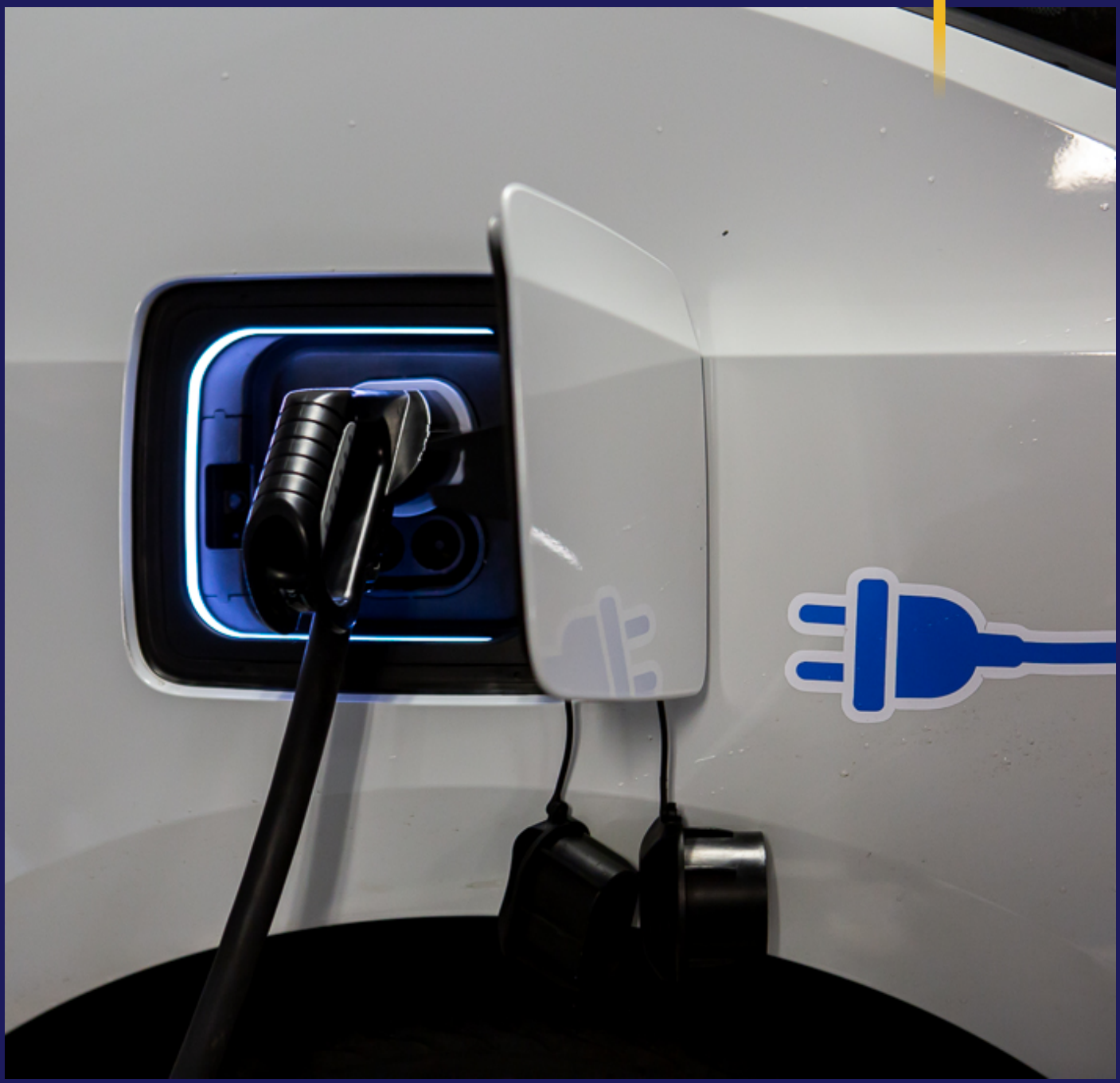
Building Visibility on Electric Bus Initiatives in Africa

Accelerating Sustainable Mass Transport



Federal Ministry
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Content

Executive Summary

This report from the Africa E-Mobility Alliance (AfEMA), commissioned by the Transformative Urban Mobility Initiative (TUMI) E-Bus mission, evaluates the state of electric bus (e-bus) adoption in Africa. We focus on ten countries: Cameroon, Egypt, Ethiopia, Kenya, Morocco, Nigeria, Rwanda, Senegal, South Africa, and Uganda. The report highlights the current progress, challenges, and opportunities for e-bus deployment in Africa as of July 2024, and provides recommendations to foster the growth of the sector. The countries were selected on the basis of their progress toward e-bus electrification. They range from early-stage adoptee countries who have made strides in their adoption via policy incentives and regulatory tools, such as Ethiopia, and countries who are earlier in the adoption and making noticeable improvements on policy and investment attractiveness for local e-bus deployment, such as Uganda.

Data was collected through a series of interviews with stakeholders in each country's e-bus sector, including government officials and industry leaders. Additional research was conducted through publicly accessible databases and reports, permitting the assessment of the current size of each studied country's bus fleet and that country's current policies surrounding e-buses. Information included assessments of e-bus fleet sizes, seating capacities, sourcing of vehicles or parts, and agencies, companies, or other operators buying the buses.

Objective

The primary objective of this report is to assess the current status of e-bus adoption in a group of 10 African countries, chosen as a sample to explore the current situation of bus electrification on the continent, and identify the key factors influencing their uptake. The report aims to uncover:

- The number of e-buses currently in operation.
- The sources of e-buses, whether domestically assembled or imported wholly built.
- Government policies designed to encourage e-bus uptake.
- Opportunities for further development and growth in the e-bus sector.

This report is a strategic guide for policymakers, stakeholders, and international partners committed to advancing e-mobility in Africa. The intended audience is policymakers in national and local governments, especially in the target countries. Policymakers in major funding countries, such as the United States, Germany, and the United Kingdom, will also find the report useful, as will entrepreneurs and others similarly interested in entering the sector, and domestic and international NGOs hoping to accelerate the shift to clean transportation in Africa. By addressing the identified challenges and leveraging existing opportunities, African countries can successfully transition to sustainable urban transport systems, contributing to environmental preservation and economic development.

This report begins with the chosen methodology for the study, followed by a formal introduction and overview of the current situation of transportation and bus electrification in 10 African countries. A brief discussion of the 10 sampled countries follows, after which each of those ten countries is examined in more depth. For every country, the current e-bus status, source or sources of the e-buses, and government policies are discussed. Successes and failures of recent policies are covered, followed by an examination of opportunities for further development of each country's e-bus sector. Finally, after a short look at some problems faced by multiple surveyed countries, the report concludes with an overview of overall findings and recommendations for the next steps.

Positive momentum across Africa

E-bus adoption is building momentum across Africa, albeit it varies significantly from country to country. Morocco and Egypt are leading with substantial government support and domestic manufacturing, pilot projects are underway, and e-buses are beginning to be integrated into their transportation sectors. The two countries have received substantial support from the respective government transport authorities. The Ethiopian government has already surpassed its 2030 vehicle electrification goals thanks to favourable economic policies, supporting a rapid move to e-buses and other electric vehicles and a ban on new internal combustion engine (ICE) vehicles. However, challenges relating to insufficient grid infrastructure plus a weak local currency and economy may slow or stop this progress. Kenya is emerging as a front-runner in East Africa with active policy support and several ongoing projects, including an innovative financing scheme targeting private sector buses. With its well-established infrastructure, South Africa holds great potential for e-bus integration and potential manufacturing, and has begun pilots to roll them out. However, the legacy manufacturing ecosystem might be a potential barrier if it doesn't evolve quickly to produce e-buses at scale. Uganda and Rwanda show promise with supportive policies and international collaborations driving their progress. Nigeria, Senegal, and Cameroon are in the early stages of e-bus adoption, needing considerable advancements in regulations and infrastructure to offer an enabling environment that attracts more investment inflows. However, the introduction of BRT systems in Senegal and Nigeria are presenting an opportune moment for e-bus adoption.

Challenges for the transition

The transition to e-buses faces several fiscal and technical challenges. The high up-front costs of e-buses compared to conventional diesel buses present financial hurdles, especially when paired with unfavourable VAT and/or tax structures. In Kenya, e-buses range from 20 to 26 million KSH (approximately €141,600 to €184,100) per unit compared to ICEV buses, which range from 3 to 5 million KSH (approximately €21,200 to €35,400) per bus.[1] The lack of comprehensive policies and regulatory support, limited local technical expertise, and low public awareness and acceptance can hinder the opportunity to overcome this fiscal barrier.

On the technology side, enhanced infrastructure and reliable energy are needed to pre-empt the deployment of e-buses. For example, Rwanda has only five charging stations for 19 buses. Infrastructure plays a significant role in e-bus adoption, and this requires support from both ends of the spectrum, that is, private and public sectors, pointing to a need for more private-public partnerships.

Barriers and Opportunities

Significant opportunities for e-bus deployment in Africa exist despite the financial, infrastructure, and energy access challenges. Africa's vast renewable energy resources can be harnessed to power e-buses, aligning with sustainable energy goals. For example, in Kenya, an electric four-wheeler (E4W) is estimated to produce 80% less emissions than a traditional internal combustion engine (ICE) 4W due to renewable electricity generation (primarily hydroelectric and geothermal). In Nigeria, however, EVs are estimated to only have around 45% lower emissions due to reliance on thermal electricity generation.[2]

The continent has substantial raw resources needed for electric vehicle development, providing an opportunity to develop local industry, be it manufacturing or at least processing operations and associated economic growth. The market for minerals used in battery production in the EV sector globally are estimated at $8 trillion (€7.4 trillion) by 2025 and set to reach $46 trillion (€42.5 trillion) by 2050, and key lithium-ion battery minerals are available in bulk in South Africa, the Democratic Republic of the Congo (DRC), Zimbabwe, Mozambique, and Zambia.[3] International partnerships with organisations and private investors can provide the necessary funding and technical support, as seen in the recent memorandum of understanding signed between Zambia, the DRC, and the United States.[4]

1 https://andariya.com/post/electric-buses-are-reshaping-nairobi-s-public-transport
2 https://shellfoundation.org/app/uploads/2022/02/EV-Report-McKinsey.pdf
3 https://www.esi-africa.com/africa/africas-critical-minerals-the-battery-chickens-of-the-ev-sector/#:~:text=Research%20by%20Nanyang%20Technological%20University's
4 https://www.state.gov/wp-content/uploads/2023/01/2023.01.13-E-4-Release-MOU-USA-DRC-ZAMBIA-Tripartite-Agreement-

The transition to e-buses can also stimulate economic growth through job creation and reduce long-term operational costs. Environmentally, e-buses offer a substantial reduction in greenhouse gas emissions (GHG) and improvement in urban air quality. Companies like BasiGo in Kenya and Rwanda have been awarded a $225,000 (€210,000) grant by the Green Fund in Rwanda to help create efficient charging infrastructure for the buses deployed. This will help continue to increase charging efficiency and reduce the roadblocks to vehicle electrification. The report recommends several actions to capitalise on these opportunities. Investing in charging infrastructure and ensuring a reliable power supply is crucial. Financial incentives such as tax incentives and financing options can help offset the high initial costs and have already been proven to work on the African continent and overseas. Developing and implementing supportive policies and regulations will create a conducive environment for e-bus adoption. Capacity-building initiatives to train local technicians and enhance technical expertise are essential and provide the seeds of potential long-term development of domestic manufacturing outside the traditional automotive industries of South Africa, Egypt and Morocco with established automotive sectors. Public awareness campaigns will also play a vital role in increasing acceptance and support for e-buses.

Image 3: Copyright BasiGo

Introduction

Overview of Transport in Africa

Transport in Africa is dominated by buses – a mix of informally operated paratransit services and public services – walking, and increasingly, motorcycles. In Kenya, for example, 46% of residents in Nairobi use public transit, and 36% in the coastal region.[5] Paratransit in Africa is growing as populations grow. Furthermore, paratransit is one of Africa's two most in-demand modes of mobility, as seen in Figure 2, second only to foot or bicycle transportation. This is due to the lack of an affordable alternative.[6] These services are characterised as unofficial means of transportation that connect the public and private domains.

While paratransit is associated with poor vehicle quality and disorganised management in Africa, it also offers affordable, easily accessible, and adaptable transportation options for the impoverished urban population. Usually, it is not well controlled and functions as a collection of unofficial enterprises.[7] Although small compared to other modes of transportation, commuters in Africa regularly use minibuses and other forms of bus transportation, particularly as their incomes rise. According to estimates from the United Nations, urban buses are responsible for around 25% of the black carbon released by the transportation sector, adding to the noxious fog that hangs over many large cities like Dar es Salaam. Seven million people are killed annually by fine particles that are now readily visible to the unaided eye on Dar es Salaam's main arteries. These deaths mostly occur in metropolitan cities in developing nations, with additional deaths caused by secondary illnesses, such as cancer, due to this pollution.[8]

In Dar es Salaam, for example, each bus needs 26,000 litres of fuel every year, and each liter releases around 3.5 kg of CO2 into the atmosphere. Therefore, the annual CO2 emissions from buses reach 91 tonnes, or 1.8 million tonnes for the public transport system.To put this in perspective, based on data from the United Nations, Tanzania's annual emissions are predicted to

Tab-1-MOU-for-U.S.-Assistance-to-Support-DRC-Zambia-EV-Value-Chain-Cooperation-Instrument.pdf
5 https://africa.itdp.org/kenyas-next-government-ought-to-prioritise-sustainable-transport/
6 https://changing-transport.org/changing-tracks-in-africa/
7 https://www.routledge.com/Paratransit-in-African-Cities-Operations-Regulation-and-Reform/Behrens-McCormick-Mfinanga/p/book/9780415870337#:~:text=Description,public%20and%20individual%20private%20spheres
8 https://www.unep.org/news-and-stories/story/african-cities-turn-green-buses-fight-against-pollution

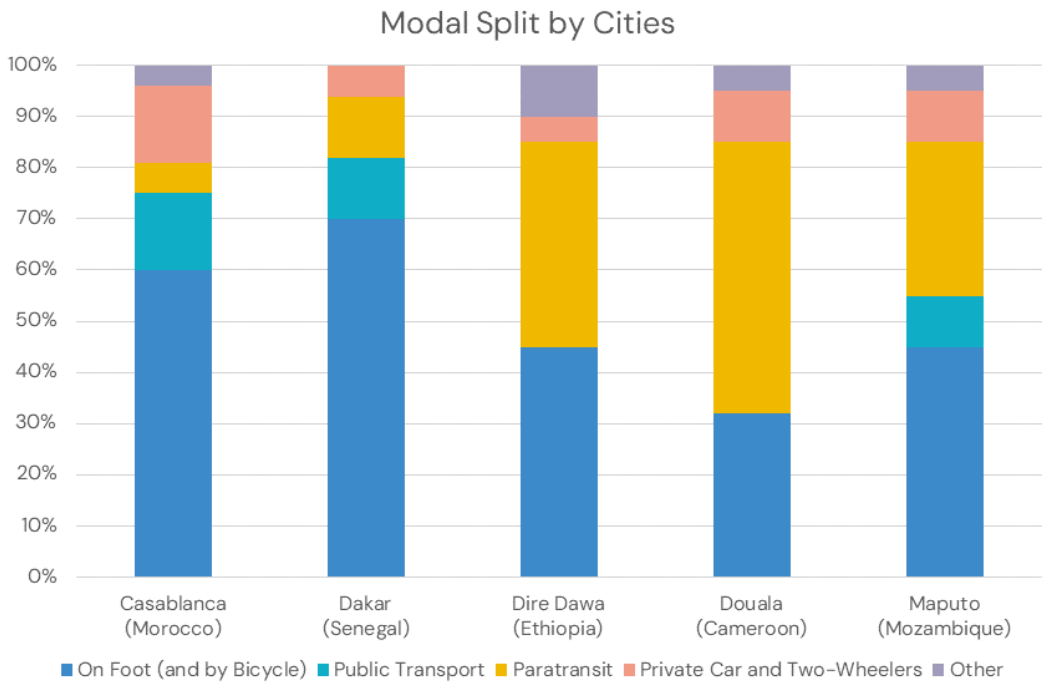

Figure 1. Modal Split of Various African Cities, Agora Verkehrswende and GIZ, 2023

be 12 million tonnes. Even on existing electrical grids, electric buses are predicted to remain the lowest-carbon transport alternative worldwide.[9] Existing data and literature indicate that e-buses can be more efficient and require less maintenance than diesel buses when comparing total expenses over a five-year period. The shift towards electric buses represents a pivotal advancement for African nations seeking to modernise their public transportation infrastructure and mitigate carbon emissions. This report therefore examines the current status of e-bus adoption across these ten African countries. The aim is to offer a thorough analysis of progress, challenges, and opportunities in these regions, emphasising successful strategies and areas requiring improvement.

Electric Bus Adoption Trends Across Africa

By 2030, there will be a roughly 50% increase in public transport usage, with urban transit buses contributing around 25% of the transport sector's total emissions. If this demand is met with ICEV buses, substantial carbon emissions, as well as other pollutants, will be inflicted on the world and cities the buses operate in. E-buses are starting to make a profit as a public transport option, although they are still more expensive than diesel buses, and have no exhaust emissions.[10] "Leapfrogging" from no or limited public transport to modern EV buses therefore will reduce pollution, as well as ensure that African urban dwellers can take full advantage of the latest advances in public transport technology. Battery electric buses are anticipated to dominate the market due to local government initiatives to lower operating costs and reduce emissions associated with public transportation. Numerous regional entrepreneurs are developing their electric bus prototypes and business models, which will assist their nations in generating jobs locally and stimulating the local economy. Global organisations like TUMI are also assisting nations in the developing world to promote electric mobility. Cities in Africa, Latin America, and Asia are receiving direct funding from the UN Environment Programme to develop strategies for switching to low-emission public transport, such as electric buses instead of diesel ones.[11] Across Africa, national policies and investments are critical to boosting e-bus deployment. Morocco has an integrated national policy that aims to mitigate the effects of climate change and cut greenhouse gas emissions by 32% by 2030.[12] In 2016, the country entered a programme with a Chinese bank to manufacture electric buses in Morocco with a total investment of MAD 1.2 billion. In Uganda on the other hand although, there are clear government-sponsored plans to scale their e-bus fleets and deliver 100 e-buses.[13] Countries like Kenya and Rwanda for example, who have made moderate progress in the adoption of e-buses, have shown increasing efforts in their delivering capacity and infrastructure for e-buses with an increase in funding from Development Finance Corporation.[14] Leading e-bus companies operating in Africa, all Chinese, include BYD, Yutong, Zhongtong Bus, and King Long.[15] Through agreements with governments, new bus models, acquisitions of regional businesses, and strategic alliances, the companies are growing their market share.[16] European OEMs for e-buses and associated parts are generally absent from the continent, outside of automotive companies active in Morocco, indicating a major missed opportunity to tap new markets. There is much interest in locating at least e-bus assembly on the African continent, signalling a potential future for true domestic manufacturing as well, countries doing assembly include Ethiopia, Kenya, and Uganda. Most buses are purchased new, or assembled in-country from new parts, and align more or less with several of the Euro standards for emissions. Because of the recency of their purchase, average road life in the different conditions on the African continent is not yet known, while in general their safety concerns are not materially different from ICEV buses.

Gaps Identified

While countries are making progress on e-bus deployment, it remains nascent and several gaps remain to be addressed. Infrastructure, charging stations and maintenance facilities are not readily available for people who wish to make the transition to electric. Financial costs and the upfront investment into electric vehicles are high in Africa and face low operating earnings. Policies to regulate and support the sector are still being developed in most African nations, and these policy needs will change depending on local economic and political contexts. The final gap is the educational gap, as many users and potential proponents are unaware of the cost and benefit of going electric. It is therefore the duty of local governments and transport authorities to enhance public understanding on the subject.

9 https://www.unep.org/news-and-stories/story/african-cities-turn-green-buses-fight-against-pollution
10 https://www.ccacoalition.org/content/transport-solutions
11 https://www.unep.org/topics/transport/electric-mobility/electric-buses
12 https://thedocs.worldbank.org/en/doc/006e680515c79d607a63c2a64933b12c-0280012023/original/TK-Note-Transport-Decarbonization-2ndDraft-04Apr2022.pdf
13 https://www.theeastafrican.co.ke/tea/business/uganda-s-100-e-buses-drive-in-fits-and-starts-4665798
14 https://empowerafrica.com/kenyan-startups-m-kopa-basigo-mogo-roam-and-pezesha-secure-250m-from-dfc-to-enhance-digital-connectivity-and-e-mobility/
15 https://straitsresearch.com/report/electric-bus-market/middle-east-and-africa
16 https://straitsresearch.com/report/electric-bus-market/middle-east-and-africa

African E-Bus Landscape

Some of the world's most crowded cities are found in Africa, and buses play a key role in getting residents across large metropolitan areas. Commuters in Lagos, the commercial metropolis of Nigeria, frequently spend over thirty hours a week sitting in gridlock. Since most cars are older and more polluting than those in wealthy nations, the terrible effects of this congestion are exacerbated. Studies have shown that estimates that 78% of air pollution related deaths are among children under the age of 5.[17] Some African cities are working to remedy this: Dakar turned a new page in January 2024, becoming the most recent city to introduce a fleet of electric buses. The Bus Rapid Transit (BRT) system in the capital of Senegal is expected to accommodate up to 300,000 passengers per day with about 120 vehicles, reducing pollution and improving quality of life.[18] In some locations, the move to e-buses makes clear sense for other reasons. Kenya's electricity grid is more than 90% clean, a significant benefit for transitioning to e-mobility. According to Jit Bhattacharya, CEO of BasiGo, the country would immediately mitigate 50 tonnes of CO2 per year if it replaced one of the 20,000 diesel buses in the city of Nairobi with an electric bus, which has a greater marginal impact on CO2 emissions than an electric bus almost anywhere else in the world.[19]

As shown in Figure 3, Egypt leads the way in the number of e-bus operators with substantial support from its government and from several city-level transport authorities. A similar situation exists in Morocco, where city government-controlled or -associated bus operators have each pursued e-bus deployment, although previous pilots have since been pulled from the road. In most other cases, even for countries like Ethiopia with substantial government backing for bus and other vehicle electrification, e-bus market share is concentrated.

17 https://www.unicef.org/nigeria/press-releases/nigeria-has-highest-number-air-pollution-related-child-pneumonia-deaths-world
18 https://itdp.org/2024/03/22/dakar-senegals-electric-brt-leads-the-way-for-african-cities/
19 https://www.reuters.com/sustainability/society-equity/how-homegrown-startups-are-boosting-e-mobility-africa-2024-05-09/

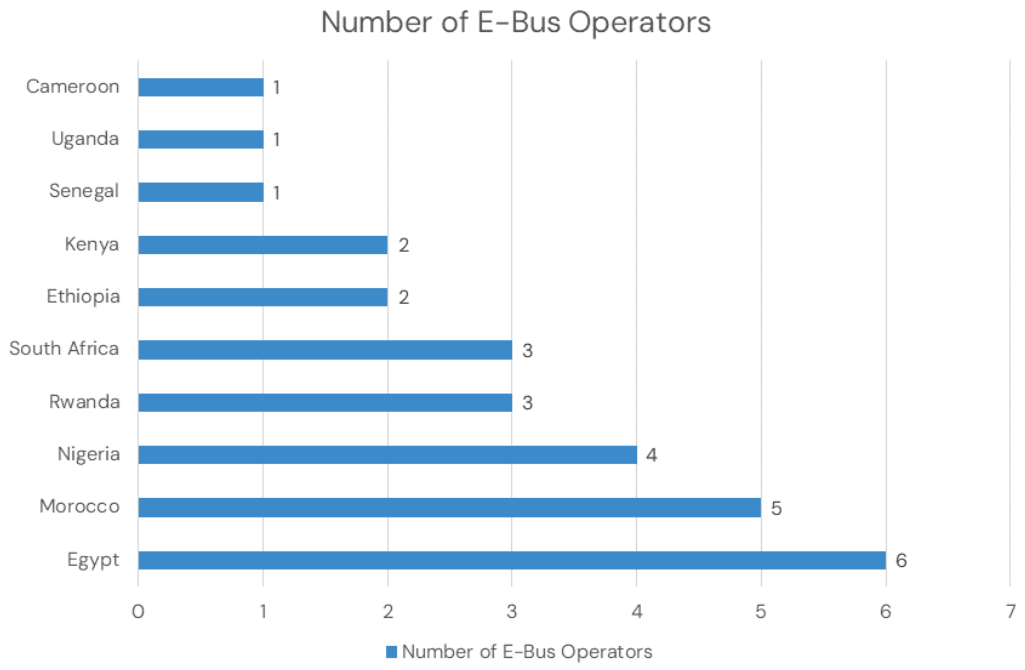

Figure 2. Number of E-Bus Operators by Country

Figure 3 demonstrates the number of e-buses currently in each studied country. Ethiopia's clear lead is the result of the government's incredibly strong tax and tariff policies designed to accelerate EV uptake, plus the ban on importing ICEVs. In Egypt, government support and efforts by various city transit operators have led to multiple simultaneous e-bus purchases, swelling their total e-bus fleet. On the other hand, South Africa's tentative efforts to electrify their buses have kept their fleet small for the time being, while Cameroon is still in pilot stages and Nigeria has an unfavourable tax and tariff environment slowing e-bus adoption.

The private sector has led the way in most African countries, as Figure 4 indicates, but a number of countries have also had government support. In South Africa, Kenya, and Nigeria the impetus is entirely the private sector, although Kenya's government has signalled overall support for bus electrification and has plans for an electric BRT. Rwanda's electrification efforts solely stem from the government. In the other six studied countries, e-bus adoption is being undertaken in concert between the government and private sectors, although this varies from Senegal's solely-BRT-based adoption to the government-heavy efforts in Morocco and Egypt to Ethiopia's rapid electrification driven largely by cost considerations.

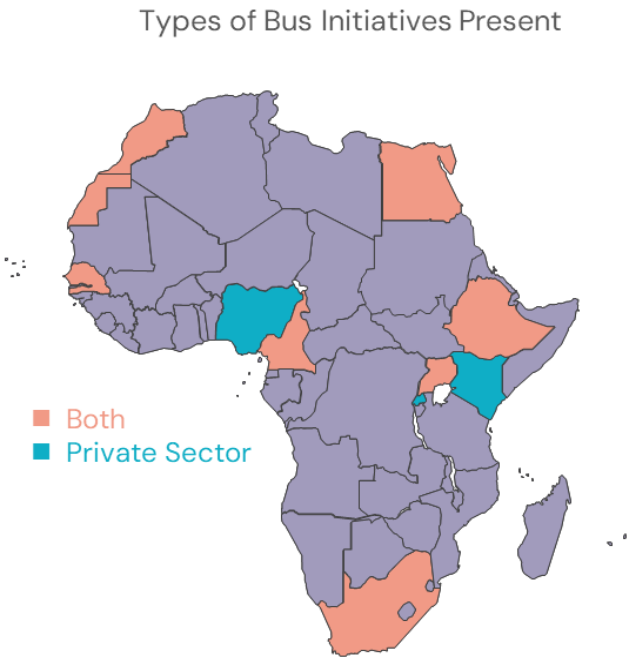

Figure 4. Type of E-Bus Initiatives Present in Each Country. "Both" Denotes That Government and Private Sector Initiatives Are Present

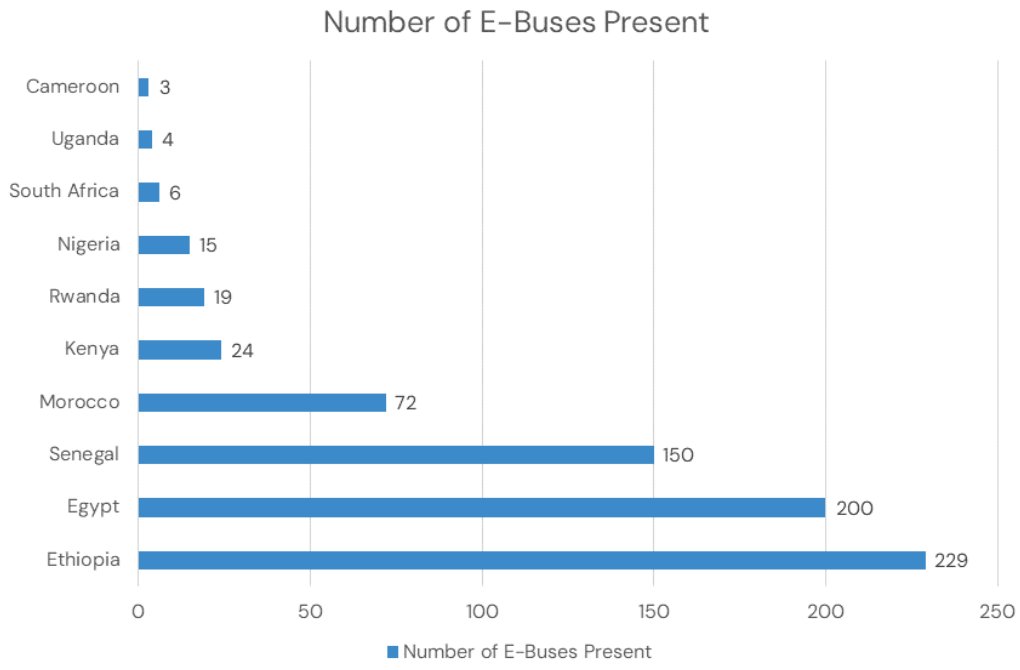

Figure 3. Number of E-Buses Present by Country

Country Analysis

This report aims to explore the current landscape of e-bus adoption in Africa, assessing both advancements and persistent challenges. It will offer insights into the efficacy of diverse policies and propose strategies to surmount obstacles hindering e-bus adoption. Through a comprehensive analysis of each country, the report endeavours to furnish policymakers, stakeholders, and investors with a roadmap to expedite the shift towards electric public transportation across Africa.

- **Current status and sources of e-buses:** Detailed statistics on the number of e-buses, their usage, and operational range. Information on whether e-buses are domestically assembled or imported.
- **Governmental Policies:** Analysis of existing and planned policies to encourage e-bus uptake.
- **Opportunities for Development:** Potential strategies to overcome existing challenges and enhance e-bus adoption.

Overall findings indicate that Ethiopia and Uganda have continent- if not world-leading policies relating to vehicle electrification. Nigeria continues to lag behind due to unfavourable policy, while the remaining countries fall somewhere in the middle – although some, like Cameroon, are mostly lagging due to lack of clear policy, not lack of potential. Most countries may have difficulty electrifying transit given limited access to electricity more broadly, indicating that the deployment of charging stations and the broader expansion of electrical power need to go hand-in-hand. Finally, the African electric vehicle market is, outside of Morocco, almost entirely dependent on Chinese imports, either for kits, parts, or fully-built vehicles.

While many countries seem keen to develop domestic EV production, this is a very long-term goal, and in the short term countries' sectors are highly susceptible to policies and initiatives, either from their own governments or world powers like China, the European Union, and the United States, that would impact this supply.

#	Country	Region	Current Status
1	Cameroon	West Africa	Corporate fleet of e-buses exists. Significant urban population centres have potential for e-bus adoption.
2	Egypt	North Africa	Existing deployment of e-buses. High urbanisation rate and government focus on sustainable transportation solutions.
3	Ethiopia	East Africa	Ambitious electric mobility goals and government interest in sustainable transport. The government indicates 2030 vehicle electrification goals were exceeded in 2024.
4	Kenya	East Africa	E-bus companies BasiGo and ROAM are present, leading the way in e-mobility initiatives with ongoing projects and policy support.
5	Morocco	North Africa	Previous and upcoming deployment of e-bus pilots and strong domestic automotive industry already moving to electric vehicle production, Government initiatives promoting renewable energy and electric mobility.
6	Nigeria	West Africa	Recent pilot for e-buses, rapidly growing urban areas with increasing demand for sustainable transport options.
7	Rwanda	East Africa	BasiGo present, partnering with local bus operators. Strong government commitment to sustainability and innovation, making it an ideal candidate for e-mobility projects.
8	Senegal	West Africa	Recent implementation of BRT buses, increasing urbanisation and efforts to address environmental challenges through clean energy solutions.
9	South Africa	Southern Africa	Golden Arrow piloting e-buses,. Well-established automotive industry and growing interest in electric vehicles.
10	Uganda	East Africa	Kiira Motors piloting e-buses, with heavy support from the government.

Table 1. Overview of Country Analysis

Cameroon

Image 4: Copyright Carlos Pardo (3)

Current Status of E-Buses

There are currently three e-buses operating in Cameroon, all in Yaoundé; two of which were imported from the United Kingdom fully-built, and the other domestically assembled from UK-imported parts. Cameroon has limited domestic assembly capacity and no domestic manufacturing. The only company involved in the effort is Africa Global Logistics.

Intriguingly, Cameroon was a surprisingly early experimenter with EV bus technology. The Blue Bus at the University of Yaoundé operated between 2014 and 2019 and was stopped in 2020 due to the COVID-19 pandemic. It offered free service within the university's campus.

Governmental Policies Designed to Encourage E-bus Uptake

E-buses and e-bus parts in Cameroon are currently exempted from taxes, meaning importation is fairly affordable. While the country only has about 63% access to electricity, it is actively working towards expansion of access, particularly for clean energy, and is highly urbanised.[20] Cameroon also has a full tax exemption for e-buses, lowering barriers to entry for electric bus projects and encouraging more adoption and investment in sustainable transportation. These factors indicate that Cameroon has many of the components necessary to adopt e-buses and charge them successfully using renewable electricity. The government agrees and plans to implement a bus rapid transit program connecting key locations in the capital, Yaoundé, as a pilot to confirm the viability of such a plan.[21] However, electric vehicle penetration, and especially the necessary charging infrastructure, is currently mostly absent, meaning the market for the time being is in its very earliest phases.

Opportunities

Cameroon has a high urbanisation rate, which is growing steadily at over 3.8% per year in the past five years, the population shifts to cities and urbanised metropolitan areas, which means a large market is ready to use public transit.[22] Within the next five years, the number of Cameroonians using public transit is expected to grow to over 25 million, accounting for population projections.[23] To facilitate e-bus uptake, standardised charging infrastructure for e-buses will be necessary and deployed in conjunction with broader electrification efforts. This will likely need to be done as part of a public-private partnership. A clear national e-mobility plan, with an associated clear set of regulations, should be adopted, and domestic assembly of electric vehicles needs to be promoted where possible rather than importing fully-built e-buses. Finally, public awareness campaigns would be beneficial in encouraging the usage of e-buses.

20 https://africa-energy-portal.org/sites/default/files/2022-09/new-31st-update-august-correction-ELECTRIC-VEHICLES-1.pdf
21 https://www.afrik21.africa/en/nigeria-new-trucks-to-improve-sanitation-in-lagos/
22 https://www.statista.com/statistics/446865/urbanization-in-cameroon/
23 https://www.statista.com/outlook/mmo/shared-mobility/public-transportation/cameroon

Egypt

Current Status of E-Buses

There are around 200 e-buses operating on Egyptian roads, 140 of which were purchased by a consortium of Egyptian transportation agencies, NGOs, and governmental bodies in preparation for COP27 at Sharm El Sheikh.[24] Following the conclusion of the COP, the buses were redistributed to Alexandria and Cairo; five additional buses were later purchased for specific use in Sharm El Sheikh. A further 100 e-buses are being purchased for the Cairo Transit Authority, plus 100 more for the Cairo Ring Road Bus Rapid Transit project.[25]

In total, approximately 60% of Egypt's e-buses are imported from China completely built, with 40% domestically assembled. Egypt has domestic e-bus assembly and manufacturing capacities via the Arab Authority for Industrialization, which has partnered with the Cairo Transportation Authority, Alexandria Public Transport Authority, and the NGO ACTA. As of September 2023, the government had also launched a deal to assemble electric Volvo buses in Egypt for export to Europe, which will further develop Egypt's e-mobility manufacturing capabilities and skilled workforce.[26]

Governmental Policies Designed to Encourage E-bus Uptake

Egypt has a strong e-mobility strategy, first implemented in 2019. As of 2024, the first of three phases is just concluding; Phase 2 will last from 2025 to 2030, and Phase 3 2030 to 2040. This strategy includes efforts to foster a trained domestic workforce, tax and tariff incentives for e-buses and penalties for natural gas or diesel buses, and strategies to deploy standardised charging infrastructure throughout the major urban areas. Some policies to require e-bus uptake in public transportation fleets are also present. The country's VAT exemption on imported EVs in particular helps to encourage uptake, although this is due to end either in 2028 or when 10% of the Egyptian vehicle fleet is electrified, whichever comes first. Egypt also offers partial tax reductions on imported parts.[27] As a result, their fiscal policy is strongly based around developing a domestic EV manufacturing sector, but existing tariff and trade agreements keep ICEVs cheaper than EVs.[28]

Opportunities

Egypt's clear e-mobility plan provides a 21-year strategy to promote not just bus but light vehicle electrification, and at the 5-year mark has so far met with good success. Continuing the phases of the strategy, including the further deployment of standardised charging infrastructure, will help to facilitate the attainment of the further goals. In addition, Egypt's existing domestic automobile manufacturing and value chains mean it is well-positioned to greatly expand its own production of EVs, a key goal of the country's e-mobility strategy.

Image 5: Copyright Carlos Pardo (2)

24 https://egyptindependent.com/egypt-rolls-out-first-electric-bus-fleet-in-sharm-el-sheikh-with-a-le50-million-investment/
25 https://transportforcairo.com/2023/03/06/egypts-foray-into-electric-buses/
26 https://www.egypttoday.com/Article/3/126764/MCV-VOLVO-to-produce-electric-buses-in-Egypt
27 https://documents1.worldbank.org/curated/en/099111723220073454/pdf/P1705461b716b87d15b26144f61b9d512edbfea286df.pdf
28 https://aps.aucegypt.edu/en/articles/1013/electric-vehicle-adoption-in-egypt-a-long-way-to-go

Ethiopia

Current Status of E-Buses

Ethiopia's electric bus fleet is well established, with 229 vehicles in operation, with a strong concentration in Addis Ababa. Three were assembled in-country, and the remaining 226 were imported fully constructed. All are from Chinese manufacturers. The main operating companies are Belayineh Kinde Metal Engineering (BKME) and Green Tech Africa.

Governmental Policies Designed to Encourage E-bus Uptake

The success of Ethiopia's overall vehicle electrification strategy has arguably surprised even the Ethiopian government itself. The country set a complete exemption for electric vehicles and parts from VAT and many tariffs in 2020-2022, combined more recently with a ban on ICEV imports. The result has been a rapid overperformance, with the country claiming to have already surpassed its goal of 148,000 electric vehicles by 2030. [29]While it has not yet achieved its goal of 5,000 e-buses by 2030, the economic incentives, close ties to Chinese e-bus manufacturers for importation, a booming domestic EV assembly sector, and strong governmental regulation on ICEVs puts Ethiopia in a good position to achieve this goal. Currently lacking, however, is much of the grid infrastructure needed to support the charging infrastructure required for widespread vehicle electrification, although new hydroelectric installations provide some potential in filling the grid stability gap.[30]

Opportunities

Ethiopia's largest challenge is ensuring the economic resources needed to facilitate the transition remain available. There are some signs of weakness at this point, especially since foreign currency is needed to continue importing EVs.[31] Additionally, charging infrastructure for both e-buses and regular EVs needs to be rapidly scaled up. However, Ethiopia's clear policy direction, strong ambitions, and growing domestic EV assembly and manufacturing sectors set it on a strong path going forward.

29 The government claims to have reached this goal, but local EV retailers indicate in interviews that it is an overestimate and the real number is likely to be closer to 10,000 EVs.
30 https://cleantechnica.com/2024/05/13/ethiopia-shows-us-just-how-fast-the-transition-to-electric-mobility-can-happen-in-africa/
31 https://www.semafor.com/article/06/06/2024/ethiopia-green-mobility-economic-slowdown

Image 6: Copyright Carlos Pardo (5)

Kenya

Current Status Current Status of E-Buses
Although small, Kenya's e-bus sector punches above its weight. The main companies are BasiGo, which has 22 buses, and the part-Swedish company Roam, which has a 2-bus pilot program; e-buses are mostly concentrated in Nairobi. Vehicles are built from imported parts from Chinese manufacturers and fully-constructed from China. There is strong interest, both from the government and from the private sector, in further developing a domestic e-bus manufacturing industry.

Governmental Policies Designed to Encourage E-bus Uptake
Kenya implemented VAT and tariff exemptions for EV parts, buses, and motorcycles in the 2023/24 Finance Act. However, recently Kenya has had significant policy instability as the 2024/25 Finance Bill proposed removing most incentives for EVs but was then withdrawn, and the 2023/24 Finance Act was suspended in a court decision.[32] However, the government has just drafted a clear e-mobility strategy, including a stronger regulatory framework, the deployment of standardised charging infrastructure and its connection to the largely-clean-energy Kenyan electrical grid, and the creation of domestic value and manufacturing chains through assembly and workforce development.[33] In the meantime, there is no VAT on e-bicycles, e-motorcycles, e-buses, a 16% VAT on e-cars, and a 0% excise duty on e-motorcycles. There are also favourable electrical tariffs to promote charging, with a 50% cheaper nighttime tariff in particular benefiting e-buses. Maintaining these benefits will help encourage uptake and bring about the eventual EV manufacturing sector the government desires.

Opportunities
The government's desire to move towards e-buses and EVs more broadly, plus the established Kenyan e-bus manufacturers and assemblers, means the country is well-positioned to accelerate the electrification of the bus sector. Standardisation of charging infrastructure and its deployment outside of the major cities provides a good opportunity to expand e-bus access, and cooperation with BasiGo and Roam could lead to public-private partnerships that will accelerate uptake. Existing VAT and tariff exemptions should be maintained or, if necessary, restored to keep prices affordable, with a clear time horizon for companies to understand how long they should expect to have access to these benefits and reach affordability goals. Finally, Kenya Power has also signalled interest in facilitating bus electrification, indicating another route for bus fleet operators and the government to pursue to encourage e-bus deployment.[34]

Image 7: Copyright Carlos Pardo (8)

32 https://www.businessdailyafrica.com/bd/opinion-analysis/columnists/proposed-taxes-in-new-finance-bill-will-stagnate-e-mobility-4637664
33 https://transport.go.ke/sites/default/files/Draft%20National%20e-Mobility%20Policy_For%20Circulation%2027.03.2024.pdf
34 https://nairobiwire.com/2024/04/kenya-powers-ksh258m-plan-to-drive-adoption-of-electric-vehicles.html

Image 8: Copyright Johannes Uhl

Morocco

Current Status of E-Buses

Morocco has had at least 12 electric buses on its roads, with another 60 planned for . The main companies are E&A and Irizar. E&A is a Moroccan government-run company, while Irizar is a Spanish company with ties to Iberdrola. In addition, several city-specific experiments have been run since 2016, including in Rabat, Marrakesh, and Casablanca. There are also the Agadir BRT system, and Casablanca, the latter run by the M'dina bus company in association with the Korea International Cooperation Agency. Several German automobile companies and parts manufacturers, including Volkswagen, Stahlschmidt, Opel, and BMW, are also involved in automobile, including EV, manufacturing in Morocco, indicating a potential opportunity for further European cooperation in vehicle electrification.[35]

Buses are largely imported from Germany, China, and South Korea, either fully built or as parts then assembled in-country. However, Casablanca, in particular, supports significant domestic production capacity for e-buses, and the country as a whole is making a strong play to shift to electric vehicles for its existing and strong domestic automotive production sector. This is aided by varied VAT rates (between 0 and 20%) and exemptions for specific conditions, such as FTA countries and international transportation companies. These tax and tariff incentives have aided in attracting further foreign investment and facilitate the expansion of e-bus infrastructure.

Governmental Policies Designed to Encourage E-bus Uptake

Despite Morocco's strong push to become Africa's main producer of electric vehicles, the country still lacks a singular e-mobility policy framework or, indeed, most other government policies necessary to strongly promote domestic e-bus uptake. The country does have varying VAT exemptions for EVs under certain conditions, but beyond this, the primary policy undertaken by Morocco is to promote the domestic supply chain, assembly, and full manufacturing of various types of electric vehicles.[36]

Opportunities

The lack of a clear e-mobility policy provides a roadblock to increasing e-bus uptake. However, should this be remedied and clear regulations and goals set, Morocco has a strong opportunity to accelerate e-bus adoption rates rapidly. Standardisation and deployment of charging infrastructure for buses and regular EVs will assist in vehicle uptake, as will stronger and more formalised tax and VAT incentives. Morocco is well-advanced in the transition to renewable energy and the development of its own EV sector, indicating the potential for the production of e-buses domestically, which may reduce costs and encourage further governmental efforts to promote e-bus uptake.**Current**

35 https://mipa.institute/en/9329
36 https://changing-transport.org/wp-content/uploads/2024_Moroccos-Role-in-the-Global-Electro-Mobility-Revolution.pdf

Nigeria

Current Status of E-Buses

Nigeria currently has 15 e-buses in operation from the following companies; Phoenix Renewables Ltd., Electric Vehicle Motor Company, and Yutong/Oando. These three are the key players operating between Lagos and Abuja in public transit routes. The average range is 150km per charge at the capacity of vehicles. The vehicles are primarily sourced from China, with a combination of local assembly at 30%; however, Nigeria has seen a push to increase its local capabilities for production with ongoing efforts.

There are a few policies in place for purchasing e-buses in Nigeria, some of which are the recent removal of the state fuel subsidy which was eliminated in an effort to increase mobility electrification in Nigeria (though some of this has since been reintroduced).[37] There have been increased investments in electric vehicle infrastructure, which consists of electric vehicle supply equipment (EVSE), particularly charging stations. There are also ongoing efforts by the international community to help mobilize over $1.7 billion (€1.57 billion) in investments to electric vehicle infrastructure.[38] Investments and commitments like this will help Nigerian policymakers become more flexible with local procurement, and infrastructure policy to make electric mobility a swift transition. However, the country's high customs duties (20-70%), VAT (7.5%), and other taxes greatly increase the cost of imported e-buses, limiting affordability and slowing down adoption rates. Reforming tax policies would accelerate the transition to electric buses.

Opportunities

Nigeria is the most populous country in Africa, with a population of over 229 million in 2024. Currently, over 12 million residents use public transport on a daily basis in Lagos alone. These figures are a clear indication of the continuous demand for transport to come to Nigeria, especially, sustainable transportation, given transport in Nigeria accounts for 60% of greenhouse gas emissions in Nigeria.[39] Nigeria has the potential to attract an influx of private capital, which will help increase start-up growth and entrepreneurship in the e-mobility space, and foreign direct investment via public-private partnerships that will create opportunities to integrate sustainable BRT systems, and also create a pathway to domestic production for electric mobility.

37 https://www.ccacoalition.org/projects/ng-23-006-nigeria-develop-national-policy-soot-free-buses-and-national-strategy-and-implementation-plan-cngelectric-bus-deployment#:~:text=The%20country%20is%20currently%20planning,the%20President%20in%20May%202023.
38 https://www.oandoplc.com/wp-content/uploads/2021/07/Oando-Renewable-Energy-EV.pdf
39 Michael M. Aba, Nilton Bispo Amado, Alcantaro Lemes Rodrigues, Ildo Luís Sauer, Abraham-A M. Richardson, Energy transition pathways for the Nigerian Road Transport: Implication for energy carrier, Powertrain technology, and CO2 emission, Sustainable Production and Consumption, Volume 38, 2023,Pages 55-68,ISSN 2352-5509, https://doi.org/10.1016/j.spc.2023.03.019.

Image 9: GIZ TUMI, Nigeria, Women on the bus

Rwanda

Current Status of E-Buses

As of early 2024 there are 19 e-buses active in Rwanda, mainly in Kigali, and a further 16 are planned with financing secured. The three main companies are Basigo, Kas Auto/Go Green Transport Rwanda, and Izi Electric Rwanda. All buses are currently manufactured overseas in China and imported, as the country has limited domestic assembly capabilities. However, there is strong interest in increased local production.

Governmental Policies Designed to Encourage E-bus Uptake

Rwanda has targeted e-buses as a key component of their overall decarbonization strategy. By 2030, the government seeks to electrify at least 20% of the country's buses. To facilitate this, vehicles, parts, and chargers are exempt from tariffs and VATs, domestic manufacturing and assembly plants in the country receive a 15% corporate tax break and other tax incentives, and charging stations can be installed by private companies at no cost on government-owned land. The government has also expanded bonuses relating to Kigali's bus network to encourage additional public transportation usage, including free internet, and worked to align other policy goals with the specific needs of bus fleets in Kigali and elsewhere. Finally, the Rwandan government has worked on public outreach to sell the advantages of e-mobility, both for buses and other EV options.[40]

Opportunities

The Rwandan government's clear and effective policies promoting electrification across all vehicle types, but especially buses, have proved effective so far and need to be continued and, where possible, expanded upon in scope if not form. As an example, the Rwandan government is adopting a new time-of-use structure for vehicle charging; once this is established, companies will have additional flexibility beyond their current primary off-peak charging times. One addendum identified during our research is that charging protocols need to be harmonised, as they are currently entirely based on whatever the OEMs for the buses import. This weakens interoperability and slows uptake, as fleet scaling is entirely dependent on the numbers of a certain type of charger. Standardised charging infrastructure is therefore critical to reduce infrastructure wastage.

Senegal

Current Status of E-Buses

The main company involved in e-bus deployment in Senegal is Dakar Mobilité, with 150 buses. Approximately 85% are imported from China fully built, while the remaining 15% are domestically assembled from imported parts. Despite strong interest in increasing e-bus deployment, Senegal currently has limited domestic production or assembly capacity.

Governmental Policies Designed to Encourage E-bus Uptake

Bus electrification in Senegal is, to date, mostly built around the new Dakar Bus Rapid Transit project in the capital city. Part of an overall push to modernise infrastructure in a large and rapidly-growing city, the project will sport nearly the entirety of Senegal's e-bus fleet.[41] Further policies to promote bus electrification have not yet been laid out; assuming the BRT project is successful, it should provide a proof-of-concept of the validity of e-buses and lead to greater appetite for their deployment elsewhere in the country. In the meantime, BRT e-buses are exempt from customs duties and specific fees, promoting their uptake for the Dakar BRT project.

Opportunities

Senegal will benefit from the Dakar BRT project and can use this project as a pilot for how to work with public opinion to encourage further acceptance of e-buses. The government should especially work to facilitate bus electrification in public transportation connecting to the BRT, notably by deploying and standardising charging installations to those used on the BRT, and continue existing exemptions from tariffs and VAT for e-buses. They can also seek to electrify feeder services to the BRT as a next step.

South Africa

Current Status of E-Buses

Despite South Africa's importance as a vehicle production and assembly site, its e-bus fleet is very small, with just 6 units split between Cape Town and Johannesburg. Three different groups are currently piloting e-buses: Golden Arrow Bus Service, GoMetro, and the University of Johannesburg. The Golden Arrow buses are either imported or locally-assembled Chinese-produced BYD

40 https://www.environment.gov.rw/index.php?eID=dumpFile&t=f&f=55460&token=6003242e29667513f33c128466ffc760c62d81d8

41 https://www.dfc.gov/investment-story/introducing-electric-buses-improve-transportation-and-reduce-emissions-senegal

Image 10: Copyright Roam

South Africa

buses (3 buses total); the University of Johannesburg bus is MiPower-built and imported, while the GoMetro buses are still being acquired. The government has, however, signalled interest in transitioning the country's automotive assembly sector over to EVs, indicating possible opportunity.[42]

Governmental Policies Designed to Encourage E-bus Uptake

South Africa developed a Green Transportation Strategy in 2018, further expanded upon in 2023 with an EV White Paper designed to promote both domestic EV uptake and EV manufacturing and assembly. In the latter document, key priorities include deployment of charging infrastructure, the overhauling of the country's strained electrical grid to support additional EV deployment, and temporary reductions in tariffs on imported vehicles and parts.[43] Although the South African bus market is large and has great potential for electrification, the government does not have a clear strategy to promote e-bus uptake beyond the current exemption from tariffs for used components.[44] For other matters, South Africa has 20% tariff duties on other e-bus components and a 15% VAT, although South Africa's large number of trade agreements may impact the country's options in using trade policy to foster vehicle electrification, especially through regional cooperation. [45]

Opportunities

South Africa's existing automobile assembly and manufacturing sectors make it well-positioned to transition to electrified vehicles, as the government intends to do; however, a clearer strategy to promote domestic EV uptake needs to be developed. The EV White Paper is vague in many areas and lacks clearly defined and attainable policy interventions for many sectors. Despite the need for stronger policy, especially in terms. The government's clear realisation of the needs for charging infrastructure and grid resilience upgrades will help promote electrification.

42 https://www.thedtic.gov.za/wp-content/uploads/EV-White-Paper.pdf
43 https://www.thedtic.gov.za/wp-content/uploads/EV-White-Paper.pdf
44 https://www.trade.gov/market-intelligence/south-african-electric-mobility-market
45 https://www.sars.gov.za/legal-counsel/international-treaties-agreements/trade-agreements/

Uganda

Current Status of E-Buses

Although Uganda is charging ahead on the electrification of 2- and 3-wheelers, its e-bus fleet stands at just 4 vehicles, although a further 24 buses are being deployed in Kampala. At the head of this effort is Kiira Motors, currently responsible for the country's entire current e-bus fleet. These buses are locally assembled from parts imported from China, in cooperation with Makerere University and STI.

Governmental Policies Designed to Encourage E-bus Uptake

Uganda's 2024 E-Mobility Strategy sets an ambitious goal: full electrification by 2030 for buses and motorcycles, and 2040 for other road vehicles. This will be attained by targets and mandates, tax benefits for domestic EV producers and assemblers, taxes on ICEVs, and large-scale deployment of charging infrastructure. Uganda has additionally, and somewhat uniquely, laid plans to promote battery recycling. The government has also framed electrification and other climate mitigation efforts as a major opportunity for the country, indicating a goal of popular mobilisation behind the programme.[46]

Opportunities

The E-Mobility Strategy is a comprehensive document that lays a clear plan towards a fully-decarbonized transportation sector within the next 15 years. The government's clear plans mean the challenge lies mostly in implementing existing strategies, and ensuring proper funding, workforce, and fleet resources, while coordinating government agencies. Further financial benefits for e-bus adoption may be merited depending on overall cost curves for batteries and other key components, and depending on how fast domestic assembly and manufacturing can be spun up it may be necessary to temporarily promote imports to meet the 2030 fleet electrification goals. Nonetheless, Uganda's e-mobility strategy stands as an example of a strong plan for rapid decarbonization.

46 https://sti.go.ug/wp-content/uploads/2024/07/National-E-Mobility-Strategy.pdf

Image 11: Copyright Carlos Pardo (12)

Multi-Country Challenges

Apart from the country-specific challenges e-bus adoption faces, there are several broader challenges to the sector in Africa. Primary among these is the high upfront cost of e-buses, which in most cases remain far more expensive than their ICEV counterparts, particularly in comparison to the used ICEV buses imported in many countries. While further reduction in e-bus prices is expected as production increases and more companies enter the market, this will be a long-term process and there is the unfortunate potential to lock in more ICEV bus usage in the meantime. Until such costs come down, the cases above show that the most effective way of countering this is to provide VAT and tariff exemptions for e-buses, and in some cases introduce penalizing tariffs for imported ICEV buses, changing the cost calculus.

A second challenge is the heavy reliance of e-bus users on Chinese-made vehicles. Given rising international tensions between the United States and China, African countries may find themselves squeezed by the impacts of retaliatory tariffs or efforts to limit Chinese access to raw materials needed for EV components, either of which could significantly increase prices. This is not a roadblock African nations can explicitly plan to work around at this point in time, but as electric vehicle manufacturing takes off globally – not just in the U.S. and Europe but in India, Morocco, and potentially Vietnam and Indonesia – it would be beneficial for countries to seek to broaden where they are buying e-buses and parts from, to build as much resilience as possible to future geopolitical shocks.

Finally, several countries, including Uganda, Morocco and Kenya, are signalling strong interest in developing domestic EV production, including for e-buses. This has led, in several cases, to pre-emptive tariffs being levelled, or at least proposed, before the workforce needed to feasibly develop such an industry exists in-country. Increasing cost on imported parts will not only make e-buses more expensive but also harm growing domestic e-mobility industries, reducing employment in these sectors. In this instance, the appropriate policy move is to keep tariffs low on imported parts and fully-built buses for the time being to foster further development of the needed trained workforces and only increase them on fully-built vehicles and locally available parts once the local markets have the capacity to build their own EV manufacturing sectors.

Image 12: Copyright Roam (2)

Recommendations

Overall, bus electrification is increasing across all of our surveyed countries, and in most cases, the EV bus fleet is in the double and occasionally triple digits. However, these positive facts mask the fact that EV buses still make up a very small portion of the total bus fleet in most countries.

EV adoption is also distributed unequally: while Egypt, Morocco, and Senegal already sport or are already in the process of obtaining dozens or hundreds of e-buses, Nigeria only has 15 EV buses in the entire country and South Africa just 4. The trend is clearly in the right direction, but it will take time to realise.

A secondary trend observable in most countries is that EV bus adoption is nearly entirely concentrated in urban areas. This mirrors patterns of electricity access and unequal access to charging infrastructure. Therefore, to facilitate full and equitable EV bus adoption, a strong focus on solving related infrastructure challenges, including improving electricity access in rural areas and improving national grid stability, is required.
All countries surveyed have adopted some of the same strategies to promote bus electrification. African countries in this study also have established tax or tariff breaks; this is an especially relevant policy choice discussed in more detail below.

The surveyed countries show a strong interest in fostering domestic EV manufacturing industries and have repeatedly signalled they intend to try to bring these about. However, except Morocco, most other African countries are heavily dependent on imported buses, almost always from China, or, at best, locally assembled buses from parts produced elsewhere in the world. High startup costs for manufacturing, lack of the necessary skilled workforce, and the realities of the global supply chains for EV parts mean that developing domestic EV production will require strong and long-term policies. Countries like South Africa and Egypt which have existing automotive industries could have an easier time building e-bus industries, but must first get over the gap of developing those industries while they continue to protect against fully-built imports.

Finally, governments recognise the bottlenecks to EV adoption posed by a need for charging infrastructure and seek to solve this. However, the cost and technical challenges related to this require strong policy, which is only sometimes present. As noted previously, the charging infrastructure that has been deployed is usually concentrated in urban areas; the policy to promote rural bus electrification is almost always lagging far behind.

Most electric vehicles remain more expensive than their ICEV counterparts, making government support to reduce costs critically important. Evidence from the surveyed countries suggests that tax incentives, especially tax and tariff breaks, are major drivers of accelerated EV adoption, along with government support in procuring bus lines. Cameroon, for instance, offers a total tax exemption for electric buses, but does not have public bus fleets with clear plans to electrify. At the same time, Senegal exempts buses from customs duties and the government is actively involved in procuring e-buses for the BRT line, while Ethiopia has a clear tax and tariff incentive structure to promote further adoption, backed up with an ICEV import ban. Senegal and Ethiopia are therefore making strong strides towards increasing bus electrification. By contrast, Nigeria has high taxes and tariffs on imported EVs and EV kits and parts, along with cheap petrol and an unstable grid, slowing its electrification efforts.

Policies to promote the infrastructure development needed for bus electrification still need to catch up in most African countries surveyed. Signalling policy support does not itself build charging stations, and the targeted policy and implementation needed to resolve this issue is currently lacking in many countries, possibly due to cost or technical capacity questions. However, this is not unknown to the surveyed governments - South Africa and Ethiopia are working to address charging station access while building grid resiliency, while Kenya has proposed a nationwide network of charging stations (but done little to implement it so far). Uganda and Rwanda have permitted private companies to use government-owned land for chargers, and Kenya Power is moving in concert with the government to facilitate easier infrastructure development.

Finally, a policy gap exists in a key area. Our surveys show that the public is often uncertain about EV buses, if not outright sceptical. Government policy designed to resolve this currently needs to be improved. Kenya has launched a program, for instance, seeking to make electric vehicles more appealing, and Uganda's comprehensive e-mobility strategy reframes vehicle electrification as a great opportunity for the entire nation.

Our surveys indicate four main recommendations for the next policy steps to promote further bus electrification:

1) Local Financial Support

While full domestic EV manufacturing goals are admirable and well worth working towards, most surveyed African countries do not currently have the resources – economic, material, or workforce – to create them overnight successfully. In the meantime, governments should lower duties on CBUs and exempt duties on CKD/SKD kits, as well as provide tax breaks to local e-bus corporations doing local assembly or manufacturing. This will promote local manufacturing and technological advancement in the electric vehicle sector while aggressively pursuing broader education efforts to train a homegrown EV manufacturing workforce through experience. Secondarily, governments need to firmly align themselves with global part and resource supply chains, including working with other African countries to source and process raw materials and attracting foreign investment in battery production. Countries should leverage the AfCFTA and other regional trade deals to integrate themselves into the global EV market and open up wider-scale manufacturing possibilities, assisting with industrialization and modernization.

2) Long-Term Policy Support

Outside of taxes, governments should expand or, at the very least continue existing reductions or exemptions of VAT, excise duty, or import duty for electric buses to make them more competitive with traditional fossil fuel vehicles. Critically, governments need to provide clear time horizons for these incentives, based either on a clear phaseout date or a certain number of vehicles sold, in order to provide policy stability and encourage investment.

3) Infrastructure Development

Another major roadblock to EV adoption – for all types of vehicles, not just buses – is the lack of proper charging infrastructure. Governments, as well as related organisations such as utility companies and bus operating companies, need to prioritise deploying charging stations. It is important that regional towns and rural areas be included in these efforts; the demand for EV charging can also boost broader programs to expand electrical access to rural areas.

4) Harmonisation

While aligning tax policies across the entirety of the African continent is implausible in the short term, neighbouring countries and regional bodies like the East African Community and ECOWAS should cooperate on standardising their tax structures and incentives to create more predictable and supportive environments for EV investments. Banks, including international banks with climate commitments and aligned with decarbonization pathways should also work to standardize both short- and long-term lending offerings with concessional lending rates to facilitate bus electrification, while insurance companies should work to harmonize coverage options. Given the nature of many African bus markets, it is also important that lending, insurance coverage, and other financial services also be provided to smaller owners and operators, and not just larger operators or governmental agencies, to permit them to conceivably electrify their own buses.

These are general recommendations for African governments for how best to facilitate EV bus adoption, and at least for 3) and 4) they are ones GIZ can support. However, there are additional opportunities for GIZ in particular:

a) Public Education

Public outreach programs to help encourage public support for EVs, buses and other types, are critical and underutilised. Other surveys indicate that electric vehicles are viewed as highly appealing and exciting, and are similarly popular for their ease and cheapness of maintenance, but that ICE users underestimate the scale of benefits EVs provide in maintenance in particular. Targeted programs to emphasise these benefits will help resolve resistance to adoption.

b) Public-Private Partnerships

Especially for infrastructure development, GIZ is in a unique position to bring about partnerships between NGOs, governments, and private businesses to help resolve challenges slowing EV adoption. In particular, rural charging infrastructure, connected to larger goals of expanding electricity access, are an excellent option for GIZ's efforts, as rural areas are more difficult for private sector actors and require some initial support.

In addition to the recommended policy actions, robust data monitoring systems are essential as the fleet of EV buses across Africa continues to expand. Accurate and public data collection and analysis are crucial for understanding usage patterns, performance metrics, and infrastructure needs. This information will enable governments to make informed decisions for efficient policy transitions and effective management of electrification efforts.

Conclusion

This report highlights initial progress in electric bus adoption across surveyed African countries yet reveals significant challenges that impede widespread electrification. While countries like Egypt, Morocco, and Senegal lead with substantial efforts, others like Nigeria and Cameroon lag. Urban areas host a strong majority of these buses, reflecting infrastructure disparities and limited rural electrification efforts. Many countries also lack clear, finalized e-mobility strategies, although others, such as Uganda, offer clear, comprehensive, and attainable if ambitious plans.

Policy-wise, tax incentives are pivotal in accelerating EV bus adoption. Countries offering VAT exemptions or reduced import tariffs, like Ethiopia, are demonstrating major strides towards electrification. However, inconsistent policies across borders hinder regional harmonisation and broader investment predictability.

Local manufacturing presents another opportunity, though currently constrained by high import duties on CKD/SKD kits and limited technical expertise. Enhancing these capabilities will stimulate domestic production and integrate African nations into global EV supply chains, promoting industrial growth and job creation.
Infrastructure development remains another barrier, with inadequate charging stations outside urban centres. Addressing this disparity requires concerted efforts from governments and utilities, potentially linked to broader electricity access initiatives.

In North Africa both Egypt and Morocco are moving forward with bus electrification through strong government support and domestic manufacturing efforts. In East Africa, Uganda and Rwanda are clearly outpacing Kenya in comprehensive policy support, although Kenya's homegrown e-bus industry shows great promise in a more private-sector led approach. Meanwhile, Ethiopia is a continent leader in bus and other vehicle electrification through very strong policy and fiscal support for EVs while banning ICEV imports. South Africa, the only country studied in Southern Africa, is lagging behind the rest of the continent but shows promise with it's public bus fleet and automotive manufacturing. In West Africa, Senegal's BRT efforts are outpacing Nigeria's slow and haphazard electrification projects, while Cameroon, our only studied country in Central Africa, has great potential for bus electrification but relatively little to show for it as of yet.

Recommendations include harmonising tax policies, expanding incentives, supporting local assembly, and prioritising infrastructure development. Public education campaigns and public-private partnerships, particularly for rural infrastructure, are also crucial for overcoming public scepticism and accelerating EV adoption.

Next Steps

- Further surveying in other African nations – including Tunisia for its previous interest in bus electrification and Tanzania due to its existing electrification efforts in other sectors, like three-wheelers – to clarify ongoing regional trends in Africa and overall electrification progress, especially if studied on a recurringbasis.
- Benchmarking with other Global South nations, such as Colombia, Mexico, Argentina, Brazil, Indonesia, or Vietnam, to place Africa's move to e-mobility in a greater global context.
- Further data collection and analysis regarding charging infrastructure to facilitate more targeted deployment of that infrastructure. Ideally, data should be disaggregated to assess charging standards, source of the chargers, and maintenance cost, as well as overall draw on electrical grids.
- A broader examination of electrification efforts in the studied countries to evaluate the feasibility of vehicle electrification. If paired with studies relating to renewable energy deployment, this could help to clarify progress of the clean energy transition.
- Finally, an examination of the overall financing situation – private, governmental, and international – that helps or hinders e-bus uptake will provide guidance as to effective policy interventions and market shifts to accelerate bus electrification.

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