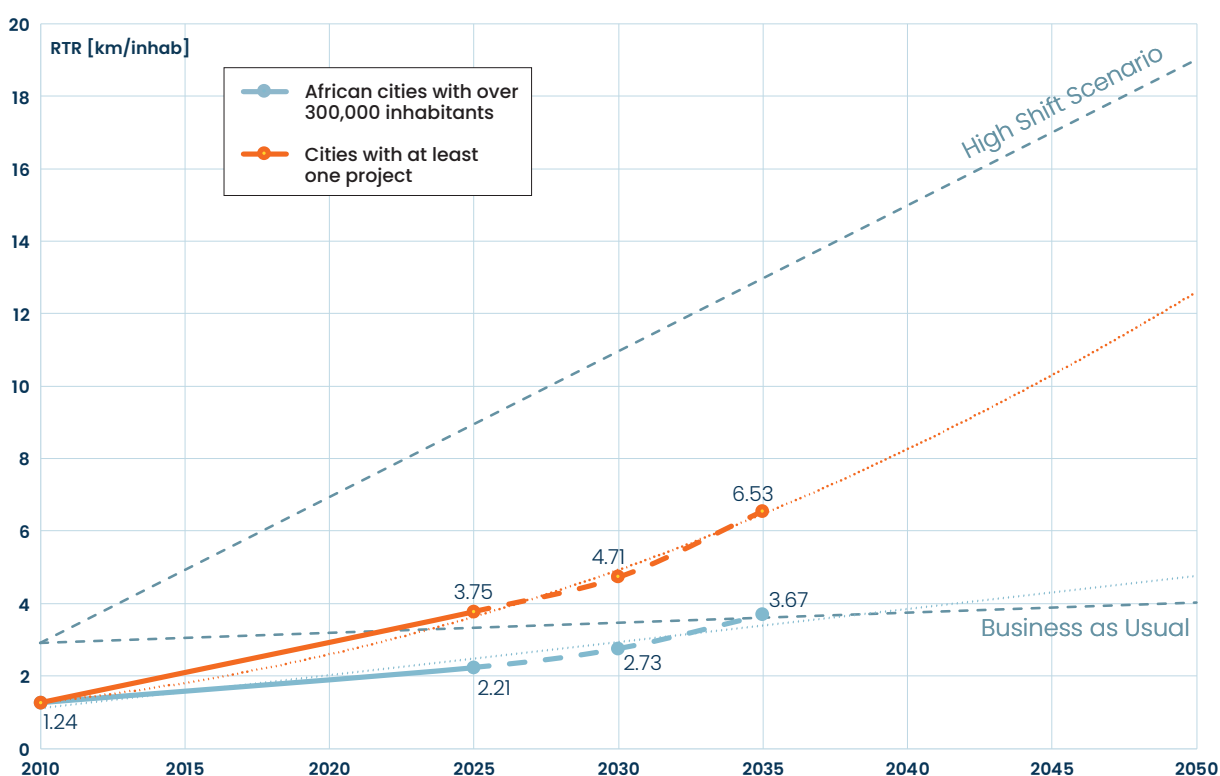


FIG. 9 RTR RATIO IN AFRICA FROM 2010 TO 2035 BASED ON THE TRANSIT CENSUS

4 Transitec recalculated the RTR ratio using Africapolis data. These data are based on different assumptions than those used by UN-Habitat and better reflect the demographics of metropolitan areas. As cities generally have larger populations under this approach, the baseline RTR ratio is in fact lower in 2010.

5 This analysis is highly dependent on the population figures used for each metropolitan area in the ITDP – UC Davis study. Our analysis is based on Africapolis data.



3. Looking Ahead: Three Key Dynamics to Foster

In conclusion, three key dynamics should be encouraged in light of these mass transit projects:

MAINTAIN THE MOMENTUM

First, cities that already have mass transit systems must continue their efforts to increase the capacity of their public transport systems, in order to avoid chronic congestion. The RTR indicator does not account for system capacity and does not capture performance levels. For example, projects such as the Addis Ababa tramway or the Dar es Salaam BRT have service levels that are too low relative to the investment made in infrastructure. It is therefore essential, even for cities that have already initiated the development of their mass transit networks, to ensure high levels of performance.

ENABLE LAGGING CITIES TO DELIVER PROJECTS

Second, given that these projects typically require 5 to 10 years to be implemented, it is urgent for major capitals such as Kinshasa (12 million inhabitants), Luanda (10 million), Khartoum (9.6 million), and Accra (5.4 million) to begin planning projects. Several of these metropolitan areas have recently made encouraging announcements; however, the development of viable projects depends above all on strong project ownership capacity, which:

- conducts feasibility studies in line with international standards;
- is aligned with high-quality multimodal planning;
- secures the financing required to commence the construction phase;
- clearly defines a viable business model for the operational phase⁶.

ANTICIPATE THE GROWTH OF SECONDARY CITIES

Finally, given the pace of urban growth across the continent, planning secondary cities around high capacity public transport systems must be considered a priority. Structuring these cities around reliable public transport systems before congestion emerges will help prevent uncontrolled urban sprawl and dependence on individual transport modes. In these secondary cities, even more than in large metropolitan areas, integrating mass transit projects into a coherent metropolitan multimodal strategy is a key success factor. Establishing clear governance frameworks and appropriate financing mechanisms remains the foundation of effective urban mobility and accessibility policies.

⁶ Some capitals have undertaken feasibility studies but these have since become obsolete due to a lack of political commitment to investment..

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Data relating to mass transit projects was collected from various websites during 2024. The information was cross-checked to ensure its accuracy. The stages of progress of the various projects were assessed based on the authors' knowledge of the projects.

If you would like to provide further information to help correct any errors, please contact us at paris@transitec.net



Dar es Salaam BRT (2026) ©Transitec



About Transitec

Transitec Consulting Engineers is an independent consultancy firm specialised in strategies and technical solutions for urban mobility.

With a long history of working in a variety of contexts, Transitec has demonstrated its adaptability and works on mobility projects ranging from the national level down to the street level. Our work covers all aspects of urban transport engineering, from land-use planning and the design of urban spaces to monitoring implementation on the ground.

Transitec has extensive experience across the African continent, where it has been active for at least twenty years, providing consultancy services on the development of national policy, urban mobility planning, the restructuring of public transport networks, reforms to informal transport, traffic planning, and so on.



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