ELECTRIC MOBILITY IN UGANDA

The challenge of urban transport

"low hanging fruit" of electric mobility.
Net carbon benefits regardless of the "upstream" electricity-carbon mix
Key in dealing with urban transport and urban air pollution

Objectives of the Pilot

1. To demonstrate electric 2 wheelers
2. To test an appropriate product for the middle income working class riders
3. To create awareness on electric mobility

Launch of the Pilot

- Electric mobility launched in 2018
- Pilot launched in March 2021
- Partners, Government, Auto mobiles companies (Motor care, Mitsubish/victoria motors), Research Institutions/universities, MoSTI, MEMD, KCCA, UNBS, NEMA, URA, UNDP
- CAIA, Green Mobility, IUEA, Lulu Fish Farms, Pearl Rice Co LLc etc

Planning meetings

Unit test

Launch of E-mobility


IUEA ELECTRIC


RECEPTION


SKY DIV
Glovo
UFE
429M


MOVE
TO GREEN

Operational areas

The units have been used in various services and in different terrains;

- Office movements
- Logistics
- Public transport (Boda bodas)
- Farms (rice farms, fish farms)

Localities;

- Central: Kampala city, high density, mixed terrains
- East: Jinja and Busembatya relatively flat
- Western: Mbarara, relatively hilly areas

Performance

The units have undertaken various rides and covered significant distances.

The units used in passenger service have covered longer distances/mileage.

The units with chains, have performed better in hilly areas

The range has averaged between 42-85km. One unit in Jinja covered +100km in Jinja

Controlled Performance

- Route: Kampala(Mubs) – Gayaza 18.3km
- Return: Gayaza – IUEA Campus 23.7km
- Take off charge 77.3v, Return charge 70.8v
- Average speed 25-30km/hr
- Time 1hr
- Voltage used 6.5v
- Distance 42km
- Voltage/km 0.15v/km
- Implication:
- For a charge of 22v, it can cover 146km, but at regulated speeds.

Performance Determinants

The major determinants are;

- Speed
  - Acceleration
  - Weight of cargo
  - Terrain
  - Weather (especially the chain units)

Charging

- The units continue to maintain a period of 5 to 6hr charging time. But this is for bikes that are working well and those that go off from 70v and below.
- For those that go off starting from 72volts and above [72v,74v,76v and 80v] they take a period of 3-4hrs depending on what percentage they went off.
- Some units no longer get fully charged at 84.4/ 84.5v they dropped to 83.8, 83.1, 82.7, 82.3, 81,7 and 81.1. These are the units that are going off between 70-72volts. This also means that charging time will change depending on the percentage at which it gets full.

Reliability

The reliability has significantly dropped with increased use.

While at the beginning, when the units were still very new, they were very reliable, this has dropped as they get used for long

Details in the faults section

Bikes getting off / battery issues

- Bikes abruptly going off at 80v, 76v, 74v, 72v and 70v has become a major challenge as it demoralizes users.
- The cause to this was found to be that some wires were disconnected within the battery, while others that completely fail to work batteries have weakened and cant support motor to run the bike
- A good condition bike [gets full at 84.4 and goes off at 64volts] these could go for 8 hours of riding but since some bike batteries have started going off at 72v and above, this means that hours of usage have decreased from 8 hours to 6 or 5 hours.

Computer system

- We have had a number of bikes failing especially the bikes with chain being 8 and those without a chain 3 totaling to 11 bikes. The cause to this is believed to be water sprinkling into it since it was a rainy season.
- Some gears have disappeared/gone off from the screen display. This has reduced their strength in terms of climbing sloppy/hilly areas.
- And because of this, they no longer have the power and speed they had when they had the gears .

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Chargers failing

The Chargers start by heating up then turn from red to green within seconds.

After some time they stop charging completely.

Faults Summary

The main Problems associated with units are:

- Bikes getting off / battery issues
- Fast drainage of battery
- Brake down of computer system
- Lack of spare parts
- Brake down of chargers

Other faults

- Loss of pressure
- brakes holding while riding
- Horns not working
- Units moving with no acceleration

Other challenges

- Lack of clear supportive policies
- Lack of charging centers
- Lack of spare parts
- Lack of technical personnel to repair electric vehicles
- Lack of standards
- Technical issues, specifications etc

Positive considerations

- Develop policies and regulation to boost e-vehicle uptake;
  - Develop standards for e- vehicles
  - battery disposal regulations
- Create incentives for e-vehicles
  - Tax waivers for e-vehicles
  - Special electricity tariffs
- Charging infrastructure and Battery swaps
- Availing spare parts
- Improve technology
- Capacity building in e-vehicles

Immediate Impact

- Significant awareness on electric mobility created by the pilot
- Market for electric mobility activated. Many e-vehicles in the country. Nos. increasing.
  - Private cos activated and are dealing in electric mobility
  - Kiira Motors, making buses
- Many partners involved in the electric vehicle business
  - Government MoSTI, URA, KCCA, LGs
  - Research institutions. an e-mobility research centre established
  - Non state actors, CAIA, More Green,
  - Motor vehicles companies. Motor care (Kadjer/Nissan), Mitsubishi, & small importers
  - Logistics cos etc

Thank you