Electric 3-Wheeler, E-Bike, E-Motorbike, E-BodaBoda


Why to choose this solution?
Electric vehicles have a lot of advantages compared to combustion engine vehicles; they are cheaper, do not pollute the air hence reducing public health spending, and are more comfortable as they are less noisy. The e-vehicles have rechargeable battery, which can be charged at night at home.

Savings per day or production:
E-vehicles are less expensive for fuel and maintenance compared to combastion engine vehicles. The cost of fuel is reduced by 70%, as electricity is cheaper than petrol and diesel. The maintenance cost is minimal as e-vehicles need less maintenance.

Cost in money and in own time to construct:
The electrical vehicles can be constructed in different sizes from two-, three- to four-wheelers and for different purposes like private use, and commercial cargo uses. Its cost depends on size, capacity and use from USD 660 to 6,260.

Lifetime:
Depends on handling or how properly used and maintained by the user.

Maintenance needed:
There is no need of regular technical services. There is only need of proper handling by the user.

Resources needed in use:
Electric Vehicles (EVs) use electricity from the battery storage charged by normal electric supply.

Problems and limits:
Currently, the available electric 3/2 wheelers like tuk-tuks, boda-bodas, and e-scooters are limited by lack of convenient and affordable charging facilities, as well as standardization of chargers and batteries. Policies and regulations are major barriers to accelerating the e-mobilty adoption. The production facilities are still in small scale, but it is growing rapidly. This will create jobs, and will bring the price down.

Where and how can you get it or make it?
Available as being imported from China and India and by being retrofitted. There are companies started assembling and producing them.

Skills needed to produce, install. maintenance, use:
Assembling and retrofitting of electric three-wheelers/EVs require skilled and experienced engineers (electrical & mechanical engineer, electromechanical engineers). Major repair and maintenance require skilled technicians otherwise trained operators may do minor maintenance of the vehicle.

How to use it:
Training is required from Vocational Education and Training Authority (VETA) or from any other recognized institution.

How to maintain it:
Major repair and maintenance require skilled technicians otherwise trained operators may do minor maintenance of the vehicle.

Climate effect (if any):
Contribute to reducing greenhouse gas (GHG) emission from fossil fuels vehicles (petrol & diesel vehicles), which increase the global warming effects that has a high impact on the country and socio-economic factors such as human health, poverty, low agricultural production, etc. The transport sector globally contributes one-quarter of all energy-related emitted greenhouse gases, which is expected to reach to one-third by 2050. Fuel demand by the transport sector is expected to increase rapidly due to urbanization and economic growth which also worsens global climate change.

Where it is used and how many users are there?

Why is it successful?
The electric three-wheelers are very efficient and can be operated easily with no carbon emissions as they are charged by electricity, or minigrids, which is produced by renewable energy. It has a great contribution to the improvement of air quality through the reduction of greenhouse gas (GHG) emissions associated with fossil fuel transportation. Also, the prices of electric three-wheelers and operational costs are affordable by the majority.

If you can make it, a short description, typical problems, materials needed:
E-mobility is currently considered as the best solution for the environment in terms of public and personal transportation for better air quality, combating climate change, and economic relief compared to fossil-fueled mobility. In Africa, there is an increasing demand, and several assemblying facilities are has started. The electric mobility/vehicles are imported as components, and the assembling requires trained technical personnel and engineers. For the part of retrofitting, some of the spares are also imported. The spares/components/materials needed include an electric motor (DC motor), motor controller, cell unit (chargeable battery), charger system, and charging infrastructures, the other parts remain the same as other fossil-fueled vehicles.

How to make it (if possible):
Electric vehicle manufactured in factories and special engineering knowledge is required.

How is it delivered and by whom?

Successful financial model
UN-Habitat is financing and facilitating the development of pilot projects introducing electric vehicles. There are also examples of facilitating to rent the battery or get a loan to buy a vehicle, like a partnership of Roam Air with M-Kopa in Kenya.

What policies and strategies helped the success?
In Tanzania, the Climate Mitigation Strategy-2012 promotes fuel switching in transport systems and low-emission transport via mass rapid transport systems.

More info:
In Tanzania: E-motion https://e-motion.africa/ and eMo BodaBoda https://www.emobodaboda.co.tz/ ; In Kenya: ROAM AIR https://www.roam-electric.com/ Kibo Bike https://kibo.bike/ ; In Uganda: BodaWerk https://bodawerk.com/mobility/ UNFCCC: https://unfccc.int/news/advancing-electric-mobility-in-africa UNEP: https://www.unep.org/explore-topics/transport/what-we-do/global-electric-mobility-programme and ICI:
https://www.international-climate-initiative.com/en/iki-media/news/electric_2_and_3_wheelers_in_east_africa_and_southeast_asia/

Sources:

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