



SUSTAINABLE
TRANSPORT
AWARD

2025 STA Spotlight:

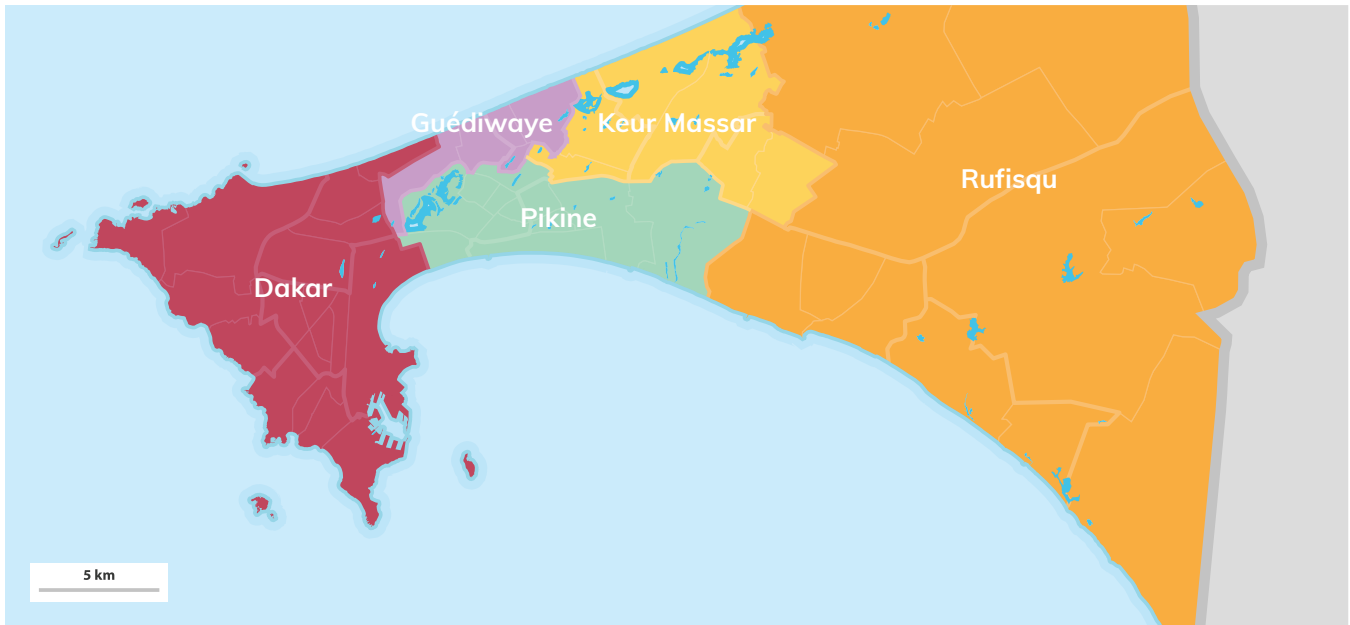
Implementing Electric BRT in Dakar, Senegal

Winner

➤ STAaward.org



Background



Dakar, the capital of Senegal, has a population of 3.6 million and continues to grow. The Dakar metropolitan area is responsible for generating 60% of the country's gross domestic product, making it a vital economic, social, and commercial hub in the region. Thanks to its location on the Cape-Vert Peninsula, the city has especially capitalized on the import and export industry. While the Dakar metropolitan area is divided into five departments (or districts),¹ the central region contains most of the employment and commercial hubs. Although this central area is home to fewer than 40% of residents, it houses 58% of the jobs.

As the majority of the population lives in the nearby Guédiawaye, Pikine, and Keur Massar districts, there is a notable disconnect between where people live and where they work. This has led to long commutes, growing daily traffic congestion, and unsustainable mobility. Hence, these “unplanned” regions, which were not included in the planning of the city's central districts, are now rapidly urbanizing. The three departments of Pikine, Guédiawaye, and

Rufisque have been developed quickly between the 1950s and 1980s.

In the 2000s, personal car ownership in Dakar was significantly lower than the global average (approximately 17 cars per 1,000 inhabitants), meaning that most of the population relied on alternative forms of mobility, such as walking, cycling, and public transportation. This included formal public transport, such as SOTRAC (replaced by Dakar Dem Dikk) and TATA (AFTU) buses, along with informal services provided by minibus operators like Ndiaga Ndiaye and Car Rapide.

Although public transport options coexisted, the systems did not always provide a seamless travel experience. Informal modes offered more flexible routes and schedules, adapting more easily to changing travel patterns and extending service into areas that were not viable for formal transport operators. On the other hand, formal transport operators provided more reliable, cost-effective, and comfortable options. Users were thus often forced to choose between two systems that had notable gaps (Lesteven, 2022).

¹ Dakar, Guédiawaye, Pikine, Rufisque, and Keur Massar, which was made a department on May 2021.

By 2000, walking accounted for 73% of the total trips in Dakar. Out of the daily motorized trips, 82% were made using public transport, including formal and informal options. During the following years, informal modes, such as Car Rapides and Ndiaga Ndiaye, dominated public transport demand, accounting for 51% and 25%, respectively. However, by 2015, these informal minibuses saw sharp double-digit declines. This shift was primarily driven by the introduction of TATA minibuses under the World Bank-supported AFTU renewal program, designed to provide services in previously

inaccessible areas by informal operators. Launched in 2001, the AFTU (Urban Transport Funding Association) program introduced a financial scheme that eased the process of purchasing new vehicles and reassessed previously denied loans for operators. The program's success led to its adoption in other cities across Senegal. Concurrently, the use of Clandos (unlicensed shared taxis) increased by 11%, Dakar Dem Dikk buses tripled their share from 3% to 9%, and private taxi use decreased from 13% to 8% (CETUD, 2015).



Before

▲
A new bridge elevates traffic and the BRT lane in Liberté 6



After



Before

▲
Pole d'Echanges Station and street modification



After

Mobility Challenges and Goals

The region's public transit agency, CETUD (Conseil Exécutif des Transports Urbains Durables), was established in 1997 to bring together the state, local authorities, and private sector to oversee mobility in the Dakar region. Since then, the Council has been taking steps to formalize the informal transport system, which has garnered interest from the private sector and development finance institutions, leading to innovative loan programs that support local service providers.

CETUD also worked to revise the Dakar Sustainable Urban Mobility Plan (PUMD) to better address the region's growing rates of private vehicle use and to mitigate related impacts, including the rise in greenhouse gas emissions and worsening air quality. Through a multi-stakeholder approach, the PUMD aims to reduce Dakar's transport-related emissions by 15% by 2030 (SLOCAT, 2022). The plan also identifies tactical strategies (World Bank, 2024):

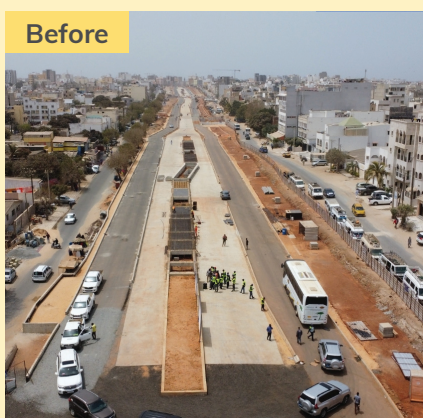
- Improve organization of transport modes
- Improve traffic management
- Organize public transport networks to support major transit corridors
- Focus on Transit-Oriented Development (TOD)
- Improve financing opportunities and governance

Notably, air quality in Senegal is currently considered unsafe according to World Health Organization (WHO) guidelines. With PM levels seven times higher than the recommended threshold in Dakar, residents face the risk of developing various respiratory diseases (World Bank, 2023). In tandem with worsening air quality is the rise in transport-related emissions from motor vehicles. In 2020, Senegal submitted its first Nationally Determined Contribution (NDC) as part of the Paris Agreement, setting a 7% emissions-reduction target (NDC Partnerships). To help Senegal reach this target, a crucial strategy is the expansion of low-emission mass transit systems such as bus rapid transit (BRT), coupled with traffic demand management measures (World Bank, 2024).

In 2021, CETUD conducted a study that projected that the adverse effects of automobile dependency would cost 900 billion CFA francs (\$1.62 billion USD) per year. Combining congestion, pollution, and road safety impacts, these losses correspond to 6% of Senegal's GDP. Reducing automobile dependency is therefore economically beneficial and Dakar has been working to develop an accessible, low-emission, and efficient BRT that will serve millions of residents and reduce private vehicle use.



▲
Pole d'échanges Guédiawaye,
before and after



▲
BRT station in Liberté 6



Planning Africa's First Electric BRT

In 2002, the United States development agency USAID provided initial funding for the development of sustainable transportation solutions in Senegal, Ghana, and South Africa. The proposition of establishing a BRT was formulated through CETUD, with conceptual and technical support provided by various partners, including ITDP. At this time, Enrique Peñalosa, the former Mayor of Bogotá, Colombia, visited Dakar as part of the Building a New City tour. Along with Peñalosa, other experts jointly held workshops and discussed the city's sustainable future. Then-President of Senegal Abdoulaye Wade and key decision-makers displayed deep interest in facilitating a mobility transformation along the lines of Bogotá's comprehensive Transmilenio BRT system and the possibility of replicating it in Dakar's context. Technical experts visited Bogotá to build further capacity and technical expertise.

The next phase focused on identifying travel patterns, deciphering the capacity of under-utilized roads, land acquisition, and, most importantly, calculating travel demand and congestion levels to identify BRT routes. This study, also funded by USAID, played a crucial role in projecting demand, mode shift, city density, and origin–destination patterns. The study took the form of the first feasibility report, which was released in 2004 and was followed by comprehensive workshops on financing, institutional roadblocks, and feasible business models. An Economic Internal Rate of Return, which measures not only financial returns from projects but also potential nonfinancial benefit, was calculated for the BRT at 18.9%, suggesting strong economic viability for the system.

CREDIT: CETUD.



Enrique Peñalosa's
visit to Dakar

Site visits to Bogotá
and Rouen

Workshops held
in Dakar

Develop the fi st phase
of the BRT corridor
service plan

Technical
review
by ITDP

2002-2004

2005-2007

2020

2002

2003-2005

2017

2024

USAID starts
funding in
Senegal on
sustainable
transport
and access

Collect data
and prepare the
feasibility study
for BRT integrated
with non-motorized
transport

Dakar BRT pilot gets
approval for 227.5 billion
CFA francs (US\$394
million) equivalent IDA
credit from the World
Bank

Dakar BRT
opens

From 2005 to 2007, the city and national governments collaborated on progressing from the feasibility study. They worked with partners, such as ITDP, to develop the fi st phase of the BRT corridor service plan. Given the high demand of the Guédiawaye/Pikine, Camberene to Plateau corridors, a trunk and feeder system was implemented to increase capacity. This feeder system proved to be beneficial, gi en the limited road space and the regulation of bus

driver behavior. Fundamental BRT components such as busway alignment, proper intersection treatments, fully dedicated right-of-way, and off-board fare collection were taken into consideration (ITDP Africa, 2024). Throughout the initial planning processes and evaluations in the 2010s, electric buses also emerged as a viable option for the BRT as technologies in the sector evolved and electrification gained traction globally.



Mr. Macky Sall, President of the Republic, officially inaugurated on Sunday January 14, 2024, the Dakar BRT and the Operation and Maintenance Center in Gadaye..CREDIT: CETUD

After years of development, in early 2024, the Dakar BRT system debuted as Africa's first all-electric corridor of its kind. The 18-kilometer electric BRT corridor runs along the city's north-south axis, connecting the Guédiawaye Prefecture in the northern suburbs to the Peterson bus station in the city center. It includes over 120 electric buses across more than 23 stations, of which three are exchange terminals and have an associated ticketing system. The electric BRT has a designated right-of-way, and support infrastructure includes a control center, administrative buildings, a maintenance center,

and a dedicated bus depot taking up an area of six hectares (MIGA, 2024).

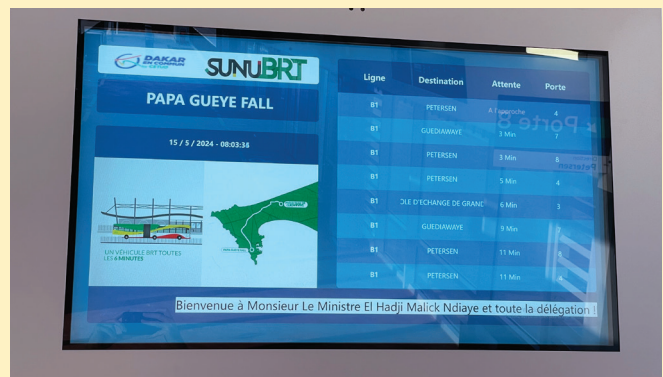
CETUD emphasized the incorporation of more efficient feeder lines to promote intermodality and price integration, aiming to achieve the financial viability of the electric BRT and TER commuter rail, which connects Dakar to neighboring cities, including Diamniadio and the airport. This integration of feeder services has allowed public transport demand to be split between the lines of electric BRT and TER, providing for more seamless trips without the need for a private vehicle.

Impacts of the Dakar e-BRT

The Dakar electric BRT (e-BRT) serves 14 municipalities and has an average daily ridership of 300,000 passengers as of 2024. The Dakar BRT also provides access to an estimated 180,000 additional jobs in the socioeconomically disadvantaged areas of the city. A landmark achievement of this project has been the reduction in travel time between downtown areas and Guédiawaye, which has been cut from 90 minutes to 45 minutes. Approximately 500,000 people was expected to be served by the Dakar e-BRT in 2025. Hence, 30% of the total trips by mass public transit that have been accounted for, include

BRT as well as the region's TER commuter rail. In line with Senegal's Nationally Determined Contributions (NDC) for climate target, the BRT is projected to reduce CO₂ emissions by 53,000 tonnes per year, primarily through its all-electric fleet. Greenhouse gas emissions are expected to be reduced by 1.2 million tonnes over 30 years, which is comparable to removing 260,000 cars from the streets (World Bank, 2023). The amount of harmful air pollutants that contribute to respiratory and cardiovascular problems is also expected to be reduced by approximately 20 tonnes of PM 2.5, 117 tonnes of NO_x, and 24 tonnes of SO₂ per year (World Bank, 2024).

The new BRT system reduces congestion and carbon emissions, while improving the cityscape and commuting experience.
CREDIT: CETUD.



Screens showing travel times and status of the SUNUBRT.
CREDIT: CETUD.



The Key Role of Diverse Investments

The Dakar BRT project is the first of its kind in the region and, as such, offers a tangible model for public transport systems across Africa. A crucial part of the project's implementation was its innovative financing models, which brought together various Senegalese agencies, development banks, and the private sector as key stakeholders. The creative approach to financing presents essential learnings for other cities interested in implementing similar BRT systems.

The electrification of bus and BRT systems has been gaining momentum globally as a standout

solution for climate, public health, and economic development. Chinese and Latin American cities have led the world in adopting and implementing electric buses in city networks in recent years. However, the upfront cost of electric buses (two to three times that of diesel) remains a concern for many governments, even though the total cost of ownership (TCO) of electric buses is, in fact, lower than that of diesel buses. Investments in charging infrastructure further exacerbate concerns about upfront capital costs.

SUNU BRT is Africa's first electric BRT system and one of the most innovative energy transformation projects. CREDIT: CETUD.





CREDIT: CETUD.

As in the case of Dakar, more governments are recognizing the potential of electric bus systems, particularly in improving air quality and stimulating economic growth. Often, fuel imports are a country's single highest import cost, and reducing the fuel needed for public transport can have a significant impact on energy security (APTA, 2002). Electric buses emit significantly lower levels of local pollutants like particulate matter, nitrous oxides, and sulfur dioxide, which contribute to poor air quality and related health concerns and costs. Both issues factored into the decision-making to implement an electric BRT for Dakar.

Totaling 377 billion CFA francs (USD \$653 million), Dakar's funding strategy for the BRT

project involved leveraging diverse stakeholders and forging trailblazing partnerships. In addition to Senegal's direct contribution of 9 billion CFA francs (USD \$16 million), the national government received financing from several development banks. The World Bank's International Development Association (IDA) was at the helm, providing 227.5 billion CFA francs (USD \$394 million), which covered the BRT infrastructure, land acquisition, road works, capacity building, and viability gap funding. Notably, the loan did not cover the electric buses themselves. The European Investment Bank provided 52.4 billion CFA francs (USD \$93 million) in financing for BRT infrastructure.

The financing strategy breakthrough was the collaboration with private sector infrastructure developer Meridiam to secure private sector investments of between 88 billion and 130 billion CFA francs (USD \$157–\$232 million) for the electric BRT fleet. In partnership with Keolis, a subsidiary of French national rail company SNCF, Meridiam bid to operate the Dakar BRT, winning the concession agreement in February 2022. The public–private partnership (PPP) between the Senegalese government and Meridiam consists of a 15-year concession agreement. The government is responsible for delivering the BRT infrastructure (designated lanes, stations, depots, etc.) and any supporting infrastructure, such as cycle lanes or sidewalks that connect to the BRT system. Meridiam is responsible for operating the system, including maintaining the bus fleet. To allow for maximum usage by citizens of all social strata, the financial structure also ensures the existence of a social fare program for lower-income residents.

Critical to Meridiam's ability to operate the system and reduce operational risk were several elements built into the original loan package.

The first was viability gap funding. This funding, also referred to as a minimum ridership guarantee, ensures that Meridiam will receive a certain level of revenue even if ridership drops below projections. This is the only operational subsidy provided. The second was funding for battery replacement. The cost of battery replacement midway through the 15-year concession was bundled into the loan package. The Multilateral Investment Guarantee Agency of the World Bank also provides a EUR €20 million (USD \$23.5 million) guarantee to Meridiam to reduce the risk of exposure (MIGA, 2023).

Though PPPs for public transport projects are not new, the collaboration between the government, development banks, and Meridiam to deliver the Dakar BRT was innovative and demonstrated the possibilities of cross-sector collaboration. The government and IDA helped mitigate risk, enabling Meridiam to operate the system in a way that also generates adequate returns. This partnership ensures the long-term financial sustainability of the electric BRT and its maintenance.

Lessons Learned

Dakar's electric BRT implementation has offered some vital considerations involving capacity-building strategies, environmental concerns, technical design adaptations, and the details of structuring PPPs.

Capacity Building and Inclusion Considerations:

Long-term viability depends on the capacity to develop and manage concessions, train qualified personnel, and build social and environmental protections. This includes early implementation of Resettlement Action Plans, Occupational Health and Safety Standards, and robust Grievance Redress Mechanisms. Urban integration elements, such as transit-oriented development, nonmotorized transport

infrastructure, road safety, and adaptation, must be incorporated into the technical design from the outset. Early in the planning stages, inspiration was taken from Bogotá, Colombia's Transmilenio BRT system, one of the largest in the world, which served as a "proof of concept" model that such a system could be designed and implemented in a similar urban context.

CREDIT: CETUD.



PPP and Risk Allocation Measures:



There are very few experienced electric BRT operators in Senegal and this region of Africa. Language barriers, governance risks, and PPP complexity have posed barriers to the adoption and expansion of public transport investments in the area. Since the PPP structuring is highly complex, it was necessary to start the process as early as possible. Governments needed to be able to negotiate effectively with private sector actors. This took close to two decades from the initial concept to the eventual debut of the Dakar BRT project. Governments will need to be prepared to take some risks to indicate to private investors that they are committed to the project's long-term success.

Innovative Financing Initiatives:

The high upfront cost of electric buses and charging infrastructure is a significant barrier to scaling electric BRT projects. Governments may not want or be able to afford these costs, despite the long-term operational cost savings and socioeconomic benefit. Financial institutions like the IDA and the World Bank can play a catalytic role, as demonstrated in the Dakar BRT project, where IDA resources helped cover the cost difference between diesel and electric buses for the BRT.





Future Growth

Aligning with the Senegal 2050 Agenda for the country's economic and social development, as well as Dakar's city-level Urban Mobility Plan (PMUD), the government plans to orient its urban mobility networks toward developing a more climate-resilient and efficient model. A vital aspect of this plan is to integrate the existing TER commuter rail and BRT systems into a holistic network that better connects walking, cycling, and informal transport corridors. Furthermore, CETUD is seeking support for the development of a second BRT line under the agency's programmatic vision for 2025 to 2035. Hence, the government of Senegal is also in the process of developing a multi-year program following the launch of the initial phases of BRT and RTC, which will be part of the Dakar Sustainable Urban Mobility SOP1. SOP2 will further prioritize the addition of new BRT corridors ([World Bank, 2024](#)).



SUSTAINABLE TRANSPORT AWARD



ITDP

Institute for Transportation
& Development Policy

Copyright © 2025
Institute for Transportation
& Development Policy,
All rights reserved.

9 E 19th St, 7th Floor
New York, NY 10003

 STAaward.org