

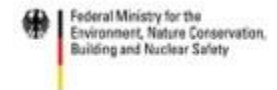
COP25

Advancing Sustainable Cities

Oliver Lah
Oliver.lah@uemi.net



Supported by:



based on a decision of the German Bundestag

Urban Pathways



- Take an integrated approach and focus on the climate change mitigation and the creation of synergies across key policy objectives
- Develop pilot projects and implementation concepts for key urban sectors to deliver on the New Urban Agenda, the SDGs and the Paris Agreement
- Supported by the International Climate Initiative of the German Environment Ministry (BMU)
- Delivered in a partnership with UN-Habitat, the Wuppertal Institute and UN Environment

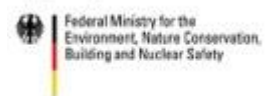
UN HABITAT
FOR A BETTER URBAN FUTURE



Wuppertal
Institut

UN
environment

Supported by:



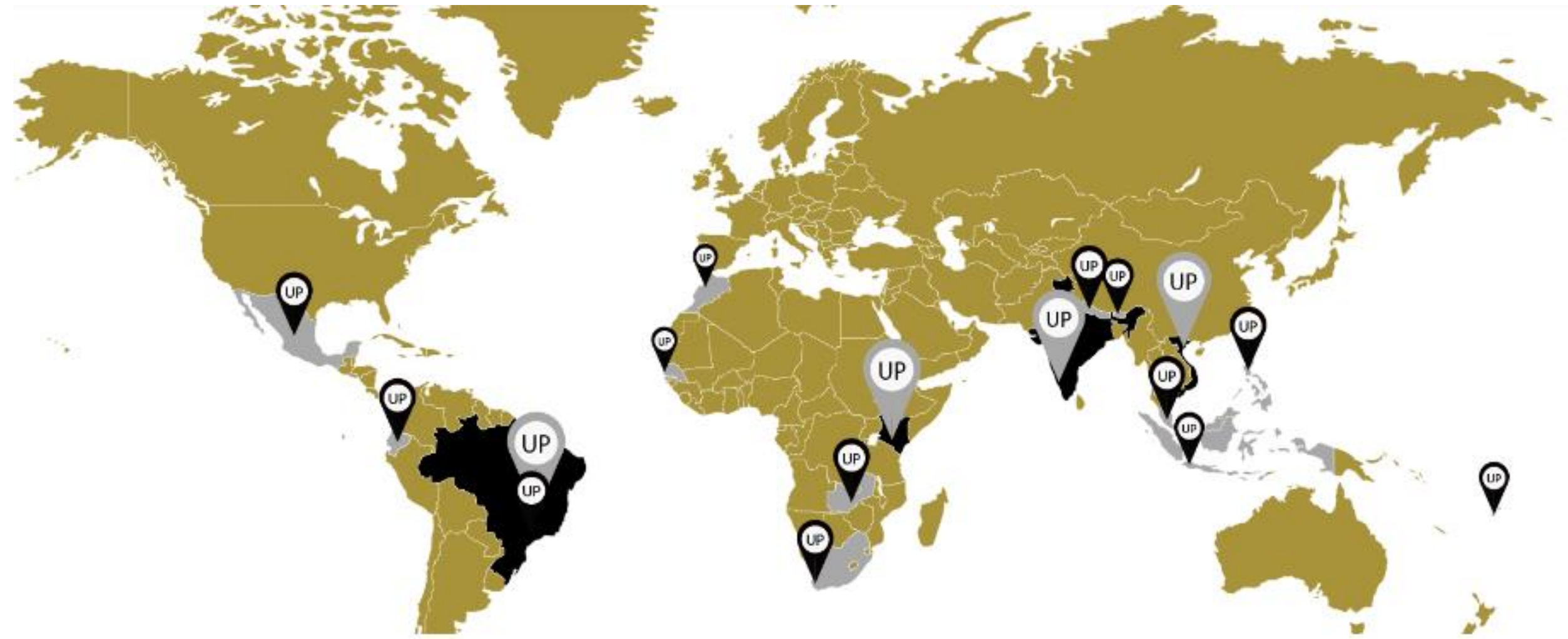
based on a decision of the German Bundestag

Linking policy objectives

- Linking and packaging policies is vital to generate synergies and co-benefits between measures, including linking GHG reduction goals with other sustainable development goals
- An integrated policy approach that creates consensus and coalitions among diverse stakeholders and interests



Partner cities



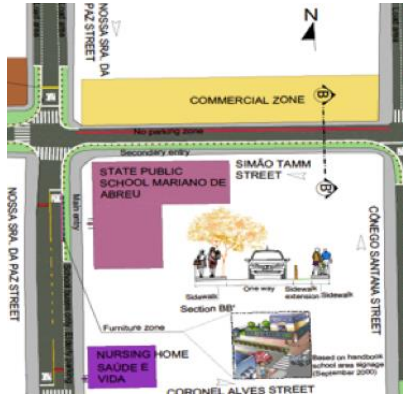
Examples of current pilot projects

Eco-districts



Quito, Ecuador

Safe journeys to school



Belo-Horizonte, Brazil

Reclaiming the city



Nairobi, Kenya

Low-carbon neighbourhoods



Hai Phong, Vietnam

E-Tuk-tuks



Kochi, India

Kathmandu, Nepal

Municipal waste management



Bhutan

E-Scooter sharing



Hanoi, Vietnam

E-Bike Sharing



Belo-Horizonte, Brazil



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

InCo flagship project on
*“Urban mobility and sustainable electrification in large urban areas in
developing and emerging economies”*



solutionsplus



InCo 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

Planned start: 1 January 2020

Total budget: €20,233,098.75 (EU Contribution:€17,970,258.75)

Consortium of 46 partners, 116 associated and support partners

Duration 48 months

10 Living Labs: Kathmandu, Manila/Pasig, Hanoi, Montevideo, Quito, Kigali, Dar es Salam, Hamburg, Madrid and Nanjing (self-funded)

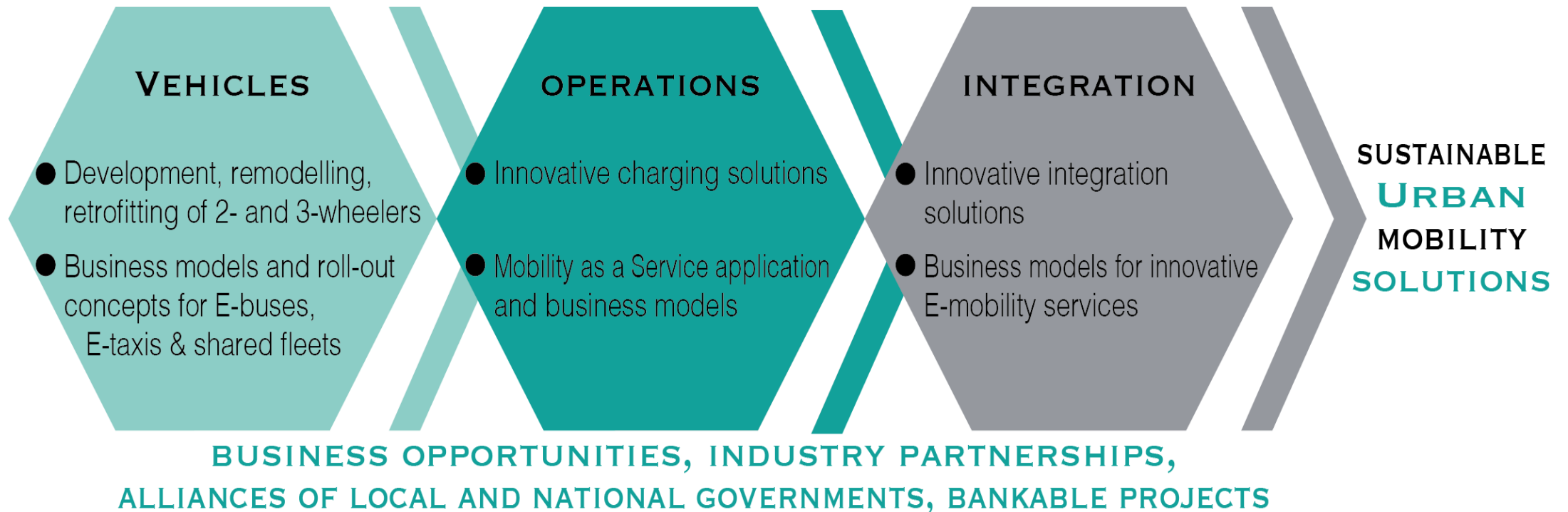


Joint Global e-Mobility Platform

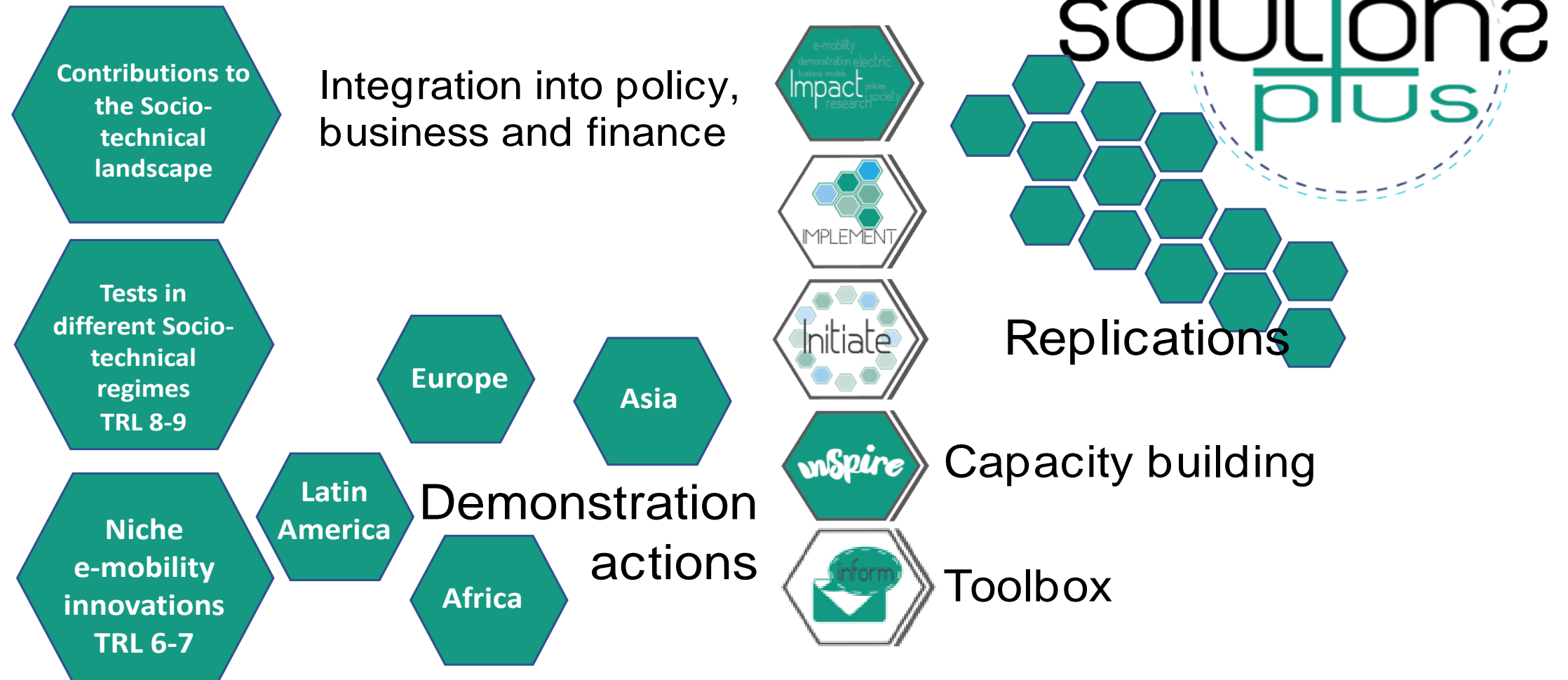


Overall objective of SOLUTIONSplus

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



SOLUTIONSplus concept and methodological framework



SOLUTIONSplus concept: five-pillar conceptual approach



	<p>A range of tools, methods and guides and adapts them for a comprehensive toolbox on e-mobility solutions across all modes.</p>
	<p>Exchange among city officials, transport operators and entrepreneurs to share their experiences on specific technologies, policy and infrastructure measures, implementation processes, operations, business and financing solutions.</p>
	<p>Initiate partnerships among local and European companies and facilitates the joint development of business models, building on sound assessments of economic, social and environmental costs and benefits.</p>
	<p>Support cities in implementing innovative, sustainable e-mobility solutions, which include technical feasibility, cost-benefit assessments for up-scaling institutional and governance analysis, organisational aspects, stakeholder dialogue, and development of finance options.</p>
	<p>Help integrate the innovations initiated and tested by the project into local, national and global policy, finance and business decision making processes.</p>

SOLUTIONSplus Method: based on three core elements

- I. Methods and tools that support capacity building and implementation of e-mobility;
- II. Demonstrations, initially to validate the tools and then to prove their feasibility and reliability in different context;
- III. A structured replication process to boost the impact of the project.















SOLUTIONSplus ambition



- ❑ Innovative business models, vehicles, services, policies and operations that help boosting all types of electric mobility
- ❑ Adaptation to a specific context which requires a real rethinking or redesign of the processes or products.
- ❑ International partnerships to replicate innovation and support upscaling



Business models and associated tools

VEHICLES		OPERATION		INTEGRATION	
	Electric 2- and 3-wheelers		Innovative charging solutions of high-capacity bus-systems		Mobility as a Service (MaaS) solutions
	Electric buses, e-BRT, mini-buses, taxis		Use of existing systems and grids for the charging of electric vehicles		Eco-routing
	Retro-fitting Electric (mini)-buses		Seamless Charging		Network Planning and Management
			(Smart) charging and charging services		Fleet Bundling
					Inner city & last Mile E-delivery shared services





Policy advice





- Necessary incentives for the electrification of public transport
- Regulations for zero emissions zones



Planned actions

- Introduction of e-mini buses, e-bikes (for the bike sharing system) and e-tuk-tuks for passengers (**e-mobility hub**)
- E-cargo bikes for last mile e-delivery services
- Cost-effective multi-standard DC charging points for 2- and 3-wheelers

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	60 E-bikes for a sharing system	10 DC charging points for E-2-wheelers	Passenger and freight integration	City: Quito Municipio
	30 E-cargo bikes	10 DC charging points for E-cargo bike	SOL+ MaaS App	Industry: Valeo, Volvo;
	10 E-Buses		Charging integration for with last-mile vehicles	Implementation: WI, SIMUS, CMM, Finance: CAF, KfW
	20 E-3-Wheelers	DC charging points (10) for E-3-wheelers		



Policy advice




- Formulation of long-term bus fleet electrification plan
- Formulation of necessary regulations and business models for private bus and taxi operators



Planned actions

- Construction of a high-capacity bus depot to charge the existing and planned e-buses overnight
- Integration of smart charging solutions compliant with CCS and OCPP standards

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	10 E-taxi	Multi-standard 50 kw fast charging for E-taxi	Bus and taxi service integration	City: Montevideo Intendencia
	Business model for e-BRT systems	Fast-charging, Charging standardisation	SOL+ MaaS App	Industry: ABB, Volvo, IDIADA
	10 E-Buses	Fast-charging	Charging operations management	Implementation: CMM, SIMUS, Finance: CAF

Madrid, Spain



Policy advice




- Formulation of long-term bus fleet electrification plan
- Test bus charging technologies and software



Planned actions

- Installation of 2 (two) inverted pantographs
- Development of a software to monitor and control the power network for charging, maximizing bus availability and operational efficiency
- Installation of multi-standard DC fast-charging points

Demonstration actions and support teams

Vehicles		Operation	Integration	Partners
	5 E-taxi		Open source software to monitor and control the power network	City: Madrid (EMT) Industry: ABB, CRF;
	10 E-bus	2 Inverted pantographs for E-bus	SOL+ MaaS App	Implementation: UITP, Polis, IDIADA, ZLC
	E-car sharing		Business model for E-car sharing	

Hamburg, Germany



Image: Martin Kleppe/Flickr/CC BY-NC 2.0

Policy advice

- Increase transport connectivity in the periphery towards high capacity public transport system
- Make car-drivers switch to use public transport




Planned actions

- Shared e-2-wheelers (e-scooter) system add test the operational model, incentives to onboard user and a pricing scheme
- Introduce charging solutions (T-Systems), smart services (MaaS App)
- Business models complementing other ride share systems

Hamburg, Germany

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	50 E-scooters	Charging solutions, Business model for PT-owned e-scooter sharing systems	Last-mile services in the peri-urban area SOL+ MaaS App	City: Hochbahn Industry: T-Systems; Implementation: UITP, WI, ERTICO

Pasig, Philippines

The approach/ innovative aspect

- E-cargo bikes (e-2/3 wheelers) for urban delivery transport services in partnership with Philippine Postal Corporation (PHLPost)
- Set-up of public AC level charging stations
- Develop business model in coordination with government financial institutions.



Activities




- Technical assistance to develop necessary local ordinances
- Capacity building/ training
- Development of smart services and GPS and controlling center (MaaS App)

Fact and figures

- Net importer of fossil fuel
- National Policies favouring EVs
- Pasig city implemented several sustainable transport initiatives
- Bicycle sharing system exist

Pasig, Philippines

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	50 E-cargo bikes	20 AC charging stations, Battery swapping station	GPS and control center Smart services, SOL+ MaaS App	City: Pasig city government/Metro Manila
	50 E-minibuses	Integrated ticketing, TSY charging system	Eco-drive monitoring tool ETSI ISO	Industry: T-Systems, Valeo
	20 E-scooter	Sharing system development	Last mile service, SOL+ MaaS app	Implementation: CAA, FIER, ZLC Finance: ADB

The approach/ innovative aspect

- Shared e-scooter system as last-mile connectivity and docking-cum-charging stations at BRT stations and the forthcoming metro rail
- Contactless payment
- Fast charging solutions for e-mini-buses
- Battery swapping technologies, telecom and power distribution boxes to accommodate vehicle charging



Activities



- Smart services, fleet bundling, e-scooter GPS positioning that support eco-routing

Fact and figures

- Hanoi public transportation share 10%, increase to 30% by 2020
- Ban fossil fuel motorbike by 2030

Hanoi, Vietnam

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	20 E-minibuses	10 docking-cum-charging -Smart battery swapping -Fast charging	Smart services (apps, smart card)	City: Hanoi Peoples Committee Industry: ABB, Valeo
	200 E-scooters at 10 stations	Business model on E-scooters	GPS positioning, Eco-routing, SOL+ MaaS App	Implementation: CAA, UTT, UNEP Finance: ADB

Kathmandu, Nepal

The approach/ innovative aspect

- Demonstrate different EVs to enhance public transport, charging solutions and services
- Convert 2 diesel bus to e-bus
- Introduce new and remodelled e-3 wheelers, e-scooters, e-minibus for last mile solutions
- E-3 wheelers business model - battery leasing/pay-per-use model
- E-scooters- GPS positioning, contactless payments and docking stations
- Integrate renewables in charging system



Image: Andrew/Flickr/CC BY-ND 2.0

Fact and figures

- No fuel reserves
- Major part of electricity- hydropower
- National policies favouring EVs
- Poor charging infrastructure




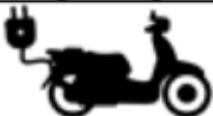
Activities

- Raise awareness on EVs
- Remodel e-3wheelers- assemble vehicle parts locally
- Smart card and services for fleet management



Image: 123_456/Flickr/CC BY-NC-ND 2.0

Demonstration actions and support teams

	Vehicles	Operation	Integration	Partners
	5 E-minibuses	Fast charging for E-bus and E-minibus	Smart services (apps, smart card)	City: Sajha Yatayat Co-operative Ltd. (Public bus system)
	30 new and 50 re-modelled e-3-wheelers	Li-ion battery swapping	Fleet management	Industry: Valeo, IDIADA, Volvo
	Convert 2 diesel bus to E-bus	Business model for retrofitting E-buses	Sol+ MaaS App	Implementation: WI, UN-H, VTT, RC
	20 E-scooters	2 docking-cum charging for E-scooter	Business model on energy integration (Dynniq)	Finance: ADB

Dar Es Salaam, Tanzania

The approach/ innovative aspect

- E-3-wheeler feeder and distribution services in DART stations
- Business models for vehicle ownership, rental, and maintenance
- Use telecom and power distribution boxes for vehicle charging



Activities

- Data collection using geo-localization-devices
- MaaS-smartphone application
- Include local stakeholders – to increase acceptance
- Capacity building on vehicle maintenance

Fact and figures

- City is in nascent phase for EVs and no electric vehicles exist to-date
- A high share of renewable energies through hydro-power
- Revised TBS supporting EVs

Demonstration actions and support teams



Vehicles

50 imported E-3-wheeler
10 prototypes (incl. business model)

Operation

Smart battery swapping charging at hubs

Integration

Integration of e-3-wheelers at 5 BRT stations,
SOL+ MaaS App

Partners

City: Dar Rapid Transit Agency (DART)

Industry: Valeo,

Implementation: DLR, ITDP, UNEP
Finance: AfDB, AFD

Kigali, Rwanda

The approach/ innovative aspect

- Introduce e-bus and develop a business model suitable for the city's current bus transport administration
- E-moto (new and remodeled) with swap and charge batteries (Lithium-ion)
- E-bike sharing with solar power energy to provide seamless charging service
- Support last mile connectivity



Image: ITDP Africa/Flickr/CC BY-NC 2.0

Fact and figures

- Electricity mix with 52% hydro
- Rwanda vision 2020 – support clean vehicles



Activities

- Involve local investors such as Ampersand for E-Moto taxi
- Ex-post evaluation: EV feasibility, charging infrastructure utilisation, emission reduction
- Smart services - eco-routing



Image: ITDP Africa/Flickr/CC BY-NC 2.0

Demonstration actions and support teams

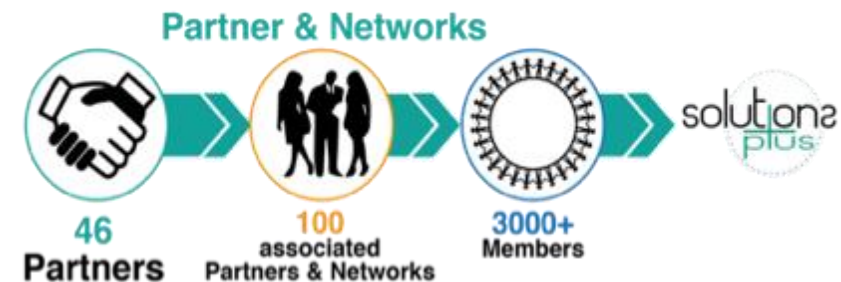
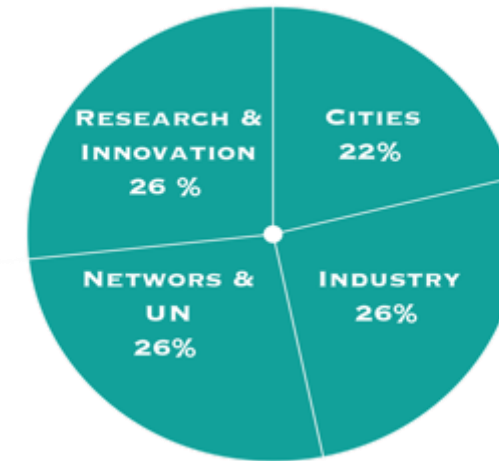
	Vehicles	Operation	Integration	Partners
	20 E-moto taxi: 10 new and 10 remodelled local-EU prototypes	E-moto taxi business model	Physical and fare integration of e-3-wheelers at 5 BRT stations SOL+ MaaS App	City: Kigali city Industry: Valeo, Piaggio
	100 local-EU E-bikes	Charging stations, sharing model	Smart services, Eco-routing, SOL+ MaaS App	Implementation: UN-H, ITDP, UNEP Finance: AfDB

SOLUTIONSplus consortium

SOLUTIONSplus brings together highly committed cities, industry, research, implementing organisations and finance partners.

Through numerous synergistic projects, networks and a strong technical experience, the project will be able to deliver its highly ambitious goals.

SOLUTIONSPLUS CONSORTIUM



Contact

Urban Electric Mobility Initiative
UEMI Secretariat
Schwedter Str. 225, 10435 Berlin
<http://www.uemi.net>

UN-Habitat
Urban Basic Services Branch
<http://unhabitat.org>

Wuppertal Institute for Climate, Environment and Energy
Mobility and International Cooperation
Neue Promenade 6, 10178 Berlin
www.wupperinst.org

oliver.lah@uemi.net
+49 (0)30 2887458-16

