



CÔTE D'IVOIRE

TRANSPORT

The necessary development of sustainable transport in Côte d'Ivoire

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The necessary development of sustainable transport in Côte d'Ivoire

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Following eight years of remarkable economic growth, Côte d'Ivoire is in the grip of rapid urbanization coupled with escalating car ownership and informal transportation. Given the key role of the transport sector in national mitigation targets, it is crucial for the government and urban centers to provide an organized response to citizens' growing demand for transport, driven by the metropolis of Abidjan. This overview presents current initiatives to modernize mobility in Côte d'Ivoire in order to meet the country's increasing demand, climate goals, as well as road safety and health requirements.



Key takeaways



Côte d'Ivoire's breakneck growth since 2012 has boosted the ownership of private cars more than the development of public transport.



Adverse traffic conditions in Abidjan penalize official operators, which are losing market shares. Informal transport solutions like wôrôs-wôrôs and gbâkâs are more flexible and better matched to meet the growing demand for mobility generated by urbanization, despite being involved in more road accidents.



The Ivoirian government has adopted ambitious urban mobility planning tools and a policy regulating the age of imported second-hand vehicles as a response to the country's fleet of outdated, polluting vehicles.



While 40% to 60% of journeys are still made by foot in built-up areas like Abidjan, the increased levels of motorization make the development of mass transport lines like the East-West BRT and line 1 of the Abidjan subway the most effective option to organize transport development.



NGOs and Ivoirian activists are at the forefront of the soft mobility movement, calling for the development of underused transport options, like cycling.

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1. Rising transport emissions generated by a growing economy

In its Nationally Determined Contribution (NDC) in the Paris Agreement, Côte d'Ivoire estimated a growth in greenhouse gas (GHG) emissions of around 4.3% on average per year from 2012-2030 (NDC Côte d'Ivoire, 2015). In particular, GHG emissions from the transport sector could rise by 25% over this period, from 2,389.36 kilotons of CO₂ equivalent (ktCO₂) in 2012 to 6,441.27 in 2030, which is an average annual increase of 5.7 % (fig. 1). GHG emissions generated by road transport almost tripled from 2005 to 2016 – although, in comparison with the global average per inhabitant, this emissions level remains extremely low (0.1 tons of CO₂/year/inhabitant) and the volume of journeys is limited. The transport sector thus constitutes the second biggest source of potential emissions growth after electricity production, and plays an important role in the mitigation strategy of Côte d'Ivoire, which is aiming at a 28% reduction in emissions by 2030 compared to 2012.

FIGURE 1

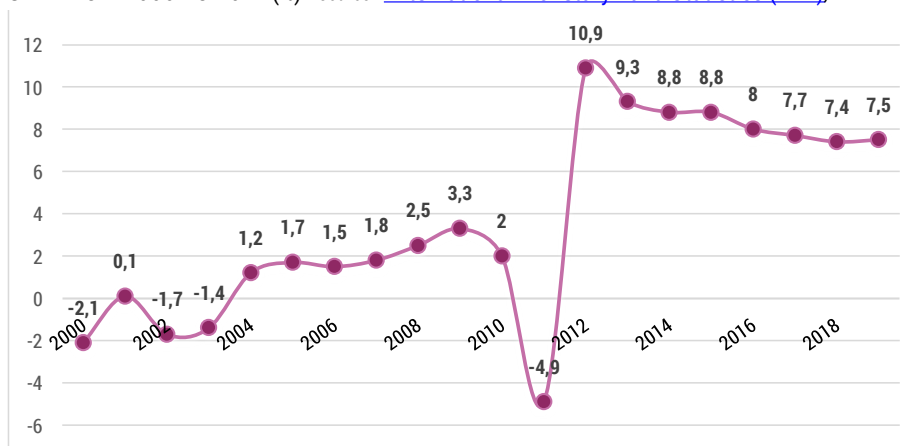
SCENARIO OF GHG EMISSIONS GROWTH IN CÔTE D'IVOIRE IN ITS NDC - source : Ministry of the Environment and Sustainable Development Nationally Determined Contribution (2015)



Like all sectors of the Ivorian economy, the increase in transport emissions is fueled by one of the highest growth rates in the world following the end of the 2010-2011 armed conflict. From 2012 to 2019, the growth of the country's economy fluctuated between 10.19% and 7.4% (fig. 2). Similar to other developing countries, these very good economic performances triggered a significant increase in the car ownership rate in Côte d'Ivoire. From 2013 to 2016, the annual average growth rate of imported vehicle registrations reached 17.6% (SICTA, 2017), with an average vehicle age of about 10 years. This registration growth rate continues at a rapid pace, almost twice as fast as GDP. The significant hike in car registrations can be explained by the high cost and difficulty of moving around on public transport. The poorest households spend on average 20% to 30% of their income on public transport and spend 200 minutes a day using it or waiting for it ([World Bank](#), 2019).



FIGURE 2

EVOLUTION OF GDP FROM 2000 TO 2019 (%) - Source : [International Monetary Fund Statistics \(IMF\)](#), IMF

The dynamics of economic growth go hand in hand with rapid urbanization accompanied by urban sprawl. This brings with it increasing needs for mobility that generates more growth in emissions. Today, over half of the country's population lives in cities, and this proportion is likely to reach two-thirds by 2050, mostly involving the expansion of Abidjan, which is set to reach a population of 10 million inhabitants (SDUGA, 2013). Following a similar trend, 80% of formal enterprises in the country are concentrated in Abidjan (SDUGA, 2013). Improving urban mobility is thus an economic and social necessity, not just for Abidjan, but for the whole of Côte d'Ivoire. While other Ivoirian cities are much smaller than Abidjan, they are also subject to rapid growth and are essential relay cities to avoid mega-concentration in the economic capital.

KEYS TO UNDERSTANDING

MEGA URBAN CONCENTRATION IN ABIDJAN

Côte d'Ivoire is one of the most urbanized countries in sub-Saharan Africa, and the greater Abidjan region drives the country's growth. Over half (56%) of the national population lives in urban centers, a rate that is rising by 5% a year, with a strong spatial disparity between the Greater Abidjan Agglomeration (GAA) and the other cities. GAA is home to around 5.4 million inhabitants, which is 42% of the country's urban population. It covers 19 municipal authorities : 13 of them come directly under the Abidjan Autonomous District (AAD), and the other six are surrounding municipalities. GAA is the country's main economic hub, concentrating about 60% of GDP (with an average GDP per capita 4.5 times higher than in the rest of the country), 80% of formal employment, 90% of formal enterprises, and over 80% of the fleet of vehicles in Côte d'Ivoire (World Bank). GAA is expected to continue growing, reaching 7 million inhabitants by 2030 and over 10 million by 2040. It acts as the main driver to attain the national objective of becoming a middle income country by 2035. This contribution is not however optimal for a number of reasons, i.e. its low economic density, low human capital, poor spatial organization and high transport costs.

BOX 1

2. Flaws in the urban transport system

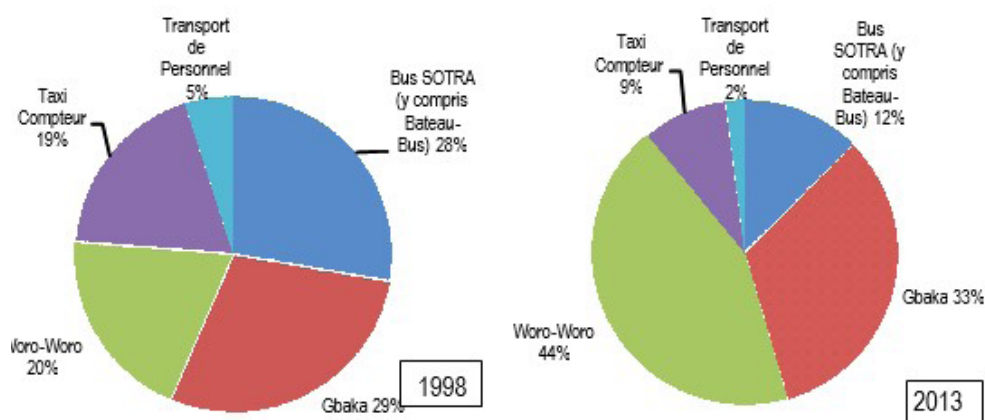
• **URBAN TRANSPORT DOMINATED BY THE INFORMAL SECTOR** • Only the city of Abidjan features formal operators organized by contractual agreements (service concession arrangements) with the state. Informal (or artisanal) operators run more flexible transport lines (provided that they respect certain conditions, such as registration and payment of a circulation fee to local authorities and trade unions). They are present in Abidjan and are the only operators in secondary Ivorian cities.

Formal transportation in Abidjan is mainly assured by SOTRA, which runs over 68 lines with a fleet of about 800 buses (Yao, 2015). Lagoon services also exist (less than 3% of the public transport market share), which are operated by the companies Société des Transports Lagunaires (STL), SOTRA and CITRANS (SDUGA, 2013). Informal transportation is operated either by minibuses or “Gbâkâs” in Abidjan and Bouaké – about 5,500 vehicles in Abidjan; municipal and inter-municipal shared taxis called “wôrô-wôrôs” – about 12,000 in Abidjan; or other taxis – about 11,300 in Abidjan. Added to these are motorbike and tricycle taxis in secondary cities, a significant share of them in Bouaké and the north of the country (Yao, 2015). Their presence expands rapidly during socio-political crises.

The Urban Master Plan for Greater Abidjan (SDUGA), adopted in 2015 by the government, reveals a marked change in the modes of transport used by Abidjan inhabitants from 1998 to 2013 (fig. 3). Journeys made by individuals in wôrô-wôrôs rose significantly by a little more than 7% per year, while **SOTRA lost about 2% of its market share per year due to adverse traffic conditions resulting in a low commercial speed (under 15 km/h), increasingly long wait times for users, and an inability to adapt its network to Abidjan’s urban development.**

FIGURE 3

EVOLUTION OF PUBLIC TRANSPORT SHARES IN ABIDJAN FROM 1998 TO 2013 - Source : Urban Master Plan for Greater Abidjan, 2013



In 2019 Abidjan joined the project “Open Data Community”, aiming to map the formal and informal transport of Abidjan. This mapping process will be useful to prepare infrastructure project such as the East-West Bus Rapid transit corridor, strengthening Abidjan’s public transport authority, and above all organizing paratransit sector and last-mile accessibility by addressing the lack of coordination among the operators that provokes congestion, congestion and lack of clear information. The project is funded by the French Development Agency and operating with the city of Abidjan and the Ministry of Transport ([DigitalTransport4Africa, 2020](#)).



• **SIGNIFICANT NEGATIVE EXTERNALITIES OF INFORMAL TRANSPORT** • The informal sector suffers from insufficient coordination and regulation, an absence of labor protection, and dilapidated vehicles that pose problems of safety, reliability and pollution. The average age of wôrô-wôrôs and Gbâkâs is respectively 22 and 17 years. They are often in a very bad state due to inadequate maintenance ([World Bank, 2019](#)).

From 2013 to 2018, the number of road accidents in Côte d'Ivoire increased by an average 3.87% per year due to the development of taxi motorbikes in secondary villages, where roads are unsuitable for the development of this kind of activity, and where the highway code is not respected by users. Road accidents are increasingly serious, with fatalities and serious injuries growing by 12.32% and 11.66% respectively. In 2018, motorbike taxis were involved in 17% of accidents and 32% of fatal accidents in the entire country. In Abidjan, public transport was involved in 54% of accidents, of which 98% on informal public transport (tab. 1).

TABLE 1

ACCIDENTS ON THE ABIDJAN PUBLIC TRANSPORT ROAD NETWORK BY TYPE OF PUBLIC TRANSPORT - Source : Office de la Sécurité Routière (OSER), 2018

VEHICULES	YEAR			TOTAL	Involvement rate of PT
		2017	2018		
Wôrô-wôrôs	2 102	1 721	2 273	8,147	79%
Minibus	1 087	1 521	1 479	4,973	48%
SOTRA bus	78	25	36	247	2%
Number of accidents involving public transport	3 267	3 267	3 788	10,322	100%
Number of accidents in Abidjan	6 378	6 245	6 478	19,101	
Involvement rate of public transport (%)	51 %	52 %	58 %	54%	

• **CONSIDERABLE TRAFFIC INVOLVING PRIVATE VEHICLES** • Private transport (individuals and metered taxis) is currently only responsible for 21% of journeys, or about 3.5 million journeys a day (tab. 2). However, it concerns about 70% of the daily road traffic of vehicles on Abidjan's main inter-municipal trunk roads, which is about 1.9 million journeys a day. In 2013, 8.9% of households owned at least one car (SDUGA, 2013) and private cars had an average age of 16 years (BNETD, end of study report, 2016).

TABLE 2

EVOLUTION OF "MARKET SHARE" BY TRANSPORT MODE FROM 2013 TO 2030- Source : Urban Master Plan for Greater Abidjan (SDUGA), 2013

Year	2013	2020	2025	2030
By foot	5,6	6,6	7,3	8,0
	(40%)	(38%)	(37%)	(35%)
By public transport	5,6	6,9	8,4	9,8
	(40%)	(40%)	(42%)	(42%)
By private transport	2,7	3,7	4,3	5,3
	(19%)	(22%)	(21%)	(23%)
Total	13,8	17,3	20,0	23,1
		(100%)	(100%)	(100%)

Unit : millions of journeys/day

FLAWS IN ABIDJAN'S URBAN TRANSPORT SYSTEM

An assessment report by the World Bank on the Abidjan Urban Mobility Project states that : “a large share of Abidjan’s population continues to depend on walking for their daily mobility needs. Approximately 40 percent of the 13.6 million daily trips in the city take place on foot. In poorer areas such as Yopougon and Abobo, located respectively to the west and north of the Central Business District (CBD), the modal share of walking is up to 60 percent, due to a poor-quality and unaffordable public transport system (Figure 4 illustrates the disproportionately higher share of walking among low-income households). [...] The lack of accessible, affordable, and reliable mass transit alternatives combined with poor management of the existing atomized public transport services causes the worsening of road safety and pollution, with adverse impacts on the health of the city’s population and the natural environment. Vulnerable road users – including pedestrians, cyclists, and motorcyclists – represent 46 percent of all the road traffic related victims of the more than 3,600 fatalities on Côte d’Ivoire’s roads each year*. The majority of these occur in urbanized areas, particularly the GAA. Recent research by the Global Road Safety Facility (GRSF) estimates the cost of each fatality at 70 times the GDP per capita for middle-income countries and 100 times the GDP per capita for low-income countries.”

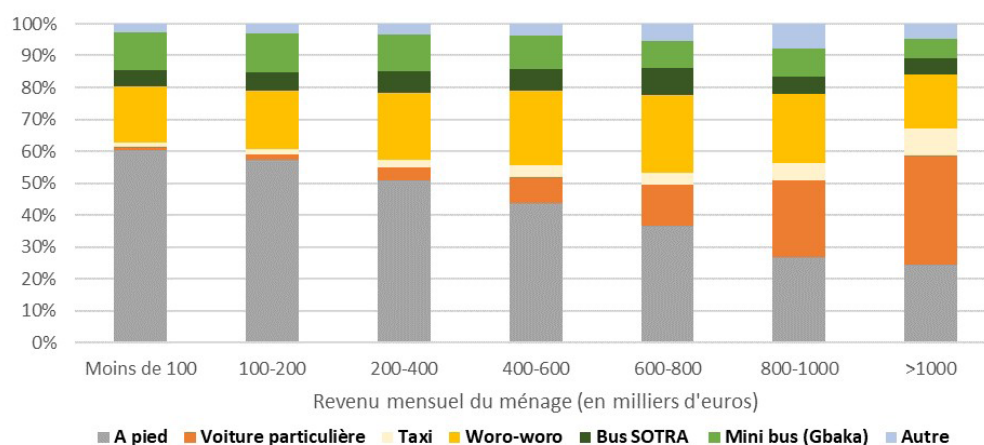
Source : World Bank, 2019

* [Global Burden of Disease \(2017\)](#)

BOX 2

FIGURE 4

SHARE OF MODAL TRANSPORT BY HOUSEHOLD INCOME BRACKET (IN THOUSANDS EUROS) - Source : World Bank (Household Survey data, 2013). Translation of categories : walking, personal vehicle, taxi, woro-woro, SOTRA bus, mini-bus (Gbaka), other.





3. Changes underway in the urban transport sector

• **REGULATORY AND FINANCIAL TOOLS** • The different tools that have been or are being developed to reduce GHG emissions aim to reduce the average age of private and public vehicles and to constitute a more energy-efficient, less-polluting fleet. These tools include a series of decrees adopted by the government since 2017.

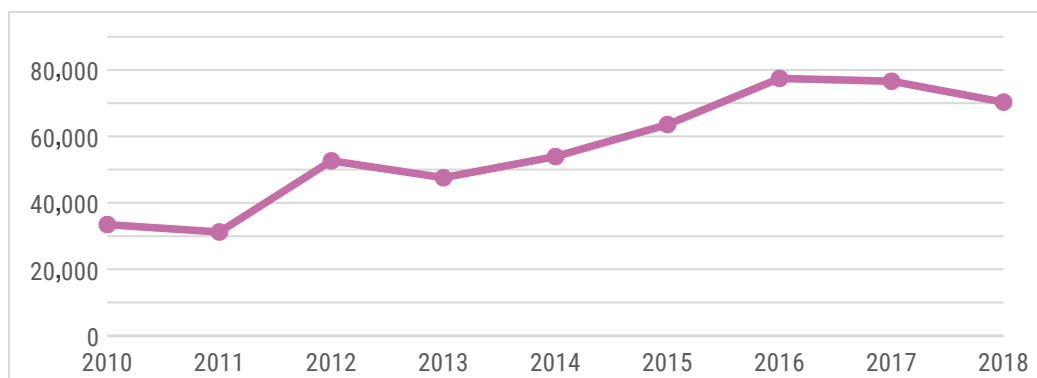
- **Adoption of [decree n°2017-792 of 6 December 2017 limiting the age of second-hand vehicles imported into Côte d'Ivoire](#) :**

- 5 years for taxis
- 7 years for 9- to 34-seater minibuses
- 7 years for vans up to 5 tons
- 10 years for coaches with more than 34 seats
- 10 years for trucks over 5 tons.

The implementation of this decree is supervised by a monitoring committee presided by the Minister for Transport. Practical checking of imports is carried out by customs and the office responsible for automobile registration (Guichet unique automobile). The fine amounts to 2,000,000 CFA francs, in addition to the cost of re-exportation or destruction. From 2010 to 2017, the average annual growth rate of registrations was about 13% (fig. 5). Following the entry into force of the decree limiting the age of imported vehicles in July 2018 (with a three-month grace period for vehicles already imported or in the process of importation), the registration growth rate dropped 8% from 2017 to 2018 ([Minister for Transport, 26/06/2018](#)). This decrease was confirmed by the total sales figure from January to September 2019, which was 48% lower than the same period in 2018.

FIGURE 5

EVOLUTION OF REGISTRATIONS FROM 2010 TO 2018 IN CÔTE D'IVOIRE - Source : Guichet Unique Automobile



At the same time, sales of new vehicles rose by 14% in 2018 and 17% from January to the end of May 2019 compared to the same period in 2018 (Guichet Unique Automobile, 2019). Although the figures are not yet available, an observation of leasing systems and bank loans reveals an increasing share of SUVs in vehicle sales in Côte d'Ivoire.

- **Adoption of [decree No. 2017-793](#) of 6 December 2017 establishing the durations for operating vehicles employed for public or private transportation of people and goods :**

- 7 years for taxis
- 10 years for 9- to 34-seater minibuses
- 10 years for vans up to 5 tons
- 15 years for coaches with more than 34 seats
- 20 years for trucks over 5 tons.

This decree, which was adopted at the same time as the decree limiting the age of imported vehicles, is not currently respected due to a lack of funding to support the renewal of public transport vehicles and effective enforcement mechanisms.

- Actions implemented for modern car recycling and the question of scrapping incentives. PAMOSSET (Project to Support the Modernization of the Transport Sector) aims to set up a processing and recycling center for end-of-life vehicles with the establishment of a scrapping incentive for 300 trucks, along with 2,000 taxis and 1,000 gbâkâs as part of the Abidjan Urban Mobility Project (PMUA).

- **Carbon tax in its early stages. Sectoral studies are underway, commissioned by the World Bank, including on a carbon tax for the transport sector** (National Authority of the Clean Development Mechanism, 2019). They include setting up a tax to meet with Côte d'Ivoire's NDCs, and taking into account internal social realities. The results of this study, which were scheduled for October 2019, should be subject to national validation.

- **[Ruling No. 2012-487](#) of 7 June 2012 on the investment code.** This code establishes tax breaks for operators depending on the amount and type of investment, aimed at encouraging and promoting productive investments, green and socially responsible investments in Côte d'Ivoire.

- **Decree No. 2017-125 of 22 February 2017 on air quality. This decree establishes maximum air quality thresholds by type of vehicle.**

In addition, existing measures need to be reinforced in a framework aimed at promoting soft transport (in particular the deployment of electric bicycles) and the effective application of the measures taken.

• DEVELOPMENT OF MASS URBAN TRANSPORTATION • The Urban Transport Master Plan for Greater Abidjan (SDTUGA), produced by SDUGA, anticipates the creation of mass transportation lines to provide the appropriate response to the demand in Greater Abidjan presented above. These two lines, initially planned as urban trains, have been modified to meet performance and cost-efficiency objectives. Thus, the North/South and East/West axes, initially planned to correspond to lines 1 and 2 of the Abidjan urban train, are now programmed as line 1 of the Abidjan subway and the East-West line of the Abidjan BRT.

Line 1 of the Abidjan subway (on the North/South axis of the city of Abidjan), covering 37.4 km, should be up and running in 2025 and transport about 800,000 people per day by 2030 (Project Coordination Unit – BNETD, 2019). The line, the main features of which are presented in the images to the right, should significantly reduce journey times and GHG emissions on the North/South corridor. One of the project's main characteristics is that it will use trains powered by electric traction with a view to a maximum reduction of emissions from public transport in Abidjan.



FIGURE 6

PHOTOS OF THE URBAN TRAIN LINE AND BRT PROJECT IN ABIDJAN



The BRT line on the Yopougon – Bingerville route (on the East/West axis of Abidjan city), covering about 20 km and including about twenty stations, should be operating by 2024 and transport about 600,000 passengers a day in 2030 (Direction Générale des Transports Terrestres et de la Circulation, 2019). This line should operate with electric buses in order to reduce the project's carbon footprint.

• **EMERGENCE OF LESS POLLUTING ENERGY SOLUTIONS** • Natural gas and butane are used in public transport by SOTRA and city taxis respectively, in particular in Yamoussoukro. The electricity produced in Côte d'Ivoire currently emits 501 gCO₂/KWh divided between 86.04% thermal power and 13.96% hydroelectricity in 2017 (Ministry of Oil, Energy and Renewable Energy, 2018). Hydrogen and biofuels are not yet produced locally, which means they need to be developed, while ensuring their energy efficiency in terms of use and production.

Given these figures, the evolution perspectives defined at the workshop that took place on 18 and 19 July 2019 to draw up a Sustainable Mobility Roadmap for Côte d'Ivoire, anticipates a 50% reduction in fossil energy by 2050.

TABLE 3

TARGET VALUES FOR CÔTE D'IVOIRE BY 2050 - Source : Estimation produced by the working group to draw up the Sustainable Mobility Roadmap, 2019

Horizon	2019	2030	2050
Electric	0 %	10 %	30 %
Hydrogen	0 %	0 %	5 %
Bio	0 %	5 %	15 %
Fossil	100 %	85 %	50 %

TABLEAU 4

TARGET VALUES FOR CÔTE D'IVOIRE BY 2050 - Source : Estimation produced by the working group to draw up the Sustainable Mobility Roadmap, 2019

ABIDJAN URBAN MOBILITY PROJECT (PMUA, 2019)

The construction of the BRT line on the East-West corridor of the city of Abidjan is part of an integrating project named the Abidjan Urban Mobility Project, managed through the Ministry for Transport. The PMUA comprises the following four components :

A. Implementation of an East-West BRT line from Yopougon to Bingerville (380 million USD obtained in a financing agreement with the World Bank, of which at last 130 million USD are expected from a private partner in a PPP. This amount, evaluated in a prefeasibility study by WSP, is likely to evolve with the results expected from the preliminary study and final draft report underway);

B. Support to reinforce SOTRA and reorganize the feeder system into mass transport lines (75 million USD). This component will help build SOTRA's capacities by constructing two new bus centers, new stations (in Yopougon and Bingerville) and renovating the bus center (SOTRA industry);

C. Support to organize the informal transport sector and access to the last mile (50 million USD). This component will be used to renew part of the fleet of gbâkâs and wôrô-wôrôs, and to create parking areas (for embarking and disembarking passengers), then service roads for the last mile;

D. Development of human capital and operational support (25 million USD). This component will be used to train gbâkâ and wôrô-wôrô drivers and apprentices, renovate the SOTRA training center, promote gender in transport, combat AIDS, and provide social security for informal workers in the sector.

The construction of the BRT line, without taking into account the renewal of the fleet, should reduce CO₂ emissions by about 100 tons/year.

BOX 3

4. Action by local authorities and civil society organizations

Local authorities act in several ways to reduce GHG emissions in transportation and develop eco-neighborhoods or neighborhoods emitting reduced CO₂.

For example, the town of Jacqueville launched a project in 2018 for three-wheel solar taxis measuring 2.7 meters long and 2 meters high. They were covered with photovoltaic panels charging six 12-volt batteries, which gave them an autonomy of 140 km ([Vivafrik, 25/09/2018](#)). While the initiative received positive media coverage, the experiment unfortunately reported a poor performance due to the operating conditions (mostly overcharging), lack of skills to maintain the equipment, and insufficient preliminary studies and support measures from the state. Some towns, like Odienné (north-west) and Korhogo (north), located in the sunniest regions of Côte d'Ivoire, had expressed an interest before this under-performance.

Action has also been carried out by Côte d'Ivoire's Chamber of Commerce and Industry with a view to deploying electric vehicles in Côte d'Ivoire. In July 2018, following a series of consultations, Côte d'Ivoire's Chamber of Commerce and Industry (Cci-CI) initiated industrial clusters for using electric vehicles. In addition, at a workshop on 11 July 2019 at the Plateau region's Chamber of Commerce and Industry, a cluster of green SMEs was launched in Côte d'Ivoire. The aim of this initiative is to set up a formal ecosystem around "green" SMEs to support and guide them through information and skills building, facilitate access to green finance focused on sustainably and climate and other funding mechanisms, promote innovation and access to green technologies, penetration of new markets and sustainable development.

**FIGURE 7**

PHOTO OF CÔTE D'IVOIRE'S PRIME MINISTER AMADOU GON COULIBALY, ON ONE OF THE FUTURE SELF-SERVICE BICYCLES Source : NGO My Dream For Africa



Several Ivorian NGOs are working to combat climate change, such as the **Club pour l'Éducation à l'Environnement et au Développement Durable (Club 2E2D)**, **Initiative Village Vert et Solidarité (I2VS)** and **MyDream For Africa**. More specifically, [MyDream For Africa](#) is lobbying for the promotion and establishment of a bike program for Côte d'Ivoire. Their lobbying targets local authorities, sports, cultural and religious associations, with awareness-raising campaigns aimed at students and schoolchildren. In 2020, MyDream for Africa intends to set up self-service bicycles in the municipality of Plateau (business hub in Côte d'Ivoire) and at Félix Houphouët Boigny University in Abidjan, which covers about 200 hectares. MyDream For Africa has already converted several figures of authority to the bicycle, including the country's prime minister, Amadou Gon Coulibaly, shown in the photograph.

CONCLUSION

Reducing emissions from transportation in Côte d'Ivoire constitutes a formidable environmental and social challenge. To honor the commitments made in its Nationally Determined Contributions, Côte d'Ivoire will need to work to establish a sustainable transport system. The successful development of sustainable transport – which would involve promoting soft modes, supporting the energy transition in the sector, increasing the deployment of mass transportation in Abidjan and developing relay towns for Abidjan (through the effective transfer of political capital to Yamoussoukro) – would make it fairly easy to reach reduction targets in the transport sector.

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