Integrating Electric 2&3 Wheelers into Existing Urban Transport Modes in Africa

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Essentially all cars on African roads are made by companies from other regions...
...a majority of these cars are not assembled in Africa
For 20 years, Africa has had less than 10% of global proven oil reserves...

Distribution of proved reserves in 1996, 2006 and 2016

Source: BP Statistical Review of World Energy, June 2017
...reserves will not last long at current production.
12% of Africa’s renewable energy potential can meet BAU scenario 2040 demand!

Renewable energy potential and expected demand in 2040 (TWh)

Source: The New Climate Economy (Global Commission on Economy and Climate)
Electric mobility & renewable energy have major economic potential for Africa!
The transport sector accounts for at least 22% of all global energy related CO2 emissions (ICCT)
To meet ≤ 2°C scenario, 20%* of all road vehicles must be electric-powered by 2030 (IEA).

*400 million electric 2&3 wheelers

A MAJOR disruption is needed to increase electric mobility uptake
Motorcycles emissions are substantial

Two-wheelers Emissions Comparison – Total Emissions [g CO₂ –equivalents / km]

- Two-stroke Scooter
- Four-stroke motor cycle
- Electric scooter (China energy mix: 724g/kWh)
- Passenger Car (petrol, Golf segment)

One two-stroke scooter emits double the NOx emissions of a modern passenger car, 300 times the HC emissions and 80 times the CO emissions.

Particle Emissions [g PM/ km]

- 0.5g/km
- 0.1g/km
- 0.017g/km (China energy mix)
- 0.002g/km

Africa is home to the world’s highest motorcycle growth rates...

- Most motorcycle purchases are for taxis
- Motorized transport increasingly on motorcycles (>> 50% in Ouagadougou and Bamako)
- Spurred on by public transport collapse, congestion and increasing disposable incomes
- Increasing GDP/capita could see more of the >50% modal share that uses NMT opt for 2-wheelers as a stepping stone to LDV’s
Electrifying 2&3 wheelers is a strategic intervention for African mobility...

- Improve **air quality**
- Reduce **climate emissions** (given increasing modal share, renewable energy outlook)
- Harness **economic potential** (new green economy)
- **Stepping stone to further electric mobility** (LDV’s, buses, etc.)
  - Low infrastructure requirements
  - Motorcycle taxis cost savings
  - Potential for replication in region and globally
UN Environment 2&3 Wheeler Projects Overview:

• 5 ongoing projects in Africa:
  – Morocco, Kenya, Uganda, Ethiopia and Rwanda

• 3 main components:
  • Planning and project baseline setting
  • Piloting / policy design
  • Knowledge management & policy replication
Planning and project baseline setting:

• **2&3 wheeler fleet characterization**
  ✓ New registrations data, emissions, existing policy baseline

• **Review of national electricity generation**
  ✓ mix of renewables, current consumption and projected capacity demand with and without electric 2&3 wheelers, emissions

• **Evaluation of local manufacturing potential**
  ✓ 2&3 wheelers as well as their components, capacity issues, incentives

• **Assessment of uptake barriers**
  ✓ Infrastructure
  ✓ Access to financing
  ✓ Policy review
Piloting / Policy Development:

- Facilitate city/national working groups

- Conduct relevant technical evaluations
  - Cost-benefit analyses, battery reuse/recycle schemes, development of electric 2&3 wheelers national standards and specifications, etc.

- fleet and policy piloting
  - Deployed in electric 2&3 wheelers in captured fleets (council services, mail delivery, private sector etc.) for performance evaluation & awareness raising
  - Testing of various electric 2&3 wheelers interventions: exclusion zones, parking waivers for electric 2&3 wheelers, integration into NMT facilities, etc.

- Support policy development
Knowledge management and policy replication:

• Develop **knowledge management & communications** framework
• Electric mobility **global outreach & awareness raising**
  ✓ South-south cooperation, road safety campaigns, 2&3 wheeler NMT integration, best practices harmonization etc.
• Develop **capacity building** and training **tools**
• Expert **training**, regional **replication** workshops