



Electric mobility in Kigali, Rwanda: Insights from policymakers, members of the public, moto drivers, and transport companies

Egide Kalisa, Andrew Sudmant, Luis Vasquez Ellis, Yves Ujeneza
and Remy Ruberambuga

- Rwanda's urban mobility strategy integrates climate ambitions with everyday welfare, promoting clean transport and setting ambitious carbon reduction targets.
- Research conducted from late 2023 to May 2025 included various stakeholders, revealing insights on travel habits, transport challenges, and the demand for electric mobility in Kigali.
- Surveys indicated strong public interest in electric mobility while highlighting barriers like charging access and costs that need addressing to enhance adoption.
- Policy recommendations include: Link charging corridors with concessional credit; build a visible spine of swap and fast-charge stations along the Nyarugenge, Gasabo, and Kicukiro; treat charging investment as preventive health spending; open adoption beyond young male riders through bespoke finance and training; hard-wire safety and open data into every electrification contract.

Policy context

Rwanda treats urban mobility as a hinge between climate ambition and everyday welfare. Vision 2050, launched in 2020, sets a growth pathway that rests on clean air and the reliable movement of people and goods (Government of Rwanda, 2020). The National Transport Policy, adopted the next year, asks every road project to pass environmental and social appraisal and requires the sector to complete a carbon accounting baseline within five years (Government of Rwanda, 2021).

Transport carries a large share of the mitigation burden in the updated nationally determined contribution that pledges a 38% cut in emissions from business as usual by 2030. Electric motorcycles and buses are expected to deliver almost one quarter of that reduction, backed by duty-free import status, value-added tax relief and a discounted industrial electricity tariff for public chargers (Republic of Rwanda, 2020; United Nations Environment Programme, 2022).

At the city scale, Kigali translates national goals into spatial action. The 2050 master plan sketches a compact city on the move with public transport corridors that stitch together dense mixed-use neighbourhoods. Over the last decade, the city has replaced informal minibuses with scheduled routes, introduced a smart card, and begun work on a bus rapid transit spine. Twice each month, the car-free day transforms main avenues into open streets for walking and cycling. Air monitors show particulate matter falling by around 15% during these events, proof that policy can buy clean air and active living together (Kalisa et al., 2025).

Electric mobility now accelerates that trajectory. Since 2021, start-up firms have deployed battery swap motorcycles that erase tailpipe pollution and cut operating costs by up to 60% compared with petrol models (World Bank Energy Sector Management Assistance Program, 2023). Life cycle analysis suggests that full conversion of the commercial motorcycle fleet would lower Kigali transport carbon by about 10% and save scarce foreign currency otherwise spent on fuel (Martin et al., 2023).

Neighbouring capitals are watching. Nairobi promised one-fifth of its road budget to walking and cycling in 2015, yet implementation remains uneven, while Kampala and Addis Ababa imported the car-free day from Kigali (Collaboration for Active Mobility in Africa, 2023; United Nations Environment Programme, 2020). Rwanda offers the region the most comprehensive incentive package, making Kigali a reference point for East African transport reform (African Development Bank, 2023).

The frame does not rest on technology alone. Surveyed officials identify finance gaps and incomplete data as the hardest constraints on delivery, even as they express broad confidence in electric buses and smart traffic systems (Survey of Policymakers, 2025). They call for stable funding streams, routine travel and air quality data collection, and regular engagement with civil society to keep reforms accountable.

Evidence of demand reinforces their urgency. Three-quarters of Kigali residents report taking an electric ride and plan to do so again, valuing lower cost and cleaner exhaust equally (Survey of Residents, 2025). Operators echo this verdict but list charging access and high upfront prices as barriers that only coordinated public infrastructure and concessional credit can relieve.

Rwanda, therefore, stands at a pivotal moment. A coherent set of national targets, fiscal incentives, and bold city experiments already aligns climate and health goals with economic gain. The next step lies in institutional capacity that can finance chargers, monitor progress and share data openly, turning scattered pilots into a city-wide network that locks clean mobility into daily life.

Survey summary

The research team sequenced five questionnaires between late 2023 and May 2025, each tailored to a distinct actor group. A door-to-door survey interviewed 246 adults across Nyarugenge, Gasabo, and Kicukiro, asking about travel habits, price sensitivity, and experience with electric motorcycles and buses. Nine municipal and national officials then completed a secure online instrument that probed perceived transport bottlenecks and regulatory appetite. October 2024 brought face-to-face interviews with senior managers from eight transport firms, generating data on fleet composition, recent balance sheets, and electrification hurdles. Enumerators with tablets positioned themselves at busy taxi ranks in May 2025 and recorded 253 responses from the current motorcycle driver cohort. A separate July 2024 exercise met 113 riders who had already retrofitted petrol bikes to electric drivetrains, collecting details on operating costs and peer influence. Digital entry throughout protected data integrity and shortened the journey from fieldwork to preliminary analysis.

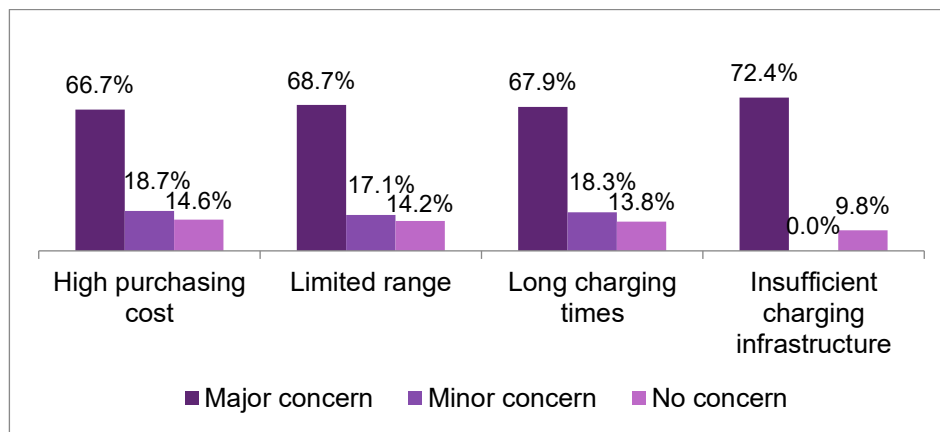
The five probes sketch a composite terrain where households voice price-aware enthusiasm, public officials weigh institutional constraints, transport firms reveal divergent strategies shaped by size and age, and riders surface the granular realities of daily operation and informal advocacy. This mosaic supplies the empirical spine for the policy recommendations that follow.

Survey findings

The public is enthusiastic about riding an e-moto, but not about buying one

73% of Kigali residents have ridden an electric motorcycle, and 100% of those who have ridden would be happy to ride again. However, members of the public have concerns about private electric motorbikes and cars that may slow their adoption. Across 246 residents of Kigali, more than two-thirds were concerned about purchase costs, range, charging times, and charging infrastructure (including swapping stations).

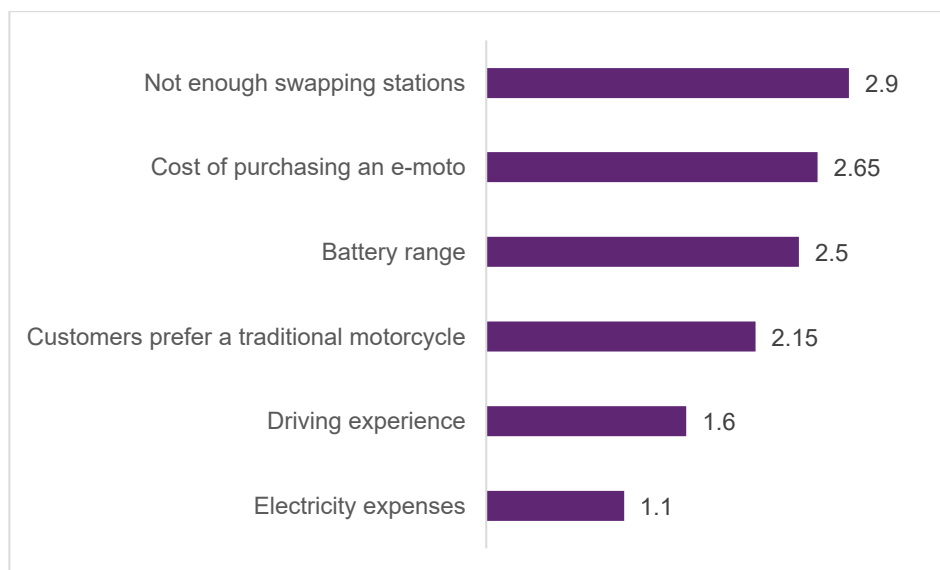
FIGURE 1: Public concerns regarding electric motorcycle adoption in Kigali, Rwanda



Finance and infrastructure block adoption among moto drivers

Electric motorcycle taxi drivers voice their strongest unease about the thin spread of battery swapping stations, assigning a mean concern of 2.9 on a six-point scale that marks six as acute anxiety and one as no concern. The outlay required to purchase an electric motorcycle follows at 2.65, while battery range sits at 2.5. Together, these scores signal that capital cost and autonomy still shape daily decision-making more than mechanical feel. Preference among passengers for combustion motorcycles registers at 2.15, hinting that ridership can pivot once infrastructure and finance stabilise. Measures tied to workplace experience, such as ride quality, fall toward 1.6 and electricity expenses dip to 1.1, indicating that operating an electric fleet already aligns with the economic realities of low-margin transport work. The gradient across these scores points practitioners toward network expansion and innovative financing before chasing incremental gains in vehicle performance.

FIGURE 2: What concerns do you have about using electric motorbikes for your daily operations?



Note: 1 is a small concern, 6 is a big concern ($n=120$).

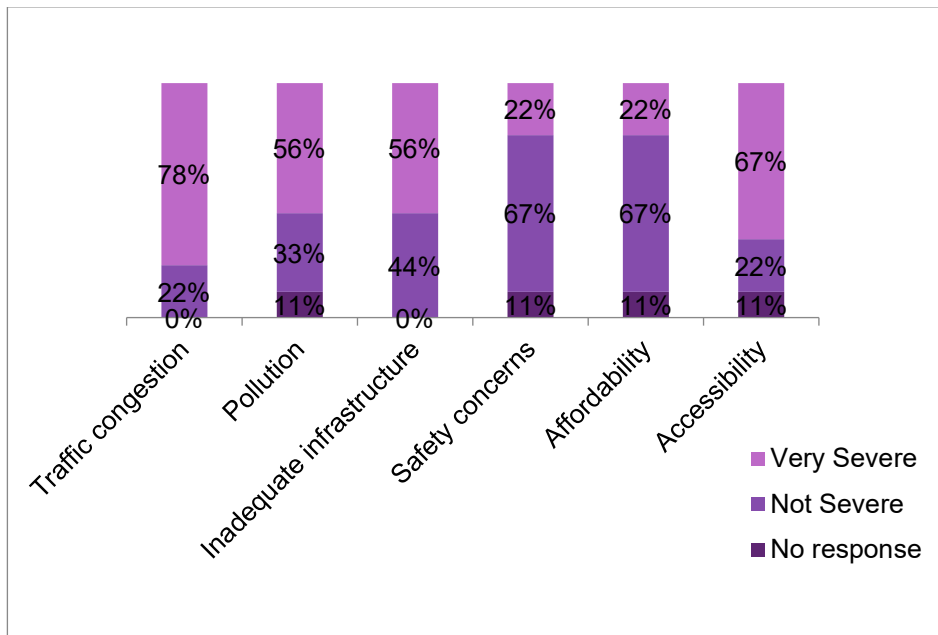
A youthful cohort waits, women watch from the pavement

Almost 60% of potential riders are between 18 and 35 years old. Flexible repayment schedules keyed to early career earnings matter more than headline tags. Yet women remain scarce behind the handlebars. Tuition, secure staging areas, and financial products shaped for first-time female drivers would broaden income streams and multiply fleet size.

Electrification needs to be part of a broader transport strategy

78% of surveyed officials rate traffic congestion as very severe, while 67% place accessibility in the same critical band, directing immediate attention to network design that moves people efficiently and equitably. Pollution and inadequate infrastructure each secure a very severe judgment from 56% of respondents, indicating that clean fleets and resilient roads must advance together. Safety and affordability elicit the highest urgency from only 22%, implying that structural upgrades should precede fare reform or behaviour campaigns. Electrification alone cannot resolve these intertwined pressures; it needs to sit inside a comprehensive transport plan that clears congestion, extends access, and modernises infrastructure so cleaner vehicles operate within a deliberately harmonised system.

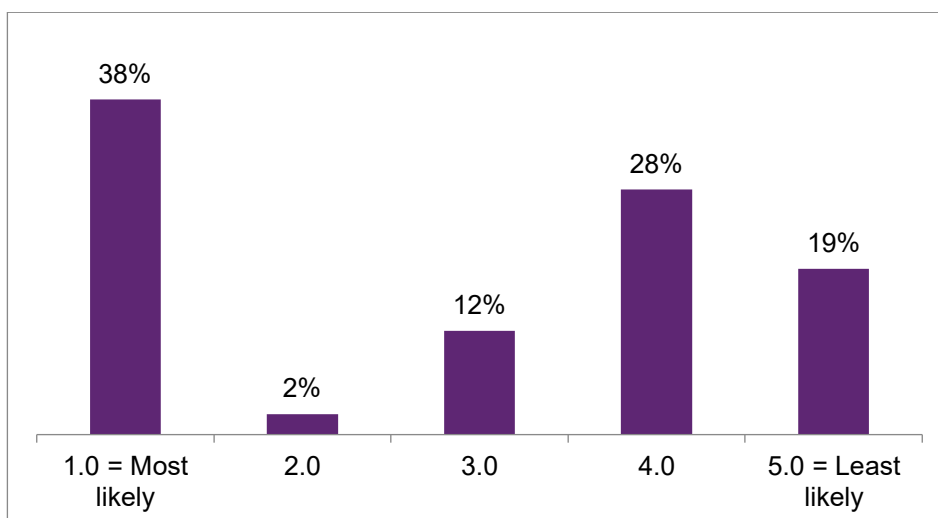
FIGURE 3: Key challenges facing the transport sector according to policymakers



Knowledge does not guarantee uptake

Most petrol riders can quote the subsidy schedule, yet one quarter still doubt they will switch within five years. Debt on current petrol bikes anchors them. A time-limited scrappage bonus or a lease-to-own pathway that absorbs outstanding loans would unlock this hesitant group.

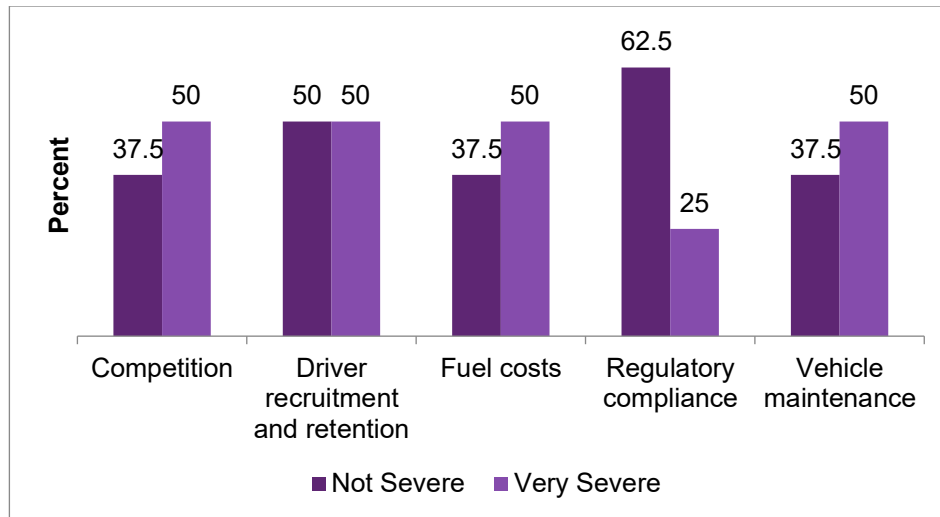
FIGURE 4: Likelihood of adopting an e-moto in the next five years among moto drivers.



Operator narratives diverge on fuel

Fleets already running on batteries dismiss fuel volatility as yesterday's headache. Diesel operators call it existential. A modest carbon surcharge on petrol, recycled into loan guarantees for late adopters, would tilt the cost curve and bring those stories together.

FIGURE 5: Perceived severity of operational challenges faced by transport companies in Kigali, Rwanda



Policy recommendations

1. Link charging corridors with concessional credit

73% of residents have already boarded an electric motorcycle and intend to repeat the trip once chargers are nearby. A single cooperative-bank facility, released the week each new node is energised, would drop the upfront hurdle that alarms 86% of potential riders and the range fear that troubles 84%. The African Development Bank (AfDB) evaluation shows performance gains when finance triggers align with infrastructure milestones (African Development Bank, 2025).

2. Build a visible spine of swap and fast-charge stations along the Nyarunge, Gasabo, and Kicukiro

Operator diaries confirm daily distances above 150 kilometres. Ampersand riders save about 40% on fuel and lift incomes by 45%, but only where a battery booth lies within ten minutes of their stage. A continuous chain of stations will turn one-off trials into habitual use and anchor investment in grid upgrades.

3. Treat charging investment as preventive health spending

Particulate monitors on car-free days register a 15% drop in $PM_{2.5}$, equivalent to hundreds of avoided hospital visits each year (Kalisa et al., 2021). World Health Organization (WHO) guidance links each microgram of reduction with measurable morbidity gains (World Health Organization, 2021). Pursuing innovative finance for transport investments from international donors by highlighting the health impacts of climate action may be a route.

4. Open adoption beyond young male riders through bespoke finance and training

Women remain rare behind the handlebars, and 60% of prospective riders are between 18 and 35 years old. Micro-loans without collateral, evening mechanic apprenticeships for women, and well-lit staging zones mirror measures that raised female e-bike ownership from 9% to 27% in comparable African pilots (Institute for Transportation and Development Policy, 2024).

5. Hard-wire safety and open data into every electrification contract

Rwanda's new helmet testing laboratory signals rising concern over crash severity (FIA Foundation, 2024). Mandatory helmet quality targets, corridor road audits, and public crash databases inside supply and service agreements will keep safety central while giving regulators live feedback. Cross-city research links transparent, integrated policy bundles with healthier outcomes (Giles-Corti et al., 2022).

References

- African Development Bank. (2025). *A decade on the move: Evaluation of the AfDB's support for the transport sector (2012-2023)*. Independent Development Evaluation.
- Ampersand. (2025). *Our customers*. <https://www.ampersand.solar/>
- African Development Bank. (2023). *East Africa economic outlook 2023*. African Development Bank.
- Collaboration for Active Mobility in Africa. (2023). *Bridging inequalities in cities through active mobility*. Institute for Development Studies.
- FIA Foundation. (2024, December 12). *First African motorcycle helmet testing facility launched in Rwanda*. <https://www.fiafoundation.org/news/first-african-motorcycle-helmet-testing-facility-launched-in-rwanda-supported-by-the-fia-foundation>
- Giles-Corti, B., Lowe, M., Adlakha, D., et al. (2022). *City planning policies to support health and sustainability: An international comparison of policy indicators for 25 cities*.
- Government of Rwanda. (2020). *Vision 2050*. Ministry of Finance and Economic Planning.
- Government of Rwanda. (2021). *National transport policy and strategy for Rwanda*. Ministry of Infrastructure.
- International Growth Centre. (2025). *Electric mobility in Kigali, Rwanda: Insights from policymakers, members of the public, motorcycle drivers and transport companies*. International Growth Centre.
- Kalisa, E., Sudmant, A., Ruberambuga, R., & Bower, J. Natural experiments in urban air quality: lessons from car-free days and COVID-19 lockdowns in Kigali, Rwanda. *Cities & Health*, 1–12.
- Lowe, M., Adlakha, D., Sallis, J. F., Salvo, D., Cerin, E., et al. (2022). City planning policies to support health and sustainability: An international comparison of policy indicators for 25 cities. *The Lancet Global Health*, 10(6), e882–e894. [https://doi.org/10.1016/S2214-109X\(22\)00069-9](https://doi.org/10.1016/S2214-109X(22)00069-9)
- Martin, E., Cormier, A., & Mral, P. (2023). Motorcycle taxis in transition, review of digitalisation and electrification trends in selected East African capital cities. *Case Studies on Transport Policy*, 13, 101057. <https://doi.org/10.1016/j.cstp.2023.101057>
- Republic of Rwanda. (2020). *Updated nationally determined contribution*. Ministry of Environment.
- Institute for Transportation and Development Policy. (2024). *Sustainable cities through transport: Optimising urban investments in Africa*. <https://africa.itdp.org/publication/sustainable-cities-through-transport-optimising-urban-investments-in-africa/>
- United Nations Environment Programme. (2020, March 18). *Car free days are taking hold in African cities*. <https://www.unep.org>
- United Nations Environment Programme. (2022, October 31). *In face of rising air pollution Rwanda turns to electric vehicles*. <https://www.unep.org>
- World Bank. (2022). *Rwanda urban mobility project*. Project appraisal document (Report No. PAD4451).
- World Health Organization. (2021). *WHO global air quality guidelines: Particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*. World Health Organization.
- World Bank Energy Sector Management Assistance Program. (2023). *Electric mobility and power systems integrating electric vehicles and the electricity grid in developing countries*. World Bank.