

Evaluation summary

Final evaluation of the Zembo project

Country : **Uganda**

Theme : **Energy transition and resilient cities**

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Date : **December 2024**

Key datas of FFEM support

Project Name: Zembo

Project Number : CUG 1079

FFEM Financial support: 600 000 €

Signature Date : June 27th 2019

Duration : 2 years

Context

Nearly 150,000 gas-powered motorcycle taxis, locally called “boda-bodas”, circulate on the streets of Kampala. They are an essential means of transportation to avoid traffic jams and serve certain isolated neighborhoods, but they are responsible for significant air pollution and numerous road accidents. The Zembo start-up project aims to provide electric motorcycles for rent or sale to drivers and to recharge their batteries through a network of stations powered by decarbonized energy (a hydroelectric mix on the Ugandan grid and photovoltaic energy in relay). This will contribute to economic and social development while reducing health and environmental impacts.

Project management

The Zembo SAS start-up is based on a model that includes manufacturing, sales, and after-sales services, financing solutions tailored to volatile assets (rent-to-own and pay-per-use systems), as well as battery swapping and recharging services (Swap). The company has partnered with Simba, a Ugandan two-wheeler manufacturer, to locally assemble the motorcycles, and with Mogo for credit solutions.



Objectives

Main objective

The goal of the project is to contribute to the development of sustainable mobility in Kampala by increasing drivers' incomes, creating jobs, and providing an accessible, clean, and reliable alternative for mobility on one hand, while also promoting the reduction of CO2 emissions and fine particulate matter on the other hand.

Specific objectives

- Provide drivers with high-quality electric motorcycles that they can own at attractive prices, and ensure their maintenance.
- Create a network of charging stations that supply the vehicles with clean energy, with a "Pay as You Go" system.
- Optimize the distribution and management of low-carbon electricity both on the grid (through the Ugandan energy mix) and off the grid (through supplementary photovoltaic relay).

Performance evaluation

Relevance

The motorbikes and services developed by Zembo are tailored to the needs of boda-bodas, and its goals of offering safe, reliable, and environmentally friendly engines were successfully achieved. The project helps reduce GHG emissions, air pollution, and noise generated by two-wheelers. Zembo contributes to the growth of the boda-boda industry, which will continue to be a concern in terms of road safety, congestion, and the use of public space within Kampala's urban area. On the other hand, Zembo aids in the professionalisation of the boda-boda sector, which could facilitate its regulation.

Coherence

The electrification of boda-bodas is supported by the government and local authorities, although the project is not part of a formal urban mobility plan. However, electrification is mentioned in Uganda's Nationally Determined Contribution, and Zembo's local assembly aligns with Uganda's Vision 2040 and the National Industrial Policy. Finally, the development of low-carbon energy production solutions, such as hydropower, results in a highly favorable electricity mix and enhances the competitiveness of e-bodas.

Effectiveness

Zembo has demonstrated its ability to deliver by designing two types of motorbikes (Storm and Thunder), assembling and delivering them, setting up a network of swapping stations, attracting customers, and offering asset financing and maintenance services since receiving initial funding from ADEME and FFEM. The Zembo system is now operational, serving over 640 boda-boda drivers daily without major issues. No recurring technical failures have been identified, and all concerns raised by users are addressed and/or subject to improvements, particularly in the second motorcycle model.

However, the project's growth has been slowed by the COVID-19 crisis and remains below initial projections. The target of 2,000 motorbikes in use, as stated in the FFEM agreement, has not yet been achieved due to delays in fundraising. Reaching the break-even point of 5,000 motorbikes remains uncertain due to a fast-changing competitive landscape and the sector's funding challenges. Main operational issues reported by Zembo customers include the availability of charged batteries at swapping stations and the lack of information and predictability, as well as maintenance and spare parts availability, particularly for the Storm model.

Efficiency

The public support provided by various donors, including FFEM, has been crucial during the early stages of the project. The leverage effect is promising, and the projected impacts justify this public support. For every euro invested by donors, the project is expected to generate more than 4 euros in social, economic, and environmental benefits by 2030 (although the benefits of noise reduction have not been quantified). Private investors and for-profit financing institutions have since taken over, and Zembo's management does not foresee any further public subsidies.

Impacts

The project has demonstrated environmental, social, and economic positive impacts, though it has an ambivalent effect on the overall mobility system. The environmental benefits of gradually electrifying the boda-boda fleet could become substantial at a relatively low cost to public authorities. The use of electric motorbikes increases drivers' income, and the decision to assemble engines locally has boosted job creation, knowledge transfer, and training for local workers. Additionally, the pricing of electric boda-bodas is similar to that of petrol-powered ones.

Sustainability

The main uncertainty lies not in the ability of Zembo's products to generate profits, but rather in the company's ability to attract sufficient funding to accelerate its deployment and convince the thermal e-boda community of the benefits of switching to electric. The wider deployment of battery "swap" stations is one of the key challenges to reassure drivers.

Additional value of FFEM support

FFEM funding has allowed Zembo to cover its development costs at the very early stages, develop a proof of concept, and then start its operations in Uganda. FFEM funding also enabled Zembo to gain visibility among French investors and companies.

Recommendations & lessons learned

Recommendations. While the e-mobility sector in general, and electric mototaxis in particular, are attracting increasing attention from donors, and the number of projects benefiting from public support (subsidies, concessional financing, de-risking schemes) is multiplying, it seems appropriate for donors to adopt harmonized and coordinated approaches in order to limit the risks of distorting the private sector.

Since the profitability of Zembo's business model will only be achieved after successfully scaling up, early-stage financing was crucial to cover the first years of investments and operations.

Reproductibility. Mototaxis are a significant mode of transport in many African countries. Uganda and Rwanda are currently the main countries where various e-boda concepts are being developed on a significant scale. The technical and strategic choices made by e-boda providers will inform investors and entrepreneurs on the best path to achieve viability and scale up in this sector.

In addition to providing valuable market insights, replicability is a key part of Zembo's development strategy: the company intends to enter other African markets based on market potential, competition with fuel boda providers (such as fiscal incentives for EVs, and the absence or limitation of fuel subsidies), and the business environment.

Lessons learned. E-boda companies need a stable and attractive fiscal and administrative framework. The main competitors are the fuel boda industry. Although they make different technological or strategic choices, the presence of several competitors helps lobby in favor of the industry and change the perception of electric moto-taxis.

A gap exists between the theoretical advantages of electric motorcycles and the perception of most riders. This gap can only be reduced once the fleet reaches a certain size, which will require significant funding to cover investments and operating losses in the first year.