

WORKSHOP REPORT

Africa E-Bus Workshop report

Durban ICC, eThekweni Municipality, Durban, South Africa

11th – 13th February 2025



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We also extend our gratitude to the eThekweni Municipality for their support in organising the event, particularly Babalwa Nyoka and Shoneeze Franks, and the executive Mayor, Councillor Cyril Xaba and his office for gracing the workshop with their presence and warm welcome.

General Description

From 11th to the 13th of February 2025, representatives from 14 African cities and 15 African countries met in eThekweni, South Africa for the Workshop: Africa Electric Bus Workshop. The Workshop was an intensive three-day workshop that featured in-depth group sessions and bilateral meetings on clean bus finance and. The workshop included closed-door city-only sessions, as well as sessions for cities, national government partners, manufacturers and finance experts to network and share their perspectives, good practices, and experience. Key themes included business models for financing zero-emission buses, procurement models, private investment, risk management, and opportunities for revenue enhancement and new funding sources. In addition, e-bus manufacturers had the opportunity to share their offer for cities.

Photo 1: Mayor of eThekweni, Councilor Cyril Xaba welcoming delegates



Photo 2: Lusanda Madikizela, Head of Zero Emission Freight (C40 Cities)



The workshop kicked off with *introductions from C40 Cities and the eThekweni Municipality's Authority*. Day 1 was exclusive to city and national public officials: a closed-door session attended by delegates from the invited cities, and from C40, United Nations Environmental Programme (UNEP), World Resource Institute (WRI Africa), and GIZ TUMI. Opening speeches were given by the Mayor of eThekweni, councillor Cyril Xaba, and on behalf of C40 Cities by Lusanda Madikizela, Head of Zero Emission Freight.

Photo 3: Polash Das, Programme Management Officer (UNEP)



Polash Das, Programme Management Officer at UNEP representing the Global Environment Facility (GEF) gave a brief presentation on GEF funding and current electric bus projects in Africa, the introductory session was facilitated by Jonathan Ramayia, Head of South-South Cooperation, Africa at C40.

Photo 4: Jonathan Ramayia, Head of the South-South Cooperation (C40 Cities)



Key takeaways

HIGHLIGHTS

- Cities in Africa are making progress in becoming more sustainable and smarter.
- Africa needs to strengthen regulatory frameworks and development planning to address infrastructure needs, including parking solutions.
- Engaging private operators is crucial to help fund e-bus deployment due to the high capital expenditure involved.
- Rising diesel costs might be an option in Africa to create a strong incentive to transition to alternative transport solutions.
- Selecting technology that aligns with local context and needs is essential for successful implementation.
- Each city's unique local context demands tailored requirements and customized solutions; there is no umbrella solution that can assist tackle the barriers and challenges of deploying electric buses.
- There is a challenge with the operator's hesitation to adopt e-buses highlights the need for education on new technologies.
- Developing EV regulations, industry-specific taxation, and integration strategies with existing paratransit systems is essential for successful e-bus adoption.
- Extending e-bus contract durations, as done in Jakarta, incentivized adoption and could similarly accelerate the transition in African cities.
- National government involvement and financial mechanisms enabled e-bus expansion in small and

mid-sized LATAM cities, offering a replicable model for Africa.

- The India experience highlighted the importance of the Aggregation model, political consensus, bankable projects, and long-term stability. It emphasized access to finance, diverse electric bus models, demand aggregation across cities, and secure contracts to encourage OEMs and operators to actively participate.
- Transmilenio's journey demonstrated how tax incentives, market research, energy grid capacity, and a shift in maintenance and charging strategy contributed to advancing electric bus adoption.
- The key challenges in the TCO model revolve around energy, electricity distribution capacity, and charging infrastructure.

Agenda

Objectives

- Create an opportunity for cities and/or countries' transport authorities to **share their experience and gain knowledge on the electrification** of their public transportation systems in the region, building a strong network of exchanges.
- Provide the delegates with **knowledge on successful and possible business models for transport electrification** in different parts of the world, especially in the global south.
- Explore **financing and funding opportunities available** for electrification of public transport in the region.
- Provide the delegates with **knowledge on the electric buses technology available**, including charging infrastructure, in the region, by bringing manufacturers and energy supply representatives to showcase their experience and products
- Showcase **successful and ongoing projects on electric vehicles** in the region, exploring lessons learned and transferable skills
- **Inspire and equip** delegates with knowledge on how to plan a transportation transition

Agenda

Tuesday 11 Feb	AM	• Opening of the workshop • Session 1: Government presentations- best practices • Session 2: Government presentations- challenges
	PM	• Session 3: Global South experience on electrification of public transport • Wrap up and Gala Dinner
Wednesday 12 Feb	AM	• Session 4: Reports presentation • Session 5: Delegates elevator pitches for investors • Session 6: Presentation of investors
	PM	• Session 7: Bilateral Meetings with investors • Session 8: Battery circularity: Second life applications practical examples in Kenya • Session 9: Workshop on E-Bus Project Cost Optimization with Circular Economy
Thursday 13 Feb	AM	• Session 10: Presentation of manufacturers • Session 11: Bilateral meetings with manufacturers
	PM	• Session 12: Wrap up • Optional Session: e-Freight session

Workshop attendees can find the slides and presentations from the event [here](#). **Please do not share these slides outside of your team and be aware that they may contain confidential information.** C40 is available to coordinate other connections between participants; please keep us copied in your communications whenever possible so that we can continue our support.

Next steps for C40 support

The Zero Emission Bus Team will build on the needs identified during the workshop to provide ongoing support to cities. Below are the actions we will consider in response to the discussions, the cities' whiteboard and feedback forms.

1. City to city engagements and/or learning exchanges with the Global South Cities.
2. A workshop with eThekweni Operators focusing on the electrification of Public Transport.
3. Ongoing webinars to build capacity of the city officials on best practices and ongoing work on the electric bus work in Africa.
4. Quarterly newsletters to share the work C40 does and news of the transition in Africa

**Is there anything missing from these follow-up actions?
Let us know by sending an email to tndlovu@c40.org.**

Working Sessions

DAY 1

Objectives:

1. Sharing government's best practices, key lessons and challenges experienced on the deployment of electric buses in Africa.
2. Inspire and equip delegates with knowledge on how to plan a transportation transition that is just, equitable and inclusive from the Global South's experience.

Session 1: Experience and lessons learned on e-bus projects

Photo 5: Session 1



Presentations

- Dr. Olukemi Amure, Lagos - First phase of 50 e-buses deployment, data to share
- Cheikh Oumar El Foutiyou BA and Nancy Seck, Dakar - E-Mobility Case study: Dakar E-BRT
- Mohammed Ali, Addis Ababa - Addis Ababa's electric bus and transportation landscape

Summary

First with a couple of presentations and then questions and answers from the audience, Dr. Amure shared that LAMATA currently has two e-buses in operation and an additional 500 HC buses are expected in phases till 2027, CETUD in Dakar has [121-158] bi-articulated e-bus with a capacity of 150 passengers and Mr. Mohammed shared that Addis Ababa has 5 electric buses and 10 electric minibuses which are operational since 2024 on two routes (Bole to Sheromeda and Bole to Pizza) by Private investor (BKG).

HIGHLIGHTS

Photo 6: Dr.Olukemi Amure



Lagos Presentation Highlights:

The Green Corridor e-bus operation will integrate seamlessly with the existing electrified Blue Rail Line, enhancing public transport efficiency in Lagos. The Lagos State Government (LASG) has allocated essential infrastructure to support e-bus operations, ensuring smooth implementation. A private partner is tasked with delivering 50 e-buses in the first phase, constructing a charging park, and signing concession agreements to operate on the Green Corridor by Q2 2025. The project is set to deploy 500 high-capacity electric vehicles (EVs) in phases, along with establishing six charging parks across Lagos by 2027. The initiative aims to attract investors and secure technical assistance to establish an electric bus assembly plant, with a goal of deploying 1,000 EVs in the city by 2030. The ultimate target is to achieve net-zero emissions by 2050, aligning with global environmental standards and creating a greener, more sustainable transport network in Lagos.

- **Population:** 20 million
- **Public Transport:** 75% run by the informal sector
- **Electric Bus Deployment:** 2 e-buses in operation; 500 HC buses to be deployed by 2027
- **Business Models for Operators:**
 - **Franchise:** Operators purchase and operate their own buses
 - **Boss:** City purchases buses, and operators provide services for a fee
- **National Policy:** CE policy aims for net-zero by 2050, driving adoption of electric and natural gas vehicles
- **Green Corridor Development:**
 - Focus on e-buses and blue rail line
 - Piloting two e-buses to demonstrate viability and emission reduction
 - Plans to deploy 50 buses by 2026
 - Project aims for 500 HC e-buses and 6 charging stations by 2027
- **Key Challenges:**

- High capital investment
- Environmental impact, including battery end-of-life plans
- Energy supply for charging (dependence on the national grid and diesel generators)
- Personnel education and awareness on e-buses

Photo 7: Nancy Seck



Dakar Presentation Highlights:

CETUD, under the state's public transport sectoral policy, is committed to ensuring sustainable improvements in urban mobility across Dakar and Thiès. CETUD is responsible for developing strategies, in collaboration with relevant services, aimed at enhancing sustainable urban mobility. A key mission of CETUD is to modernize urban public passenger transport systems, ensuring they are efficient and fit for future needs. CETUD oversees the regulation of urban public transport, including traffic management and parking organization, contributing to a more streamlined transport system. CETUD plays a pivotal role in supporting proper urban development, ensuring that transport planning aligns with the broader goals of sustainable growth. The gradual transformation of artisanal transport is underway, with 3,000 new vehicles introduced in operation across Dakar and surrounding regions, improving public transport efficiency. The project has led to the creation of 10,000 direct jobs, benefiting the local economy and contributing to the formalization of the transport sector. CETUD focuses on examining and ensuring the optimal conditions for transport operations, balancing profitability, road safety, and environmental quality. The promotion of training programs for workers, especially in the context of the renewal of automotive professions, is a key element to support the transformation of the transport sector. CETUD is dedicated to creating skilled jobs and formalizing the informal transport sector, improving the quality of employment and the sector's overall sustainability. CETUD also supports the expansion of both industrial and artisanal transport bases, helping to foster broader economic growth and development.

- **CETUD Dakar:** Established in 2017 to regulate and meet transport demand; upgraded to CETUSustainable in 2022

- **Fleet Renewal Program:** Launched in 2005 to modernize the fleet
- **Horizon 2035:** Dakar's sustainable urban plan includes walking and cycling modes
- **e-BRT Line:**
 - 18 km route from suburbs to city center
 - Significant urban development required for the project
 - Planning (2013-2018), construction and implementation (2019-2023)
 - Public-private partnership (PPP): City handles infrastructure, private operator manages buses and charging stations, including battery life.

Photo 8: Mohammed Shibeshi



Addis Ababa Presentation Highlights:

The government is actively discouraging the use of non-EVs while promoting the adoption of electric vehicles. EV buyers benefit from tax breaks, subsidies, and preferential registration processes, making EVs more affordable. A nationwide network of charging stations is being developed to support the growing number of electric vehicles. The government is encouraging the establishment of EV assembly plants and battery manufacturing facilities, promoting local production and innovation. The country aims to have 439,000 electric vehicles on the road by 2030, with over 100,000 EVs already in operation. 15% duty on fully assembled electric vehicles (EVs) and 5% duty on partially assembled EVs, incentivizing local assembly. Customs duties for EVs are significantly reduced to encourage adoption and lower the cost of electric vehicles.

- **Energy Landscape:** 60% of the population has access to generated energy, primarily from hydropower
- **Government Policies:** Customs and tax incentives promoting EV adoption
- **Electric Bus Operations:** Private companies operate electric buses and minibuses
- **BRT Development:**
 - 3 BRT lines at different development stages
 - Deployment of 500 e-buses across all lines
- **Key Challenges:**
 - High capital investment
 - Identifying suitable technology for local requirements

Session 1: Question and Answer

With prices of e-buses decreasing. Are e-buses becoming more affordable over time?

Lagos - This is not the case. Lagos does not produce buses. Procurement of buses is dependent and linked to the Forex rate. This has resulted in a delay of deployment of e-buses.

Dakar - following an opex projection analysis, it is hoped that by 2030 the cost will be the same as diesel buses.

What is the expected battery life and what is the management plan to ensure maximum battery life and its supply of energy to the charging station sufficient and is the energy supplied via grid?

Addis Ababa - batteries are managed by operators and yes, the energy supply is sufficient.

What is the greatest turning point for uptake of buses?

Lagos – Area of emissions – replace buses with low emissions make a significant impact on emissions. This was shown in the piloting of the two electrical buses

Addis Ababa – Benefits of supplying charging stations with green energy instead of fossil fuels

Dakar – Appointing a private sector that could procure and maintain e-buses for the e-BRT line. Including the operating and maintenance of the charging station.

For Dakar, what are the challenges being faced in using a PPP for the e-BRT line?

Dakar – Evaluation of the line is still ongoing. The private operator would be better placed for this. One challenge is managing the battery's end of life.

Does the city have a city specific e-buses policy? Or does this policy sit within the national government sphere?

Lagos – Policy derived from the federal government policies. Two examples given

Addis Ababa – A national policy was adopted. No city specific policy

Dakar – No policies yet but city working towards developing framework policies

Session 2: Challenges faced in implementing e-bus projects

Photo 9: Session 2 (Challenges faced in implementing e-bus projects)



Presentations

- Craig Swain, Cape Town – Challenges faced in implementing e-bus projects
- Hindolo Shaika and Christian Ngombu, Freetown – Paths to Policy Implementing strategy
- Dr. Eng John Githui, Nairobi - Challenges faced in implementing e-bus projects

Summary:

Mr. Swain shared the Strategic context, Municipal Procurement Regulatory Frameworks within South Africa and the challenges faced in implementing electric bus projects which included the loadshedding challenges in the country, Freetown shared the pathway to establishing electric buses which also covered the unreliable power supply and Dr. Eng Githui shared the barriers faced in Kenya and an ongoing solution on grid impact assessment which also touches on the grid challenges faced by most African cities in the process to adopt electric bus deployment. This was followed by a question-and-answer session.

HIGHLIGHTS

Cape Town Presentation Highlights:

Procurement regulations promote transparency and fairness but often lead to project delays and inefficiencies due to rigid processes. Municipal budget limitations significantly affect the ability to initiate and complete large-scale projects like e-bus deployment, often delaying tender awards. Infrastructure readiness is hindered by substantial initial costs for land acquisition, facility construction, and necessary electrical upgrades, requiring phased and long-term funding approaches. Charging infrastructure often undergoes independent procurement, leading to misalignment with e-bus delivery schedules and delaying project rollouts. There is a shortage of qualified suppliers and technical know-how for charging infrastructure installation, contributing to project bottlenecks. The timing mismatch between the arrival of new e-buses and the completion of charging stations or depot facilities disrupts smooth operational rollout. Supporting large-scale EV charging demands substantial upgrades to the electricity grid, requiring collaboration with energy providers and significant investment. Unreliable power supply and potential loadshedding pose risks to EV charging reliability and service continuity.

The incompatibility between high-floor bus stations and low-floor electric buses creates additional operational and infrastructure adaptation issues.

Freetown Presentation Highlights:

The challenges faced in Freetown to deploy electric buses include the unreliable power supply affecting transport operations and infrastructure (e.g., traffic lights, EVs). Poor road network and lack of integrated public transport systems. Lack of designated parking facilities, leading to on-street congestion. Overlapping or competing mandates among transport sector institutions. Weak inter-agency commitment, especially for sustained traffic law enforcement. Limited financial and human resource capacity for planning, management, and operations. Poor land use planning contributes to urban sprawl and transport inefficiencies. Proliferation of informal transport operators (e.g., minibuses, okadas, tricycles). Unregulated street trading encroaching on pedestrian and vehicle space. Poor driver behavior contributing to unsafe road conditions. Non-compliance with traffic rules exacerbates congestion and safety issues.

Nairobi Presentation Highlights:

E-buses are 21% more expensive in Total Cost of Ownership (TCO) compared to diesel buses. Lack of subsidies, grants, or structured financing options for operators. Unclear mechanisms for scaling up. Ongoing debate over leasing vs. outright purchase models. No established second-hand market. Battery degradation impacts resale potential. Existing informal sector operators (matatus, SACCOs) show reluctance due to operational disruption. Low awareness and trust in e-buses among passengers. Need for training of drivers, mechanics, and regulatory bodies. Absence of safety, operational, and incentive frameworks for e-buses. High import duties on e-buses and batteries; unpredictable tax policies. Poor alignment with BRT systems and broader transport strategies. Weak coordination among transport, energy, and urban planning bodies. Lack of cohesive, integrated public transport and EV transition plans. Few charging stations contribute to operational uncertainty. While generation is largely renewable, distribution capacity and reliability are lagging. Urban space constraints for siting charging depots. Limited battery capacity, worsened by extreme weather conditions, restricts operational range.

Session 3: Global South experience on electrification of public transport

Panel discussion- moderator: yaseen saile, C40

- Udayalaksmanakartiyasa, TransJakarta
- Polash Das, United Nations Environment Programme
- Thomas Maltese, C40
- Marcos Ataya, Transmilenio (Online)

Summary:

The four panellists shared experiences from Jakarta, India, LATAM and Bogota. They shared challenges and solutions towards the deployment of electric buses in the Global South and the importance of partnerships in ensuring a smooth transition.

TransJakarta Highlights:

- 2022: E-bus program launched with 30 buses.
- 2024: Cost per km already lower than diesel buses.

- Current Fleet: 300 electric buses, operated by 4 key operators under TransJakarta.
- Target: 50% zero-emission buses by 2027, 100% by 2030.
- **“Buy the Services” Model:**
- Operators **own and procure** the e-buses.
- Government **pays per-kilometer remuneration**.
- **Heavily Subsidised System:**
- **Flat fare** for passengers (~50% of operational cost covered).
- Affordability increases public acceptance.
- **Contractual Reform:** EV bus contracts allowed to run **longer than diesel** contracts, improving ROI and encouraging operator adoption.
- **Government Commitment:** Strong support from the Jakarta government and city authorities.
- E-buses have **lower maintenance costs**, contributing to better uptime.
- **EV Bus Prices Declining:**
- Market trends are making EV procurement increasingly viable

India Highlights:

- The Grand Challenge’s scale and pricing have rendered diesel bus procurement economically unfeasible.
- With **8 of the world’s 10 most polluted cities** in India, there’s a strong health and environmental motivation.
- National and state-level policies align to push for electrification.
- Justified by the **“Make in India” manufacturing boost** and **public health benefits**.
- Framed around job creation and economic competitiveness in clean tech.
- Centralized procurement aggregated bus demand across multiple cities.
- Created **bankable, long-term contracts** that attracted OEMs and operators.
- **Political consensus, access to finance, and regulatory stability**.
- Enabled aggressive OEM participation and competitive pricing.
- **5,500 buses in Phase 1, 6,500 in Phase 2.**
- OEMs responded with **aggressively low bids**, making e-buses more accessible.

LATAM Highlights:

- ZEBRA was **launched in 2019**, when **no e-bus OEMs** were active in the LATAM market.
- Catalyzed the creation of a regional electric bus ecosystem by facilitating partnerships and market entry.
- Focus shifted over time from **“should we transition?”** to **“how do we scale?”** among city operators.

Increased national government involvement is enabling:

- Structuring of **financial mechanisms** to support e-bus expansion.
- Extension of benefits to **smaller and mid-sized cities**, beyond capital metros.

Santiago, Chile:

- First major LATAM city to successfully deploy e-buses at scale.
- Pioneered an **innovative leasing model** with **electric utility companies**, leveraging their financial strength.

Mexico City:

- **C40 involvement from inception** helped align technical, financial, and policy aspects.
- Demonstrated the value of early multi-stakeholder coordination.

Transmilenio Highlights:

Transmilenio is a Public company that operates 11,000 buses in Bogotá, including 2,350 in BRT (Bus Rapid Transit) corridors. It operates under a Public-Private Partnership (PPP) model and it does not own buses.

Initially managed under a **single contract**, since **2019 split into two contracts**:

- **Fleet Provision** (bus acquisition and maintenance)
- **Operations** (bus driving and scheduling)

Operates under a co-financing scheme of 50% fare revenue and 50% government subsidies via the Fondo de Estabilización Tarifaria (Fare Stabilization Fund).

Electrification Transition:

- Initial government effort to electrify failed — no proposals received.
- In 2019, successful launch using new two-contract structure (provision + operation).
- Shift to focus on Total Cost of Ownership (TCO) to evaluate financial viability of e-buses.
- TCO was initially unfavorable but has since improved — now e-buses are cost-effective.
- Charging infrastructure was a barrier — addressed through strategic partnerships.
- Worked with ENEL X to implement Depot-as-a-Service model: 11 electric depots built and rented to TransMilenio for 15 years.
- Tax incentives reduced capital costs for e-bus transition.
- Efforts included market research, grid capacity studies, and maintenance model shifts.
- Bogotá selected heavier, large-battery e-buses for greater operational flexibility.
- In 2025, 269 e-buses are being added (including 156 articulated buses).
- Instrument for Clean Air (ICA) has been active since the beginning of electrification.
- Collaborations with Chile and China, local government, and existing operators to build trust in e-buses.
- Worked with banks and insurance companies to improve financing mechanisms.
- Most electricity in Colombia comes from hydropower, supporting clean energy use for e-buses.

KEY TAKEAWAYS

- Jakarta - important to cooperate with existing players, trying to manage the e-bus project as a collective project and avoid push backs. Importance of data collection (km per day) to support decision making over adequate routes for e-bus implementation.
- Latam - importance of business roundtables at the beginning to present the idea to financiers, investors, etc. Different business models possible according to local context.

Session 3: Question and Answer

Standards, charging infrastructure, minibus taxi integration into electric bus

Technical standards provided in the tenders/procurement, and standardize the charging standard

End of life of electric buses, how to dispose of electric buses at the end of life

TransJakarta operator buys the bus, same as Addis Ababa city provides the guarantee for the bus, electric buses are becoming cheaper over time. Need to decide if the battery will be replaced or not. Market prices for new electric buses and the business case will decide if the batteries will be replaced or the whole vehicle

DAY 2

Objectives:

1. Explore financing and funding opportunities available for electrification of public transport in the region.
2. Provide the delegates with knowledge on the financing and funding opportunities and investments for electric bus deployment.

Photo 10: Day 2



Session 4: Reports Presentation

Presentations

- Dawie Bosch, Logit - Accelerating a Market Transition in South Africa: Insights into the Bus Industry and Emerging Electric Bus Models (Online)
- Japheth Kipkirui, WRI Africa - Accelerating an E-bus Market Transition in East Africa

- Valentin Robineau, CPCS - Accelerating a Market Transition in West Africa
- Andrew Bulman and Robert Cameron, UrbanEQ - Global eBus Financing report and TCO calculator

Summary:

The session covered studies that have been done and currently ongoing, the South African study was launched in 2024 February here and the East and West African study currently ongoing done by WRI Africa and CPCS commissioned by C40 Cities and the United Nations Environment Programme through the Global Environment Facility. The session ended with the launch of the Global eBus Financing report and TCO calculator by UrbanEQ commissioned by the United Nations Environment Programme.

HIGHLIGHTS:

South African Study Highlights

- The South African study investigated battery electric buses (BEBs / e-buses) vs diesel
- The Costs given are for **BRT buses** and the study also covered **commuter buses** (which is cheaper)

Recommendations:

Thus, there is a business case for e-buses NOW, purely on financial grounds (in addition to the environmental reasons) – under a range of circumstances. These include:

- **Design life** of buses of 15 years +.
- **45 000km** or more per bus per year (i.e. efficient bus utilisation).

Cities and operators:

- **Do their own feasibility studies**, linked to their operational plans.
- Where possible **improve efficient** and productive use of their buses.
- Note that the cost of operating e-buses is likely to drop.
- The study recommends C40 to make **costing model available for use, testing and improvement**.

Government actions regarding contracting bus services

- Lengthen NLTAs maximum contract terms (currently 7 years)? Or bus ownership with government
- Urgent finality on which part of government is responsible for bus contracts

Funding and finances

- Government to **finalise subsidy policy** – the newly proposed subsidy policy has increased uncertainty, and assist the industry to **access lower cost climate-related financing and funding**, e.g. as part of the Just Energy Transition (JET)
- **Temporarily exemptions** from import taxes for wholly built e-buses for pilot studies
- Cities to investigate **more cost-effective risk strategies** than traditional commercial insurance

Other

- Implementation of the **Electric Vehicles White Paper**.
- The Study shows E-buses should be key category – buses purchased per year:
 - By 2030: 720 – 1 120 buses
 - By 2050: 1 200 – 3330 buses

Develop models of **battery management services**

- e.g. companies supplying on-board power to bus operators

East African Study Highlights

Photo 11: Japheth Kipkurui (WRI Africa)



Urbanization & Growth:

- Cities in East Africa are undergoing rapid urbanization and population growth.
- This places heavy strain on existing transport systems, exacerbating inefficiencies and bottlenecks.

Transport System Characteristics:

- Urban transport infrastructure is often inadequate and of low service quality.
- High traffic congestion is widespread, impeding mobility and economic activity.

Paratransit systems (e.g., minibuses, boda-bodas) dominate:

- Serve large parts of the population's needs
- Contribute to congestion, road safety issues, and unregulated emissions

Common Regional Challenges:

- Traffic Congestion – limited road networks overwhelmed by rising vehicle numbers
- Air Pollution – largely driven by aging diesel fleets and unregulated paratransit
- High Upfront Costs – electric buses are capital-intensive, deterring adoption
- Limited Infrastructure – insufficient charging stations, poor road conditions
- Financial Constraints – cities face budget limitations and reliance on donor aid
- Skills Gap – shortage of technical expertise in electric mobility and fleet management

West African Study Highlights

Photo 12: Valentin Robineau



- Transport is a major emission source in West Africa, with rapid urban growth leading to reliance on an unsustainable informal transit system.
- All six cities have experienced rapid population growth over the last 3 decades.
- The cities are forecasted to continue to grow at this rapid pace.
- These cities also experience robust economic growth.
- Poor air quality is experienced in these cities.
- West Africa has significant potential for solar energy and experiences some of the highest solar irradiance levels globally making solar a potential for cleaner, greener energy.

Global ebus Financing report and TCO highlights

Photo 13: Andrew Bulman



- The model is to help stakeholders understand the financial implications of transitioning to electric buses. It identifies the most cost-effective and feasible pathways for making this transition.
- **Higher Mileage Improves Cost-Effectiveness:** Electric buses become significantly more cost-effective as their annual operating distance increases.
- **TCO Declines with Increased Utilisation:** The **Total Cost of Ownership (TCO)** per kilometre decreases sharply at higher usage rates. This is because:
 1. Fixed costs (like vehicle purchase) are spread over more kilometres.
 2. Electric buses have **lower variable costs** (e.g., fuel and maintenance) than diesel buses.
- **Illustrative TCO Reduction:**
 1. At **20,000 km/year**, TCO is **\$3.29 per km**.
 2. At **80,000 km/year**, TCO falls to **\$1.086 per km** – a reduction of over **67%**.
- These findings suggest electric buses are best suited for **high-utilisation routes**, where their economic advantages are maximized.

Session 5: Delegates elevator pitches for investors

Presentations

- Dr. Zebediah Chitanha, Zimbabwe - e-Bus Project Journey So Far
- Dr. Olukemi Amure, Lagos –
- Eng. Immaculate Nyamaizi, Uganda –
- Mr. Mohammed Ali, Addis Ababa – Addis Ababa's electric bus and transportation landscape
- Mr. Nyandwi Edouard, Burundi – A brief overview of mobility in Burundi
- Hindolo Shaika and Christian Ngombu, Freetown – Paths to policy implementing strategy.
- Mr. Alex Johnson, Accra - E-Bus: Urban Mobility Management & City Health
- Mr. Jean-Marc Atche, Abidjan – Electric Bus Supply for Abidjan

KEY TAKEAWAYS

The governments presented for three (3) minutes each their current or planned electric bus deployments. Governments showcased long-term transport electrification goals, aligning with climate targets (e.g., net zero by 2050). They also covered strong policy backing through national or city-level electrification roadmaps and green public transport initiatives. The presentations highlighted needs for private investment, such as: Vehicle procurement financing, Charging infrastructure development and Operations and maintenance partnerships. In some countries there is a need for feasibility studies and route optimization for e-buses, Capacity building for transport authorities and Data systems for energy use and fleet performance monitoring. They also described supportive policy environments such as Import duty exemptions for e-buses, subsidies or incentives for operators and mandates for fleet electrification

Session 6: Presentations of investors



Presentations

- Rethabile Rapiletsa, DBSA
- Nathan Fredericks and Joy Balepile, IDC
- Franck Benard, Meridiam
- Philippa Vivienne McLaren and Gaetan Tiberghien, IFC
- Amanda Chipako, Proparco

DBSA highlights:

- There is a lack of enabling legislation and clear national or local strategies to promote electric vehicle adoption.
- Electric Vehicles Classified as Luxury Goods: This leads to high import duties, making EVs prohibitively expensive and limiting fleet expansion.
- Limited access to affordable financing for EV projects, especially for municipalities and local operators.
- Many municipalities are technically insolvent, reducing their capacity to co-invest or operate EV fleets.
- Public transport fare collections are too low to support bankable financing models for electric bus deployments.
- The national or local grid lacks the capacity to reliably support large-scale EV charging, threatening energy security.
- Inadequate public and depot charging facilities create logistical and operational barriers to EV adoption.
- Opportunities include PPP regulation reform and the electric vehicle tax incentives bill (from March 2026).
- Provide funding options to municipalities by procuring through PPP's or leasing.
- Support the use the public transport grants as a contribution to make public transport commercially viable to crowd in private sector.
- Provide funding instruments through grants, concessional funding etc.
- Formalization of Minibus Taxi Industry - Pilot Project.

IDC highlights:

- The IDC played a pivotal role in establishing a local manufacturer of buses and trucks in Rosslyn.
- Provided a term loan facility to enable the development and the initiative was in collaboration with an Italian Original Equipment Manufacturer (OEM).
- Objective is to promote localization and industrialization of commercial vehicle manufacturing, reducing dependence on imports.
- South Africa has previously hosted a strong footprint of **international OEMs**, including **Iveco, MAN, Isuzu Trucks, Scania, TATA, VDL Bus & Coach, and Volvo**. This reflects the country's historical capacity and attractiveness for vehicle assembly and industrial investment.
- Commercial banks are often reluctant to fund bus operators without requiring 100% guarantees, especially for riskier or informal operators.

Meridiam highlights:

- Broad investment capability across the sustainable mobility value chain
- Meridiam and the Executive Council of Urban Transport in Dakar (CETUD) signed the Concession Agreement (CA) In **March 2022**. The final version of the CA was submitted to the World Bank to obtain their non-objection after which the parties reached Commercial Close in **July 2022**.
- The concession term is for **15 years** from the start of commercial operation. The tariff starts from **400 FCFA/0.7 USD** for trips within "Zone 1" and **500 FCFA/0.8 USD** for trips exceeding the boundaries of "Zone 1".
- The SPV benefits from an **exemption on customs duties and VAT** except for the VAT applicable on royalty fee and financial charges. An average annual **royalty fee of 5%** of turnover is to be paid by the SPV to CETUD on a quarterly basis.
- The **mobilization period was compressed from 24 months to 18 months** from entry into force of the CA allowing for a start of operations in **May 2024**, with 60 buses and 14 operating stations.
- Post financial close in **October 2023** the project secured, **USD 24m** of equity from Meridiam (70%) and the Sovereign Strategic Investment Fund (FONSIS) (30%), **USD 94m** of senior debt and **USD 17.5m** of subsidies (from **Proparco and EAIF**).
- Total CAPEX of 136m USD

IFC highlights:

- IFC supports incubation of projects that potentially shares early-stage development risk.
- Offers investment or financing through debt, equity and quasi equity, risk mitigation and mobilization.
- Economic and climate advantages of e-mobility are that electricity cost is cheaper for electric buses than diesel is for ICE vehicles, GHG emissions are lower compared to diesel powered vehicles,
- Chile case study on electric buses.

Proparco highlights:

- Financing the private sector and sustainable development for over 45 years
- 3 million people will benefit from new or enhanced access to an essential good or service within 5 years.
- 2,162,000 beneficiaries of new or improved access to renewable energy, o/w 857,000 in Sub-Saharan Africa
- **A growing activity addressing a growing need: over USD 150M committed since 2020**

- **URBAN TRANSPORTATION**
- **A growing activity addressing a growing need: over USD 150M committed since 2020**
- PROPARGO is building a strong track-record in urban transportation
- Over 150m USD committed to the growing need for urban transportation advancement in 2020.

Session 7: Bilateral meetings with investors

Round	Table 1 DBSA	Table 2 IDC SA	Table 3 IFC	Table 4 Meridiam	Table 5 Proparco	Table 6 Jakarta	Table 7 UNEP
1 13:45	LAGOS	IVORY COAST	SIERRA LEONE / GHANA	TSHWANE	MADAGAS CAR	SOUTH AFRICA	KENYA
2 14:00	ZIMBABWE	BURUNDI / UGANDA	SENEGAL	IVORY COAST	KENYA	LAGOS	SIERRA LEONE
3 14:15	IVORY COAST		ZIMBABWE	CPCS	TSHWANE	SENEGAL	MADAGAS CAR
4 14:30		LAGOS	MADAGA SCAR	SENEGAL	CPCS	IVORY COAST	CAPE TOWN
5 14:45	CPCS	TSHWANE	KENYA	ADDIS ABABA			IVORY COAST
6 15:00	GHANA	CPCS	BURUNDI UGANDA	MADAGAS CAR	ADDIS ABABA		TSHWANE

NB: Closed Sessions

Session 8: Battery circularity: Second life applications practical examples in Kenya

Photo 14: Herman Kwoba (GIZ)



Presentations

- Herman Kwoba, GIZ Kenya - Promotion of Electric Mobility in Kenya: battery second life application

HIGHLIGHTS

- The framework conditions for urban and rural electromobility have improved and applications are being used in practice.
- Battery Regulation: Guidelines for all battery types, covering applications such as EVs and industrial power storage. Measures for EV battery repurposing and defining market use cases.
- Carbon Footprint Reporting: Tracking raw material sourcing, battery manufacturing, distribution
- Standardize both the battery product and data collection processes for consistent quality control and information sharing. Create a governance framework for secure, effective data sharing that protects business data and operational processes.
- Data Centre Infrastructure: Essential technical standards for data handling, storage, and security. Components include IT infrastructure, management systems, governance policies, and specialized software for battery tracking. Interoperability: Align with global technologies to facilitate secure, standardized data exchange.
- Extended Producer Responsibility (EPR): Integrate batteries under the EPR framework, requiring manufacturers to support end-of-life management and recycling initiatives in local settings. Integration with Other Policies: Align battery passport system with existing environmental laws like the Environmental Management Act. Collaborate across regulatory areas.
- Phased Rollout Strategy: Establish detailed milestones for a structured rollout, allowing adjustments to policy based on stakeholder feedback and regulatory changes. Ensure alignment of all stakeholders with timelines and objectives for smooth system implementation and success.

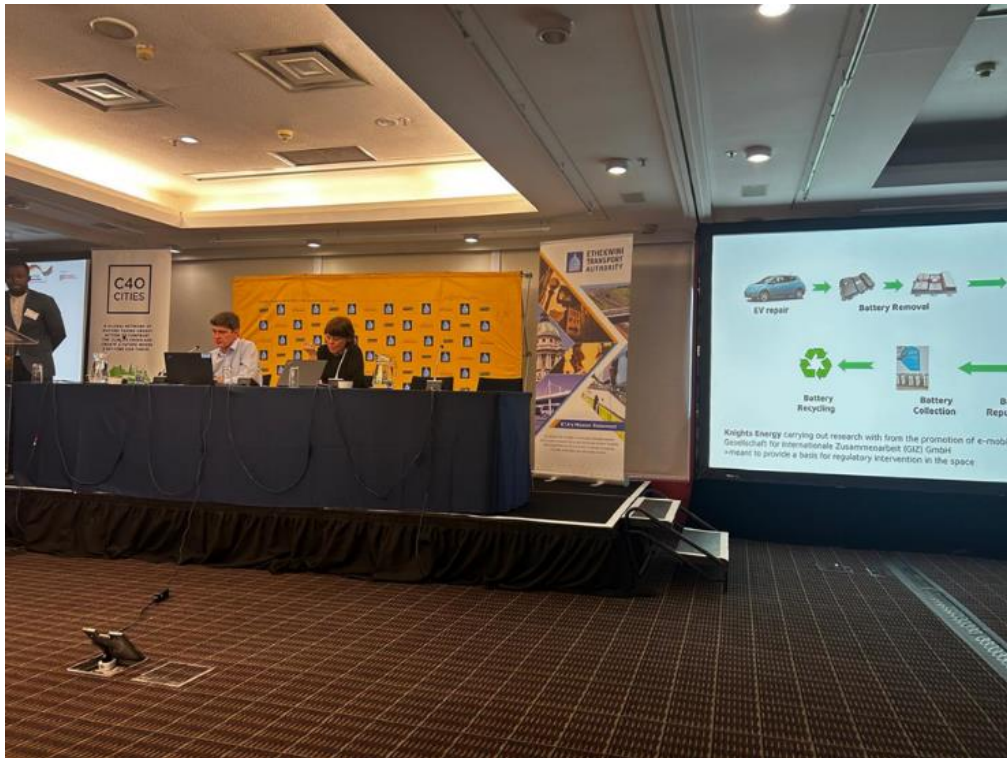
Session 8: Question and Answer

Can CE reduce e-bus end of life scenarios

CE approach can have positive optimization opportunities

Session 9: Workshop on E-Bus Project Cost Optimization with Circular Economy

Photo 15: Session 9 (Ramboll Workshop)



Trainers

- Jan Bell and Karen Wanner, Ramboll

Part 1: Understanding and leveraging CE potential of E-buses

- The Circular Economy (CE) is an economic model designed to minimize waste and maximize the reuse, repair, remanufacturing, and recycling of materials. Unlike the traditional linear economy (take-make-dispose), the circular economy keeps resources in use for as long as possible, creating sustainable value and reducing environmental impact.
- Resource Recovery Options, often referred to as R-strategies, are fundamental principles of the circular economy. But how does it relate to e-buses?
- Extending Product Lifecycles: Battery diagnostics, repair, remanufacturing, and repurposing
- Waste Prevention: Optimal routing, standard operation procedures, and regular maintenance
- End-of-Life Management: Sound waste collection, pre-treatment, recycling, and waste-to-energy conversion
- Design and Production: Use of sustainable materials, extended producer responsibility (EPR), and interoperable infrastructure
- Sourcing Strategies: Transparent raw material tracking and development of alternative raw materials
- A BEV pack with 70 kWh (600kg) can yield: 40kg aluminium, 2kg steel and 1.4 kg copper
- However, material value often does not cover the full costs of reverse logistics and sound treatment operations, but depends on: mandatory systems and rules that delegate the obligation for sound collection, collection builds the basis for all further activities (repair, remanufacture, repurpose, recycle). These can be achieved through: Extended producer responsibility (EPR) implemented in legislation together with targets and criteria Rules laid out in tender documents

Discussion 1: how does each org/city/country approach a circular economy? The delegates were tasked to split the room into groups of 6, allocated a spokesperson and discussed according to the

questions on the table and given time for each group to share their conclusions.

Part 2: Case studies/Global Best Practices

- Global Case Study 1: Recycling- Case Study demonstrating how recycling can be introduced into the end-of-life of E-buses in an effective manner.
- Case Study 2: Repurposing- Case Study demonstrating how repurposing can be introduced into the end of life of E-buses in an effective manner.
- Case Study 3: Retrofitting- Case Study demonstrating how retrofitting can be introduced into the end of life of E-buses in an effective manner.
- Case Study 4: Ownership models and procurement- Case Study demonstrating how ownership models can be effective in promoting Circular Economy in E-bus adaptation.

Discussion 2: What can your organization, City or Country take from these case studies? What could be applied to your local conditions? In your opinion, are the bidding documents the right place to introduce circularity requirements? Who should bear the cost of collecting and processing the electronic buses and their batteries at the end of their life cycle? The delegates were tasked to split the room into groups of 6, allocated a spokesperson and discussed according to the questions on the table and given time for each group to share their conclusions.

DAY 3

Objectives

- Provide the delegates with knowledge on the electric buses' technology available, including charging infrastructure, in the region, by bringing manufacturers and energy supply representatives to showcase their experience and products

Session 10: Presentation of Manufacturers

Photo 16: Manufacturers' Presentations



Presentations

- Moses Nderitu, BasiGo Kenya - BasiGo case study presentation: Electric bus leasing models
- Leon Nelson, Volvo – The ecosystem of electrification
- Gu Feng Forrest, Yutong - E-buses types and project
- Jan Aichinger, MAN - E-buses types and project
- Felix Eningsjö, Roam - E-buses types and project

Basigo Presentation highlights:

- Nairobi operates 20,000 buses, carrying 40% of daily passenger trips.
- Fuel costs have surged over 70% since 2022, driven by foreign exchange pressures and Air pollution remains a growing urban concern.
- 90% of Kenya's electricity comes from renewable sources, enabling cleaner transport alternatives.
- Fuel is the largest operational expense for bus operators.

Basigo's E-Bus Solution:

- 52 electric buses in operation, primarily in Kenya; expansion planned for Rwanda.
- Business model: *Pay-as-you-drive* lease – Basigo retains ownership of bus, battery, and charging infrastructure.
- Operators pay a mileage-based fee.

Financial performance:

- 31% IRR over 8 years,
- Break-even in 7 months.
- Local assembly of buses, with components sourced from China.
- Passenger app for e-bus bookings.
- Asset management platform offers real-time tracking and operations data for financiers and fleet managers.

Volvo Presentation highlights:

Bus

- Highlights the ecosystem of electrification and the multiple elements involved necessary to deliver smooth traffic operation
- Importance of analysing operation - Volvo talks about useable energy, rather than range, needed to deliver operational needs

Charging

- Charging strategy needs to be adapted to specific operation
- Opportunity vs overnight charging

Operations

- Considerations to assess and optimize operation
- Focus on individual bus status vs accumulated parameters

Yutong Presentation highlights:

- Reliability is one of the most important features of the Yutong buses → 99% uptime
- Battery safety is guaranteed by the Yutong Electric Safety Standard (YESS)
- Yutong has total control over its entire value chain and already sold almost 14000 NEVs across the world
- Yutong has KD experience in 15 countries with local partners
- Yutong already testing 2 e-buses in Nigeria and is planning to build a KD plant

MAN Presentation highlights:

- Global climate protection targets, local emission regulations, cleaner cities or company environmental targets based on fleet emissions – the reasons for switching to alternative drive systems are multifaceted, yet specific to each customer. Just like the solutions from MAN.
- MAN created the first locally produced e-bus in the country - currently being trialled at University of Johannesburg
- Another vehicle will be trialled in rural areas
- They also sent another vehicle to Ankara to test the quality of the vehicle's build
- Highlights importance of carefully selecting routes, battery size, and optimizing operation

Roam Presentation highlights:

- Present in Kenya Quiet buses designed for the Kenyan and African Market

- Focusing on localisation to build the entire chassis
- In 2022 they took part in BRT tender for Nairobi for which they designed a specific bus
- Infrastructure-wise, they offer a complete turnkey solution so that the transition to e-buses is smooth → pay-as-you-charge solution, working with the largest operators who own their own depots, in which they install the charging stations with no upfront cost required
- Their business model is that they want the operators to own everything, so they work with local financiers to enable operators to save money from Day 1 and provide both in-house lease and other lease-to-buy solutions.

Session 11: Question and Answer

Yutong: no special criteria to choose local partners, to whom they provide Basigo expansion? They are in Rwanda but they don't have a KD plant there because you can import. Potentially looking to other countries, but they need strong local partners. They are a climate company so local climate policies are important factors.

Technology updates and innovation:

MAN: How much is the local industry benefitting? MAN's e-bus production is 98% localised. Their local plant can make 600 buses/year.

Volvo: providing a global solution and tailoring customized solutions

Yutong: from an energy perspective, they also have hydrogen fuel cell buses, which have the potential to be cleaner than even battery electric buses. Intelligent driving is also a growing feature, autonomous buses being trialled in China

BasiGo: increase density of charging infrastructure; moving to new battery technology with longer warranty for operators; 2nd platform of vehicles (small vehicles)

Weight regulations and requirements?

MAN: Lower loads in South Africa allow for smaller batteries. Compared to typical commuter buses, the electric version offers slightly fewer, due to weight regulations. Technically there would be no issues

End of life policies?

MAN: various opportunities - in EU they have specialized repair centres

Do BasiGo get any subsidies from the government? 15 USD/tonne of carbon credits?

Pay as you drive model includes monetization of carbon

Strong incentives to produce locally - there is no local supply chain, they've been given a 2 years waiver by government

MAN/Volvo diesel bus production? Need for high-floor vehicles?

Volvo: Globally the demand for diesel buses is still there

MAN: We need to consider where the energy is coming from - in South Africa the need would be the Euro V requirement. They are asking for this because it would serve a purpose for fuel reduction. They started with commuter buses because that's the dominating market

Tenders for diesel buses showing no interest from OEMs / e-bus tenders with few responses - why?
Timelines given by cities - up to 3 months can be needed; need to engage OEMs asking what they could deliver and how much time would be needed

Session 11: Bilaterals with Manufacturers

11:00 - 11:50 BILATERAL MEETINGS
WHAT TO DO?

- 👉 Express your interest: flipchart by the door
- 🌐 Write the name of your CITY or COUNTRY
- ☕ Enjoy the coffee break
- 🤝 Join meetings in the conference room (tables 1-4)
- 🕒 Listen to the sound at the end of each round
- 📶 If you're not in a meeting, enjoy networking in the coffee area outside
- 😬 Please do not leave the venue, more sessions to come!
- 🔒 Please remove important belongings from tables

Photo 17: Thomas Maltese (C40 Cities) presenting the session



NB: Closed Sessions

Session 12: Conclusion and Wrap-up

Day 1: Government Leadership & Policy

The Honorable Mayor: Councilor Cyril Xaba welcomed us to eThekweni, eThekweni Municipality reaffirming C40's commitment to climate action. Discussions revolved around government experiences with e-bus projects, implementation challenges, and global case studies on financing and business models.

Day 2: Investment & Circular Economy.

Key reports on market acceleration in South, East, and West Africa as well as the Global e-Bus Financing report and TCO calculator, were presented. Investors and financiers shared insights on unlocking funding opportunities for electric buses. The day concluded with an essential discussion on battery circularity and how governments can integrate circular economy principles into e-bus adoption

Day 3: Technology & Manufacturing

Industry leaders showcased electric bus models and manufacturing advancements, followed by an optional session on e-freight solutions.



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