

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



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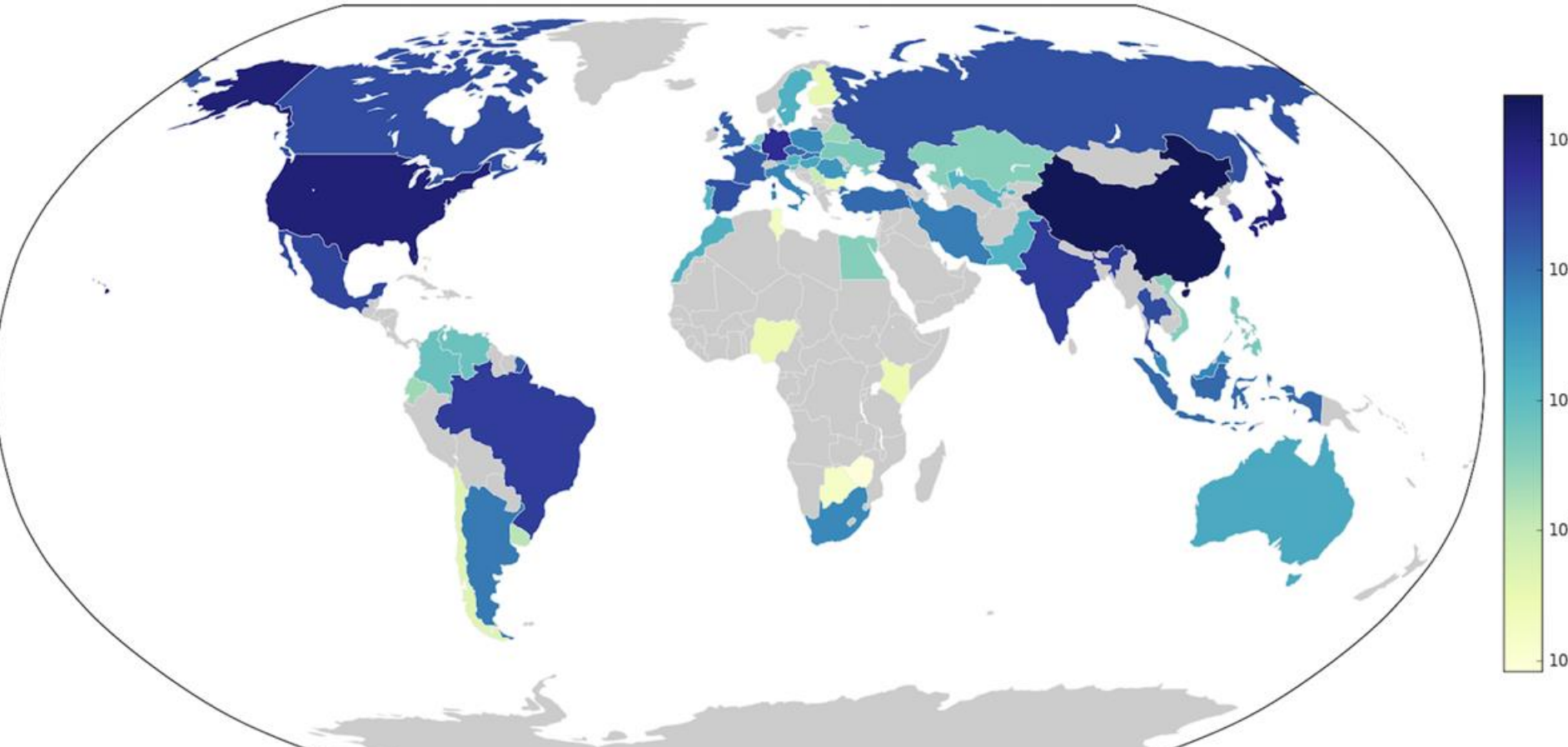
Essentially all cars on African roads are made by companies from other regions...



SOURCE: Ycharts



...a majority of these cars are not assembled in Africa



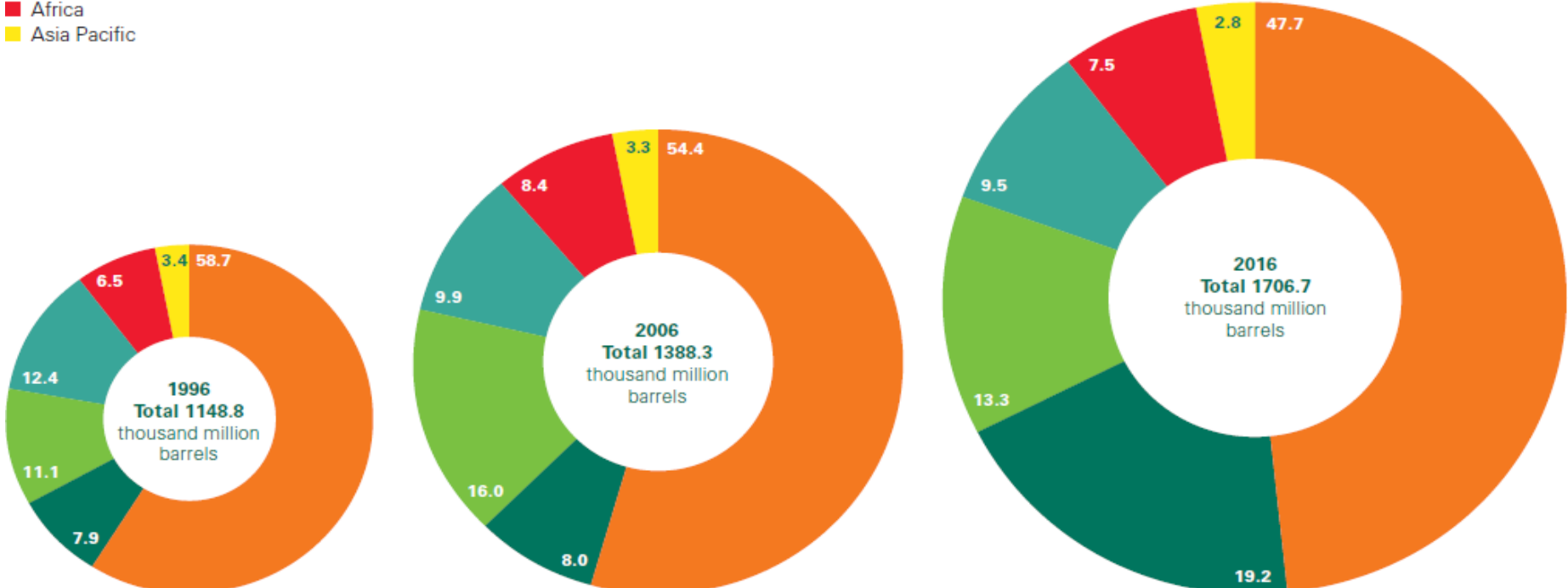
Motor vehicles produced by country in 2013 (Organisation Internationale des Constructeurs d'Automobiles, OICA).

For 20 years, Africa has had less than 10% of global proven oil reserves...

Distribution of proved reserves in 1996, 2006 and 2016

Percentage

- Middle East
- S. & Cent. America
- North America
- Europe & Eurasia
- Africa
- Asia Pacific

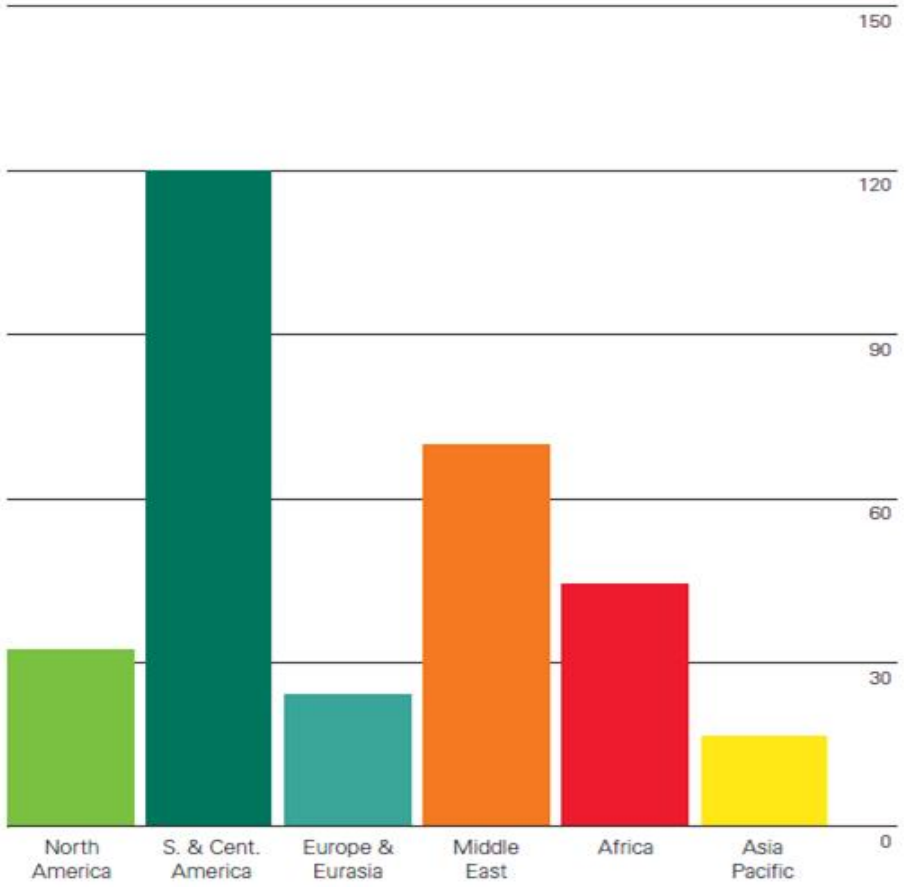


Source: BP Statistical Review of World Energy, June 2017

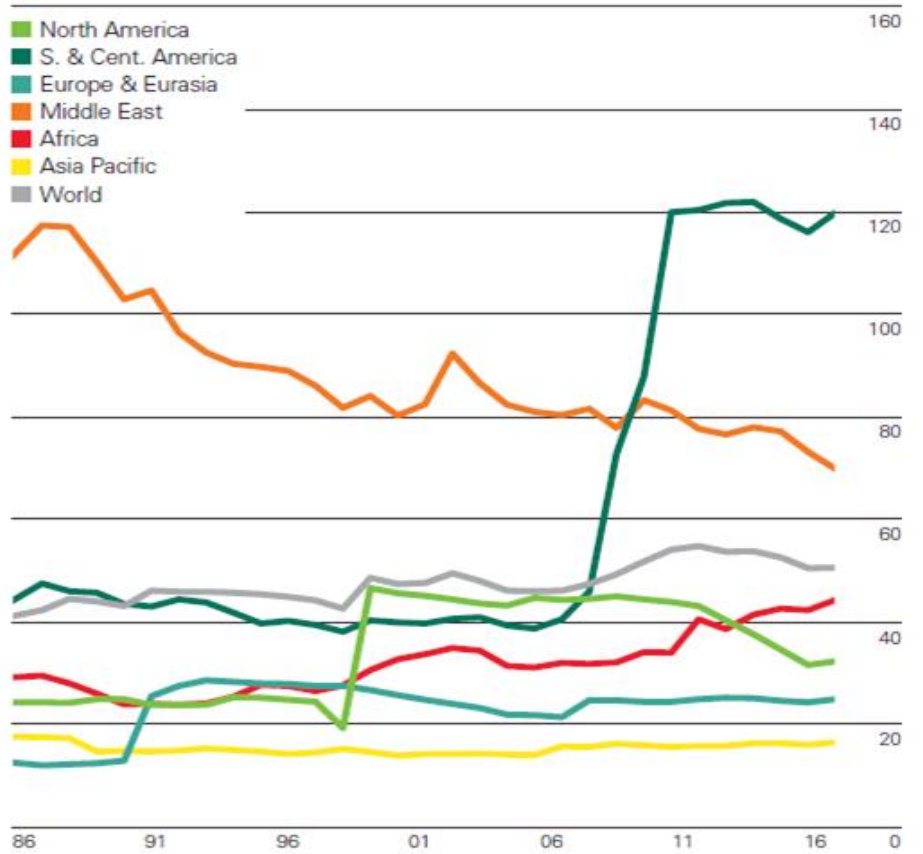
Reserves-to-production (R/P) ratios
Years

...reserves will not last long at current production

2016 by region



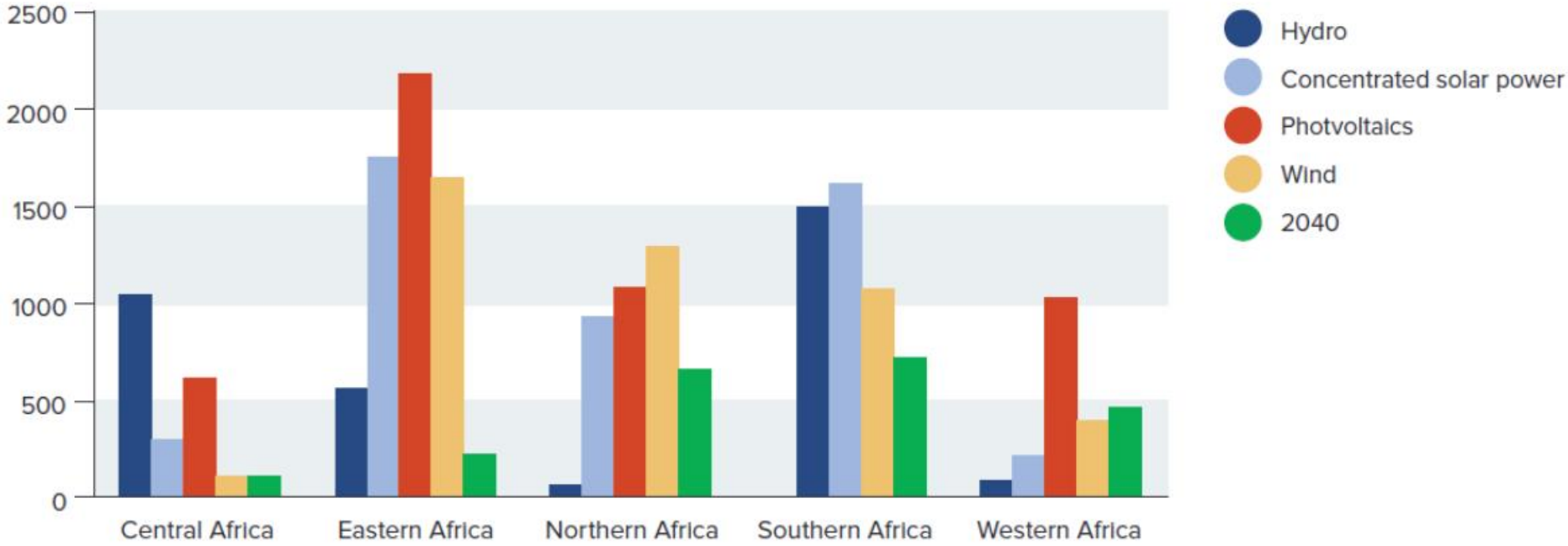
History



Source: BP Statistical Review of World Energy, June 2017

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!

RENEWABLE ENERGY EMPLOYMENT IN SELECTED COUNTRIES AND REGIONS

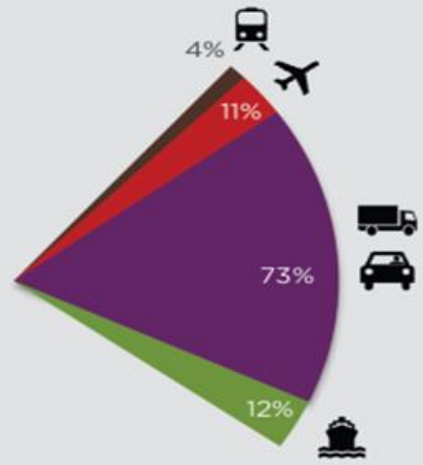


The transport sector accounts for at least 22% of all global energy related CO2 emissions (ICCT)

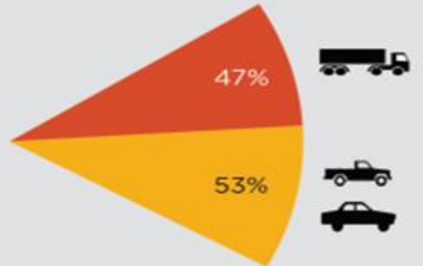
GLOBAL ENERGY-RELATED EMISSIONS
≈ 30 Gt CO₂



TRANSPORT EMISSIONS
≈ 7 Gt CO₂



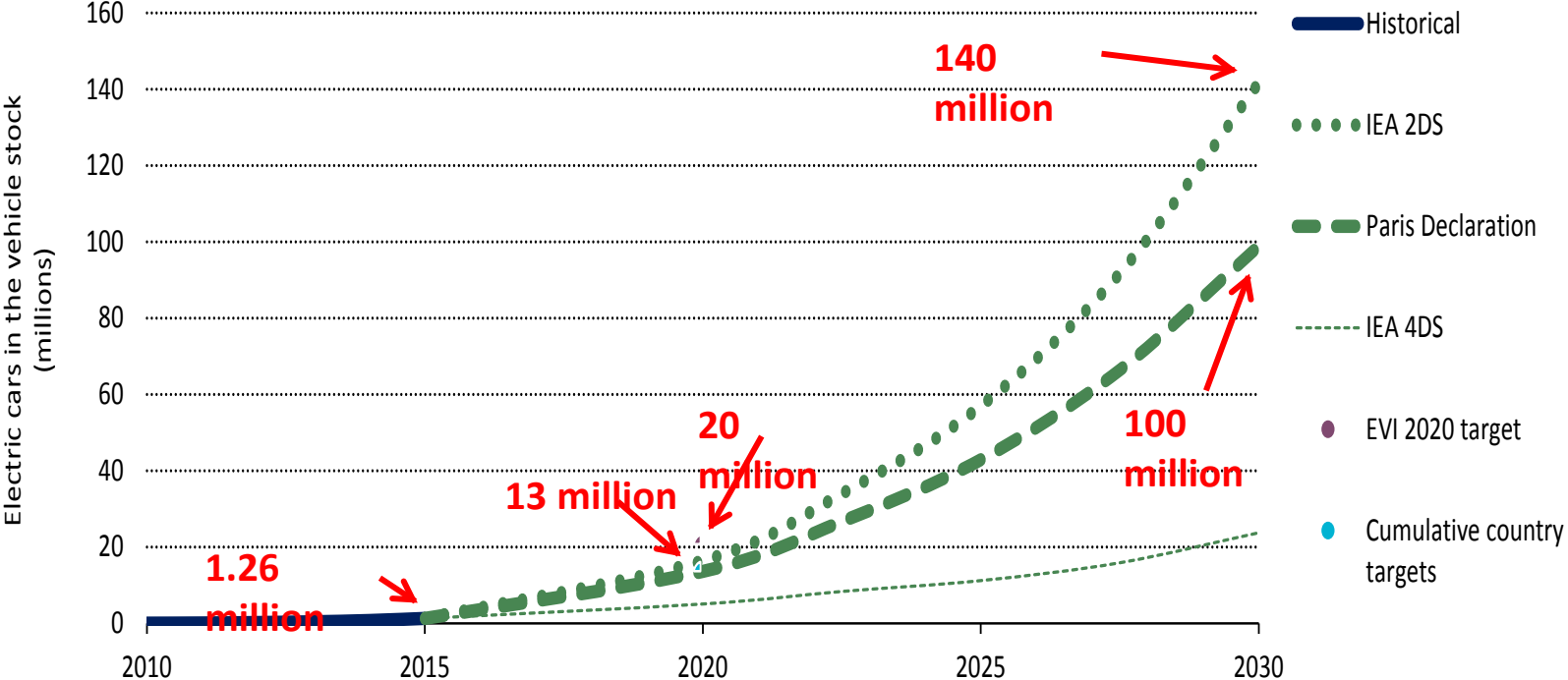
ROAD TRANSPORT EMISSIONS
≈ 5 Gt CO₂



LEGEND

- RAIL
- AIR
- ROAD
- SEA
- HEAVY-DUTY VEHICLES
- LIGHT-DUTY VEHICLES

To meet $\leq 2^\circ\uparrow$ scenario, **20%*** of all road vehicles must be **electric-powered by 2030 (IEA).**

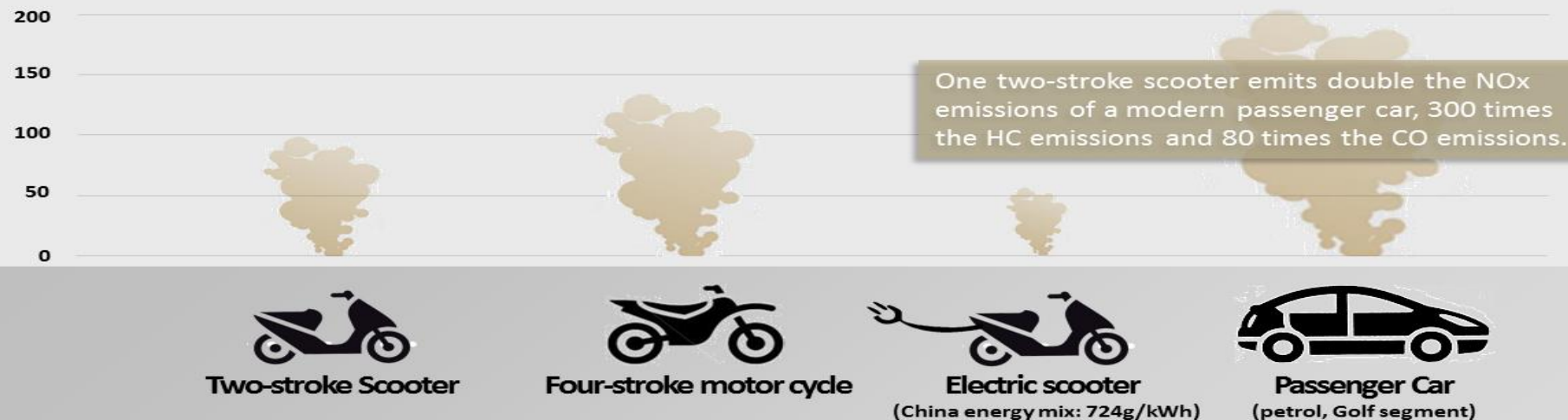


*400 million electric 2&3 wheelers

A MAJOR disruption is needed to increase electric mobility uptake

Motorcycles emissions are substantial

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

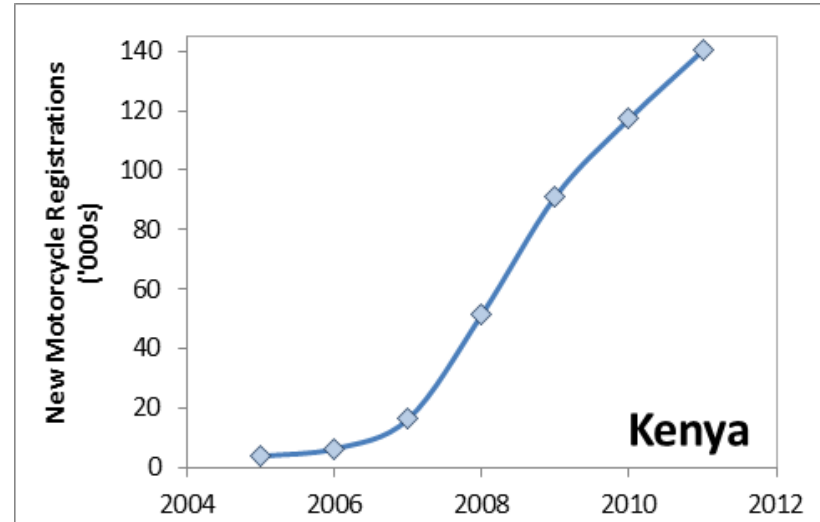


Particle Emissions [g PM/ km]



Graphics based on data from: Swiss EMPA, Materials Science & Technology "Umweltnutzen von E-Scootern"; TÜV NORD CERT, Bericht-Nr.: 8000410537-1 "Umweltprädiat Golf Modelljahr 2012"; ADB 2009 "Electric Bikes in the People's Republic of China Impact on the Environment and Prospects for Growth"

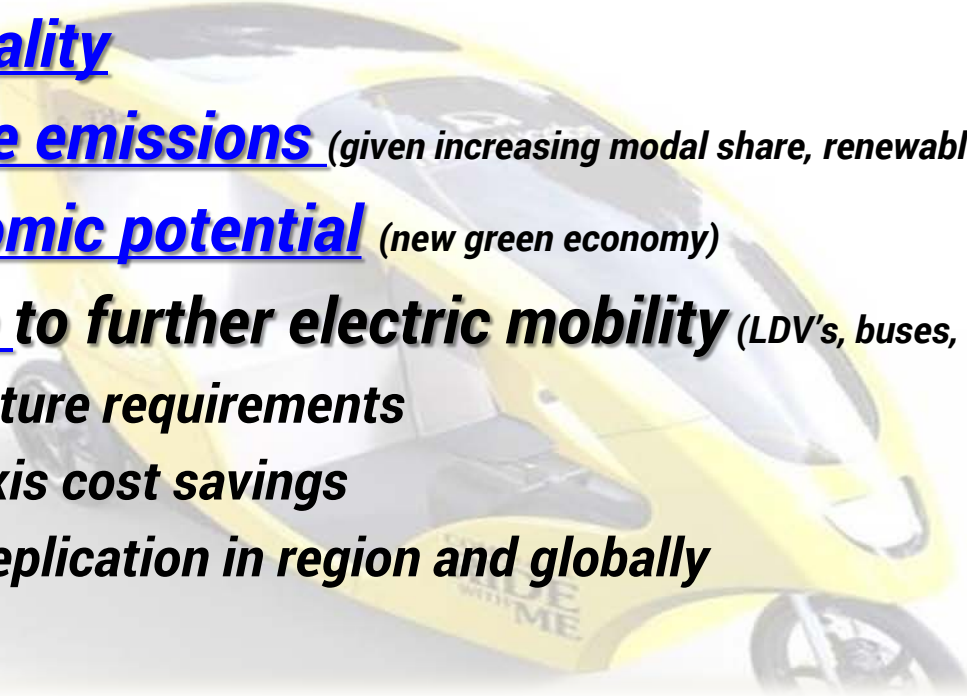
Africa is home to the world's highest motorcycle growth rates...



- *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*



Federal Ministry
for the Environment, Nature Conservation,
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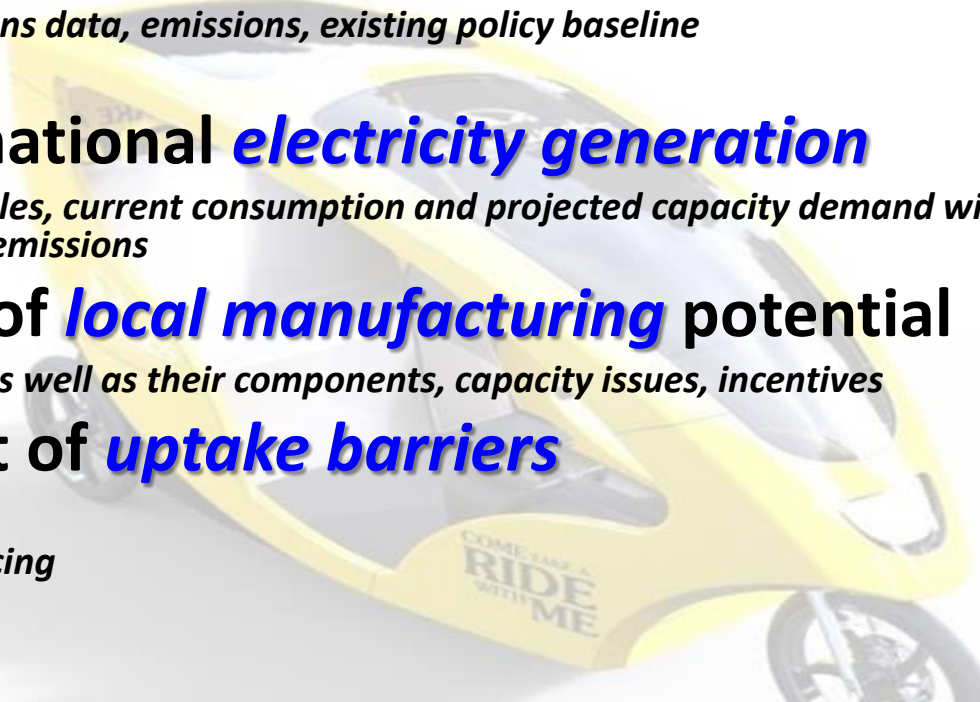


مؤسسة محمد السادس لحماية البيئة

FONDATION MOHAMMED VI
POUR LA PROTECTION DE L'ENVIRONNEMENT

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

Thank You!

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