

# Promoting E-Mobility in Uganda

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## Policy Brief



### Executive Summary

Energy efficiency and reduced emissions are vital for the economic transformation of Uganda. We have assessed the current state of e-mobility, the level of awareness and perceptions about the dangers of using fossil fuel-powered engines, and the benefits and challenges associated with e-mobility systems. The key findings show that while Uganda seeks energy efficiency through promoting e-mobility, actors within the transport sector are still dissatisfied by the outdated laws that may not adequately

accommodate e-mobility developments, the counterfeits in electric batteries, the lack of battery charging or changing stations and the scarcity of specialized mechanics in the country to handle electric automobiles. This brief recommends updating the current laws and policies to promote e-mobility developments, earmarking support for e-mobility innovations, and increasing investments in the battery charging network.

### Introduction

Promoting energy efficiency and reducing emissions is high on the global agenda. The key intentions are to reverse environmental damage and reverse climate change effects. In Uganda, stimulating energy efficiency is at the forefront of the development agenda. It is well anchored in Vision 2040 and the recently approved fourth National Development Plan (NDP IV). NDP IV spells out strategies aimed at increasing access to renewable energy as a

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way of promoting energy efficiency among other interventions.

Uganda's economy is predominantly agricultural, accounting for about one fourth of the total GDP and about three fourths of the total employment (UBOS, 2023). However, pursuing energy efficiency is fundamentally important, especially with a focus on the country's transport sector, which is fast expanding and associated with detrimental emission effects, especially in urban centres (NEMA, 2019).<sup>7</sup>

For example, in June 2020, the vehicle fleet in the country stood at about 2.3 million, and the number of motorcycles rose as well, which threatens the country's air quality (Galiwango et al., 2023).

This policy brief provides key findings that relate to the current state of e-mobility in Uganda, the level of awareness of the danger of using fossil fuel engines, the benefits and challenges of adopting e-mobile systems, and how e-mobility can be upheld in the country.

## Data and methods

The results presented in this brief were obtained through desk reviews, Key Informant Interviews (KIIs), Focused Group Discussions (FGDs), and Stakeholder engagement organized in the form of a policy dialogue. The KIIs involved managers and drivers of bus companies, FGDs involved motorbike riders for business, locally known as boda bodas, and taxi operators mainly

operating 14-seater passenger mini-buses.<sup>8</sup>



*Figure 1: Participants during one of the FGDs*

The policy dialogue involved stakeholders, including representatives from policy-making institutions, vehicle operators that use either fossil fuel engines or electric engines or both, academicians/researchers, automobile dealers (both electric and fossil fuel powered) and representatives from Civil Society Organisations (CSOs) and Non-Government Organisations (NGOs).



*Figure 2: Participants at the policy dialogue*

During the discussions, participants were asked several questions, including their socio-demographic attributes, and the

<sup>7</sup> Road transport is the main mode of transport accounting for 99% of passenger flow and 95% of total cargo (MoFPED, 2022).

<sup>8</sup> Respondents for KIIs and FGDs are averagely 41 years with 14 years of experience in transport sector and average daily working hours of 13. About 88% are married.

attention was mainly on answering the following key questions:

(1) What is the level of awareness about the dangers of using fuel powered engines and, if they are aware about such dangers, then, why are such engine powered automobiles still on high demand in the country?

(2) What is the state of e-mobility in the country? What are benefits and challenges of using e-mobile systems?

(3) How can e-mobility be promoted in Uganda?

### **Key findings**

In trying to assess the level of awareness about the dangers of using Internal Combustion Engine (ICE) and why such automobiles are still on high demand in the country, participants were asked about: (1) the dangers of fossil fuel engines and (2) why people still prefer using such automobiles. In responding to the first question, the following dangers were mentioned:

- *Fossil fuel engines are associated with environmental damage due to (i) the poor quality of fuel sold at some service stations and (2) the big volume of gross polluters, especially old vehicles. The latter is confirmed by the Ministry of Works and Transport report of 2019 that documents that by 2018, 40% of motorcycles in the country were over 8 years old and imported cars averaged 15 years.*
- *Fossil fuel engines are hazardous to human health, plants, and animals. Regarding human health, participants were*

*concerned about the respiratory complications associated with such engines. During the discussions two sources of respiratory complications were mentioned: (i) Indoor air pollution caused by parking the motorbikes inside houses for safety reasons and (ii) boda boda riders blowing pressure into the fuel tanks using their mouths when fuel is low to push it into the tubes; an act that was identified as a health risky.*

- *Some fire outbreaks in houses are linked to fossil fuel engines since many boda boda riders park their bikes inside their houses.*

In response to why many still prefer using fossil fuel engine automobiles, the participants:

- (i) Demonstrated their fear of counterfeits in batteries used by electric bikes. They reported sudden shutdowns of batteries while in transit. To emphasize their point, respondents mentioned that sometimes, batteries shut down while still indicating about 40% remaining power. This affects their in-transit programs.
- (ii) Additionally, the boda boda riders revealed their discontent about the operating time of a fully charged battery, claiming that the serving time is too short. They indicated that on a busy day, batteries may have to be charged/changed thrice

whereby they lose working hours while riding toward battery changing stations<sup>9</sup>.

- (iii) Electric automobiles are route-specific determined by the availability of battery charging or changing stations and specialized mechanics to effect repairs.
- (iv) The automobile operators and owners lack information about e-mobility.
- (v) There is a growing fear among electric bike operators and users arising from past experience of battery shutdown while on transit. This seems to be affecting potential buyers for such bikes.
- (vi) Some customers are not familiar with the uniqueness of electric bikes. Thus, they consider such bikes as private and not for boda boda business. As such, their riders miss out on some customers.

### **Current state of e-mobility in Uganda**

The promotion of e-mobility systems in the country is supported by Vision 2040, National Development Plans (NDPs), and policies especially implemented by the Ministry of Science, Technology and Innovations (MSTI) and the Ministry of Works and Transport (MoWT). As a result, the government supported the establishment of Kiira Motors Corporation to manufacture electric

vehicles. To date, the plant has produced several buses, and close to 100 are operating on various routes. Additionally, many firms have been authorised to supply electric bikes and their equipment, including Zembo E-mobility Solutions, which started in 2018 and has so far supplied about 400 electric motorcycles<sup>10</sup>, Spiro that manufactures 2-wheeler electric motorcycles, GOGO Electric which assembles lithium-ion batteries and electric motorcycles, Soleil Power that is currently constructing an assembling plant for lithium-ion batteries, Karaa Africa for producing electric bicycles and Ebee Mobility Uganda that deals in e-bicycles.

### ***What are the benefits of using e-mobile systems?***

Asked about the benefits of using electric vehicles or motorbikes, respondents, mainly boda boda riders mentioned:

- (i) ***Cost-saving.*** Respondents, especially boda boda riders, appraise the significant cost savings from two sources i.e. the cost of fuel when using electric bikes and savings from oil lubricants.
- (ii) ***Security:*** Electric bikes have specialised battery charging/ changing stations, which is a unique advantage compared to fuel service stations. Respondents revealed that such bikes are easy to track in case of theft since their

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<sup>9</sup> They averagely reported 4 minutes are taken while charging the battery.

<sup>10</sup> This is still a very small percentage given that Kampala alone has about 60,000 motorcycles.

charging will be at defined stations. They further echoed that electric bikes are kept inside houses because of no fears of indoor air pollution, which improves the stance of security.

(iii) **Promote environmental restoration and reduce health risks:** During the field interface, respondents demonstrated their knowledge of the environmental and health benefits of using electric vehicles and motorbikes. Specifically, they highlighted that electric operating systems bear no smoke and heavy sound, which they directly relate to environmental and health gains.

## Conclusion

Energy efficiency and reduced emissions through promoting e-mobility is critical for transforming the economy of Uganda. It helps to reverse environmental damage, reduce health hazards associated with emissions, and also, reverse the climate change effects. Therefore, there is a need for the government to update the regulatory framework and combat counterfeits in e-mobility systems.

## Challenges for e-mobility in Uganda and suggested policy measures

- Reviewing and updating existing laws to incorporate e-mobility. This will help to improve the regulatory framework for purposes of accommodating the e-mobility development programs implemented by state and non-state actors.
- Ensure support for innovations targeting e-mobility. Such support could take the form of increased budget allocations, tax concessions earmarked for e-mobility research and innovations, or government institutions embracing the use of electric automobiles.
- Invest in an expanded network of battery charging systems. This requires a feasibility study to understand the viable locations defined by the number of motorbikes or vehicles that will access the charging station. The expansion of the charging network is key in promoting the adoption of e-mobility.
- Bridge knowledge gaps by creating awareness of e-mobility. Although remarkable efforts have been implemented to promote e-mobility in the country and within the region, field evidence suggested knowledge gaps on the use of electric vehicles and motorbikes. Focus should be placed on the benefits of e-mobility, the serving period of batteries, and the cost of charging/changing them, among others. Moreover, there is a need for capacity-building programs on the side of e-mobility operators.
- Invest in hybrid vehicles and motorbikes. Hybrid automobiles use both fuel and electricity. These are important in solving the problem of insufficient charging stations.

- The economic transformation of Uganda requires significant investment in promoting efficient energy programs. This is vital for reducing environmental damage and the effects of climate change. Carbon emissions in Uganda are partly driven by its transport sector. This policy brief indicates that Uganda does not have a clear regulatory framework that can adequately accommodate e-mobility developments, and the e-mobility market is still threatened by counterfeits. Therefore, there is a need for the government to prioritize updating the regulatory framework to provide for e-mobility developments, eliminate counterfeits in electric batteries, and increase investment in the expansion of the battery charging network.

#### **Further Readings**

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- Nakijoba, S., Courtright, T & Tahir, S. (2024). *E-Mobility as a Driver for Change Towards a Gender Transformative and Just Transition to Electric Mobility*