Retrofitting of Fossil motorcycles to Electric Motorcycles

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Specific Aims:

This proposed project aims to control transport air emissions starting with retrofitting Internal Combustion Engine (ICE) motorcycles in the taxi business as one of the major sources of air pollution in Rwanda, particularly in Kigali. The implementation of the project will not only bring solutions to the air quality degradation and climate change effects plus soil and water pollution caused by the discharge of used engine oils during the maintenance but also financial ones through the significant cost savings where savings of electric motorcycles vs petrol ones will cover the cost of retrofitting in less than a year.

The proposed project will be implemented in partnership between Rwanda Electric Motors Ltd and the University of Rwanda. We will combine the city-level transport and mechanical engineering on e-mobility and economic capacities of REM with civil engineering skills, air pollution monitoring, and modeling from the University of Rwanda, this project will seek to provide an evidence-based and policy recommendation to inform a rapid phase out the existing petrol-driven motorcycles by conversion of an internal combustion engine motorcycle into converted battery-powered electric motorcycles, process known as “retrofitting.

The overall goal of this project is to scale up retrofitted motorcycles and undertake research to study the environment and socio-economic and health impact**.** Implementation of this project will be achieved through the following **specific objectives:**

- **i.** To Retrofit about 100 Fossil Motorcycles to Electric Motorcycles in Rwanda
- **ii.** To quantify the environmental, health and socio-economic impact of retrofitted motorcycles
- **iii.** To design recycling strategy of batteries from retrofitted motorcycles
- **iv.** To Educate and raise awareness for local technicians and taxi-moto drivers

The approach of this project will start with the selection and engaging the stakeholders (Moto-Tax cooperatives and IPRCs), Training of technicians and users, Collection of retrofittable motorcycle, taking out the petrol engine and other key components, replacing them with the electric ones, professionally reconfiguring of electric parts, ensuring the conversion is safe and roadworthy.

The outcomes of this project are reduction of air pollution from transport sector in Rwanda and there will be development of a new infrastructure that is in line with the government road map for the e-mobility transition. **The expected impacts** are bringing solutions to the air quality degradation and climate change effects plus soil and water pollution, cost savings, creating employment opportunities, and a new skill set and knowledge base will be developed. **Total Project Budget** is 89,890,000 RwF including In-Kind Contribution of partner industry for the duration **of 18 months**.

Additional information

Investigators/Institutions

Dr. ABAHO G Gershome , Senior Lecturer and Head of department of Civil Environmental and Geomatics Engineering, School of Engineering, University of Rwanda
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