SOLUTIONSplus

Integrated Urban Electric Mobility Solutions in the Context of the Paris Agreement, the Sustainable Development Goals and the New Urban Agenda

Co-organized by

SOLUTIONSplus

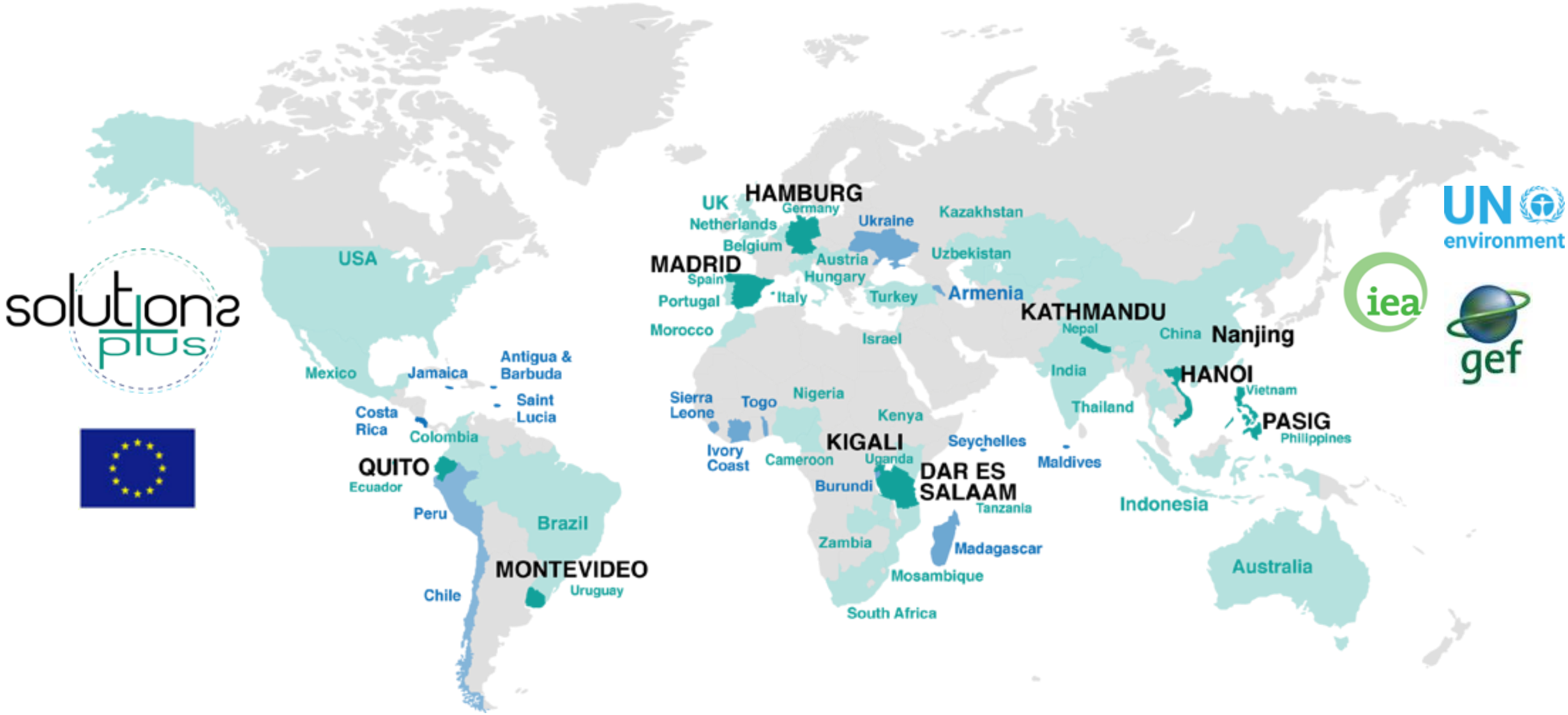
In Co-flagship project on Urban mobility and sustainable electrification in large urban areas in developing and emerging economies

Funded under the Horizon 2020 call GV-05-2019
Duration: 1 January 2020 – 31 June 2024
Total budget: €20,233,098.75
(EU Contribution: €17,970,258.75)
Consortium of 47 partners, 116 associated and support partners

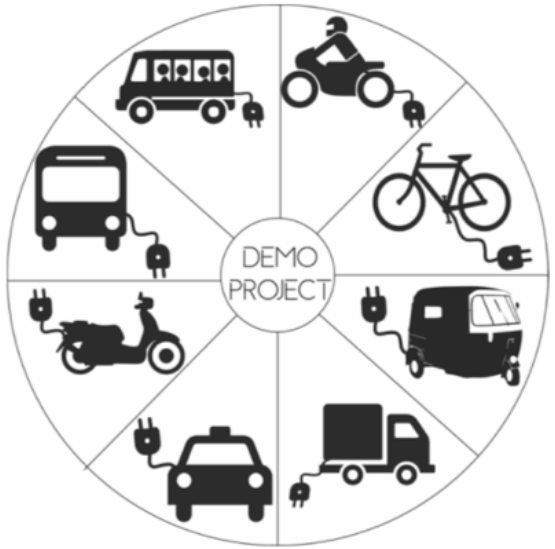
10 Living Labs:
Asia: Kathmandu (Nepal), Manila/Pasig (Philippines), Hanoi (Vietnam), Nanjing (China)
Africa: Kigali (Rwanda), Dar es Salam (Tanzania),
LATAM: Montevideo (Uruguay), Quito (Ecuador),
Europe: Hamburg (Germany), Madrid (Spain)

The project has received funding from European Union's Horizon 2020 research & innovation programme under grant agreement no. 875041

Global E-Mobility Platform



Sustainable and electric urban mobility



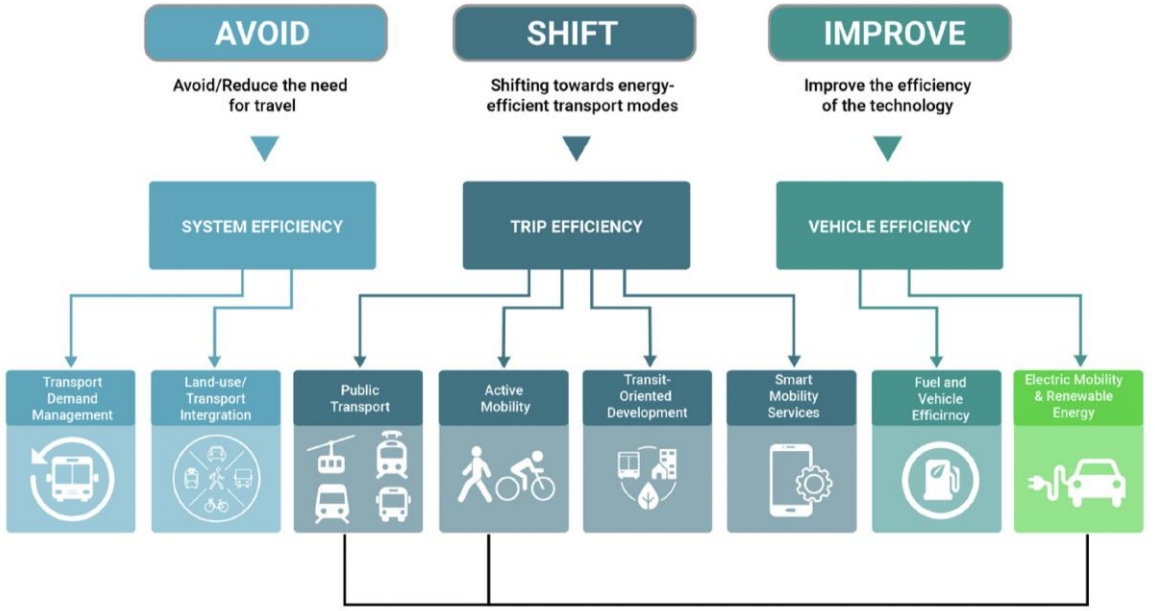


Figure 2: Avoid-Shift-Improve paradigm (UN-Habitat)

Montevideo


Hanoi

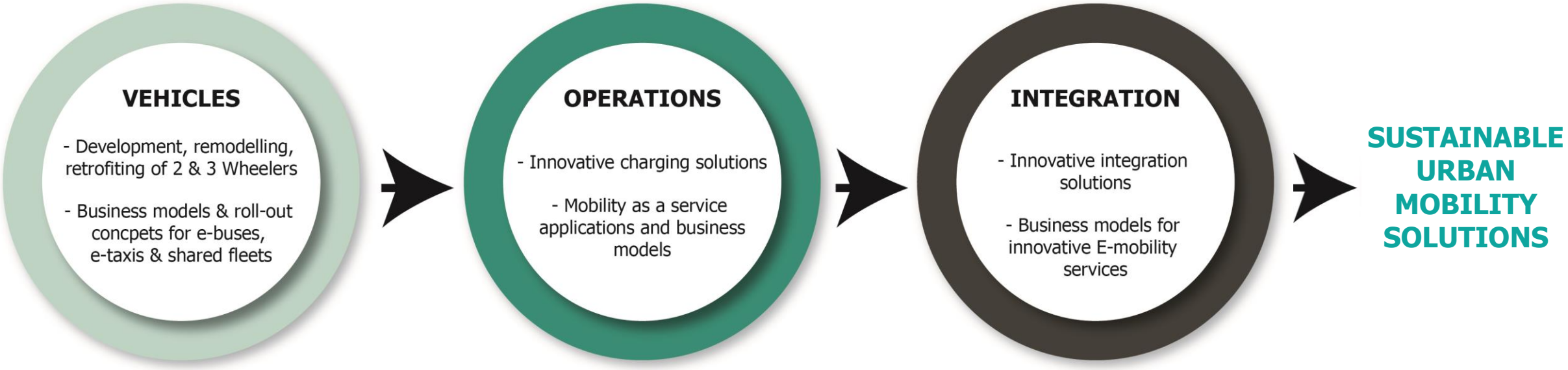

Kigali


Quito

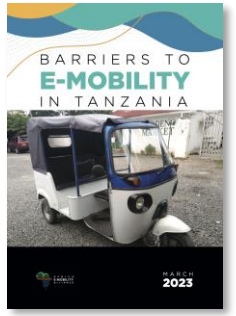

Montevideo

SOLUTIONSplus Objectives & Concept

Accelerate transformational change towards sustainable urban mobility through innovative and integrated electric mobility solutions



Africa Demonstration Actions

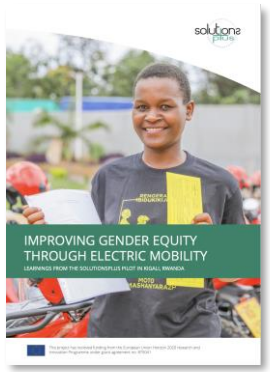


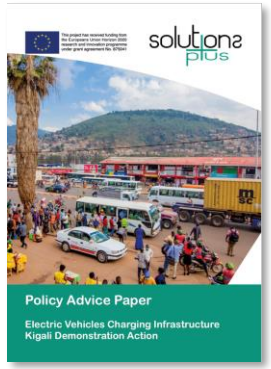
Rwanda

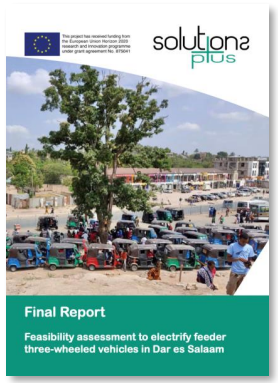
Electric motorcycles & gender
Electric bicycles
Electric buses
Institutional coordination
E-mobility policies

Tanzania

Electric tuk-tuks
Electric bicycles
Awareness raising
Policy advice







Africa Replication Actions

Sierra Leone

Electric motorcycle & gender
Passenger taxi services

Uganda

Electric motorcycle & gender
Passenger taxi services

Togo

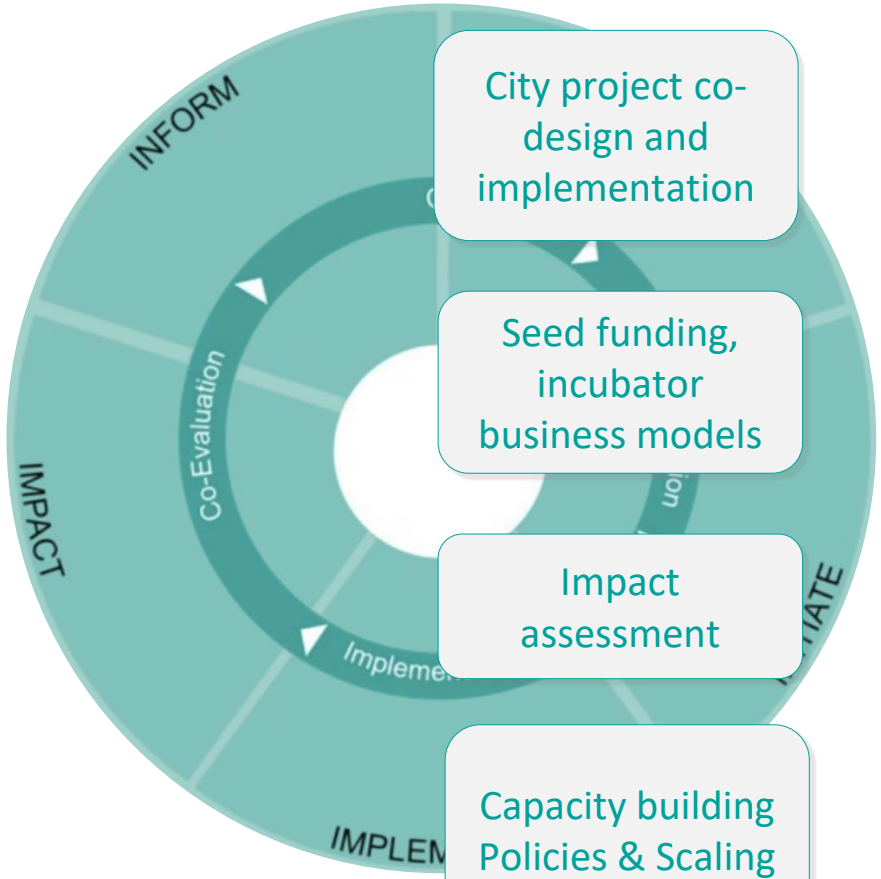
Electric bicycles & gender
Urban deliveries

Kenya

Electric motorcycle & gender
Passenger taxi services

Electric three-wheelers & gender
Peri-urban product deliveries

Urban Living Lab approach



City project co-design and implementation

Seed funding, incubator business models

Impact assessment

Capacity building Policies & Scaling

Core Lab partners in Dar es Salaam & Kigali

UEMI www.uemi.net

Urban Living Lab CENTER

DART DAR RAPID TRANSIT

Wuppertal Institut

UN-HABITAT FOR A BETTER URBAN FUTURE

UN environment programme

ITDP Institute for Transportation & Development Policy

UN environment programme | copenhagen climate centre

DLR

Supporting partners

Dar es Salaam Institute of Technology Company Limited – Excellence in innovation

UITP ADVANCING PUBLIC TRANSPORT

Applus IDIADA

POLIS CITIES AND REGIONS FOR TRANSPORT INNOVATION

ERTICO ITS EUROPE

Technische Universität Berlin

Codatu

FIER Automotive & Mobility

PLUSERVICE.NET Integrated Information System for Mobility

SOLUTIONSplus Objectives & Concept

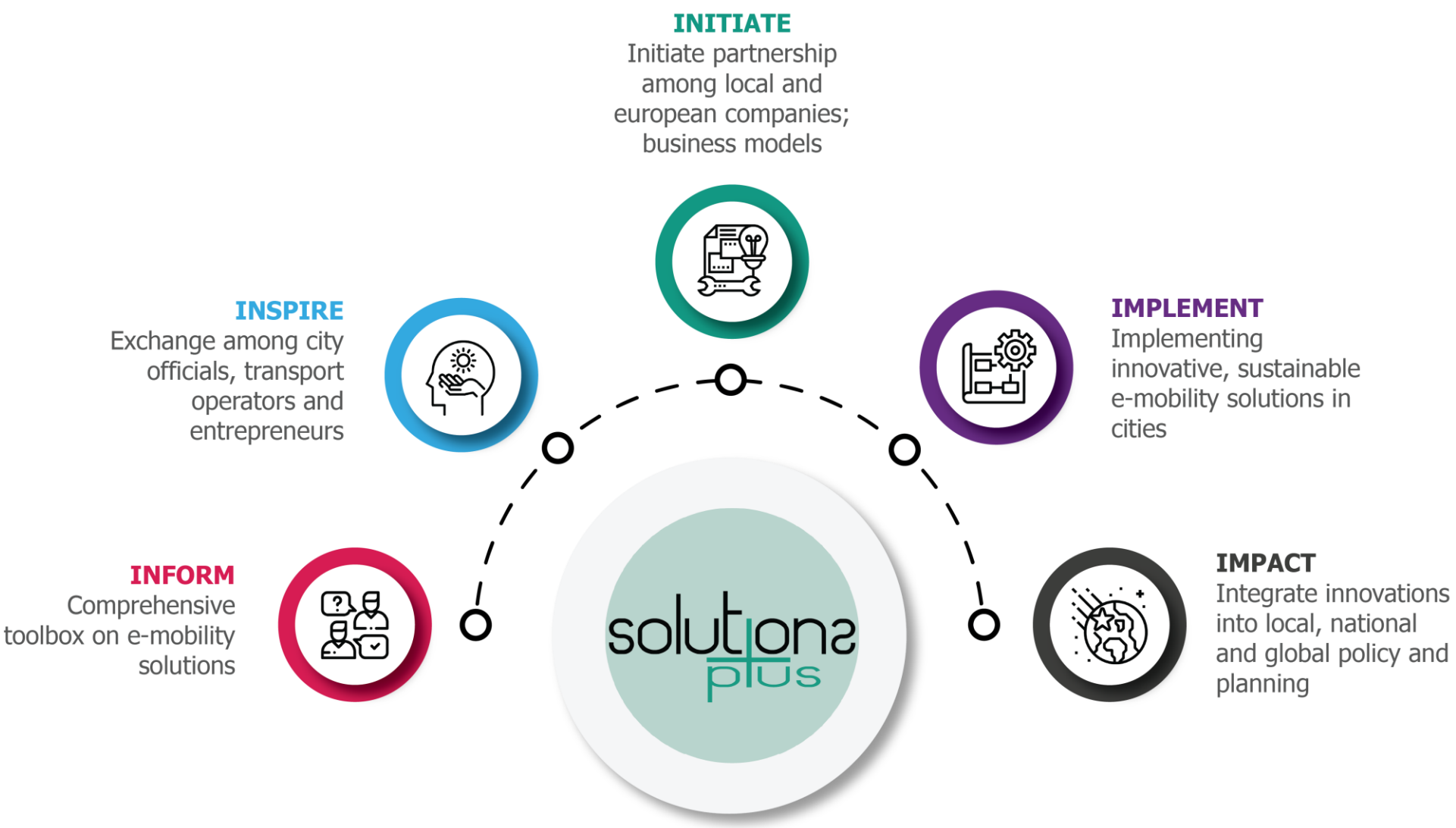
INITIATE
Initiate partnership among local and european companies; business models

INSPIRE
Exchange among city officials, transport operators and entrepreneurs

IMPLEMENT
Implementing innovative, sustainable e-mobility solutions in cities

INFORM
Comprehensive toolbox on e-mobility solutions

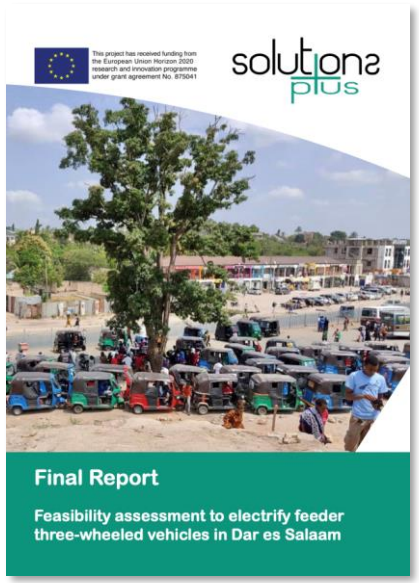
IMPACT
Integrate innovations into local, national and global policy and planning

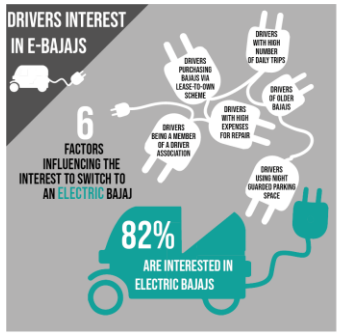


Results

Demonstration Actions

Inform



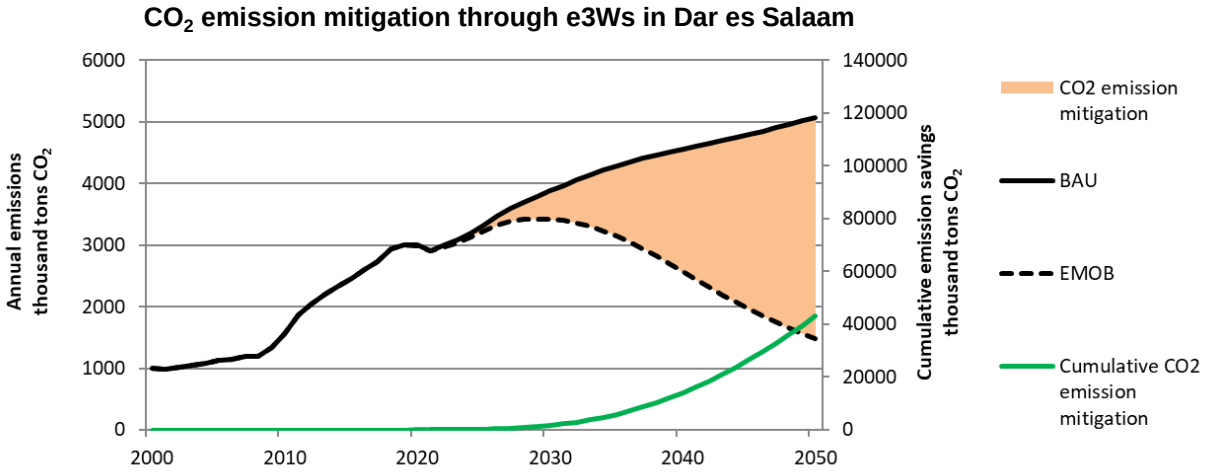


Data on the feasibility to electrify feeders

- E.g. Dar es Salaam: **unprecedented data collection** to assess the feasibility of electrification of e-bajajs
- Collaborative and inclusive approach

Impact assessment (extracts)

- **Financial viability**
  - Business model highly attractive for drivers of e-motos in Kigali: Internal Rate of Return of 42%
  - Viable for companies, e.g. e-bajajs in Dar es Salaam: IRR of 22.5%. Challenges exist though, e.g. risks of drivers' payment default
- **Environmental benefits**
  - GHG emission reduction of 73% with e-motos compared to ICE motos in Kigali, 95% with electric bicycles replacing ICE motos in Dar es Salaam
  - Overall impacts depending on the pace of introduction and phasing out of ICE motorcycles



Inspire

Multiple training content & formats

- **Africa regional training based on needs**
  - 2021: EV Charging Infrastructure
  - 2022: EV Batteries & End-of-Life Management
  - 2023-2024: Public Transport Electrification; Integration of Paratransit, eBRT

- **Global City peer learning** e.g. e-bicycles, e-bajajs
- **Study visits** e.g. Bogota, Madrid, Hamburg
- **Online E-courses**: e-mobility within sustainable urban mobility; public transport electrification; MaaS and ITS; paratransit electrification; E-freight
- **Toolbox of resources** on e-mobility

Organising Africa peer exchange on e-mobility

- First E-Mobility Forum in Dar es Salaam, 2023, with Tanzanian stakeholders and delegates from 17 sub-Saharan countries
- Second E-Mobility Forum in Dakar, 2024

Initiate








	Seed funding	Technical assistance

E-bajajs	• Dar es Salaam: Auto Truck/DIT; SESCOM; TRI Ekoglobe (4 companies): 39 new E3Ws and 4 retrofitted
	• One replication case
		• Technical training
		  ○ Vehicle assembly
		  ○ Battery sizing and design
		  ○ Charging strategies and options
		  ○ Retrofitting process
		  ○ Maintenance & repairs
		  ○ Industrialisation strategy
		• Incubator support
		  ○ Business Model Canvas
		  ○ Technical support on the operation of shared systems
		  ○ Digitalisation Support

E-motos	• Kigali: Ampersand: 24 e-motos driven by women • Three replication cases in Kenya, Uganda, Sierra Leone	
E-bicycles	• Dar es Salaam: Africrooze: 16 pedal-assist electric bicycles • Kigali: Guraride • One replication case in Togo	
E-buses	• Kigali: BasiGo: 4 bus deployed to prepare the City E-Bus Master Plan	

Implement



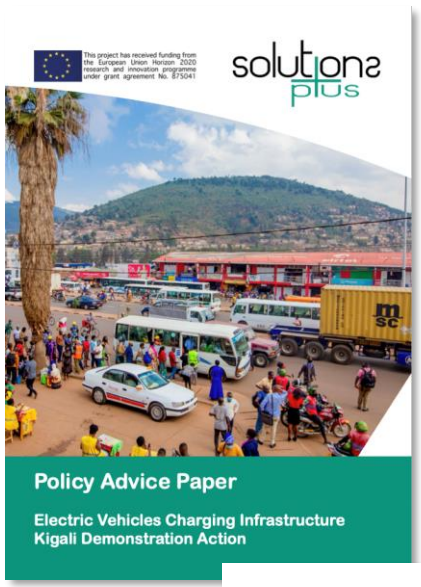


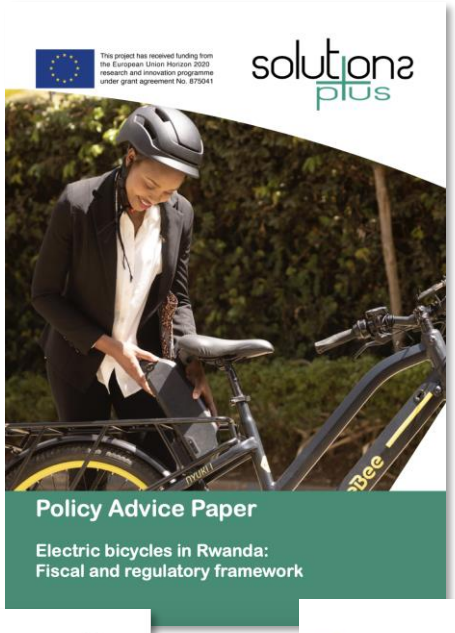


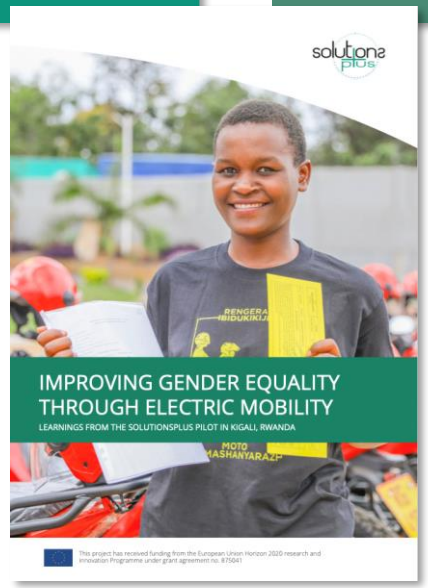
Findings

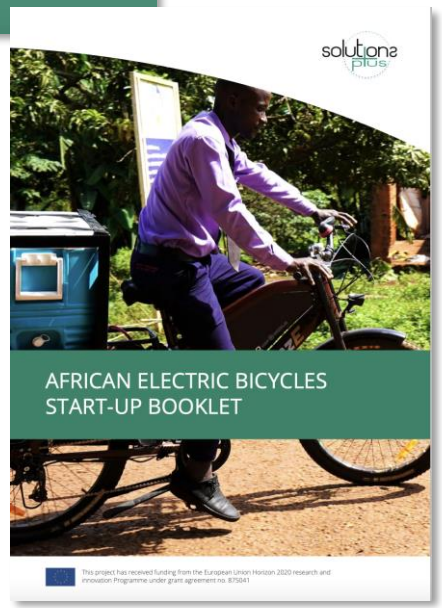
- **Essential to collect data on ICE patterns and preferences of transport operators** to ensure a customer-fitted product
- **Essential to adopt an iterative approach** that includes feedback from transport operators on the vehicle and charging
- **No one-size-fits-all**: battery swapping is adapted in some contexts, but not all
- **Essential discussions between government authorities and companies** to ensure policies are adapted to needs, implemented, and include all vehicles, e.g. electric bicycles
- **Need to create a full ecosystem** including asset companies and digital platforms to distribute risks
- **Needs to scale policy efforts** to avoid environmental risks, e.g. lead-acid batteries
- **Needs to scale technical skills** for maintenance, repairs, and further local value creation

Impact









Policies

- Assessment of barriers
- Electric mobility policies
- EV Charging Infrastructure
- City Roadmaps
- National Urban Mobility Policies and Investment Program
- Gender inclusion
- Electric bicycles
- End-of-life management of EV Batteries

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