Hanoi, Vietnam

SOLUTIONSPLUS I LIVING LABS UPDATE

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PROJECT PARTNERS

ABOUT

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TITLE

SOLUTIONSplus Living Labs Update: Hanoi, Vietnam

FINANCIAL PARTNERS

SOLUTIONSplus

DISCLAIMER

LAYOUT

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PICTURES

All the pictures are provided by the SOL+ partners

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HANOI, VIETNAM

The SolutionsPlus project aimed to accelerate the transition to sustainable urban mobility through innovative and integrated e-mobility solutions. To this end, the consortium partners created Living Labs at city level to test different types of innovative and integrated e-mobility solutions. Living Labs reach beyond the implementation of technological innovations and also include elements of information, inspiration and initiation to achieve a stronger and sustainable impact of the project activities.

INFORM

Boost capabilities of local and national authorities, public transport operators and entrepreneurs about innovative urban e-mobility solutions across various transport modes by **informing them about tools** to plan, assess, implement and operate e-mobility solutions.

INSPIRE

Foster the take-up of e-mobility innovations by businesses, start-ups, local and national governments and transport operators by **inspiring** officials, operators, industry and businesses through peer-to-peer exchange on innovative e-mobility products and services.

INITIATE

Strengthen policy and business **collaboration** by **initiating** partnerships between local and national governments and local and European entrepreneurs and supporting the development of new e-mobility models business implementation plans.

IMPLEMENT

Create reference models for e-mobility innovation by **implementing** demonstration actions to test innovative e-mobility technologies and services, foster their **replication** and ensure their long-term **sustainability**.

IMPACT

Contribute to global **sustainability and climate goals** by boosting the **impact** of this project through the integration of the innovative concepts into policy, funding, operation, research and business practice.

With a population of approximately 5.5 million, the capital city of Hanoi ranks second in importance after Ho Chi Minh City. However, when considering the capital region, which includes the surrounding cities, the total population of around 20 million. Confronting challenges such as congestion, flooding, and environmental pollution, Hanoi is currently undergoing a significant transformation process. This transformation is accelerated by strategic planning initiatives aimed at accommodating rapid population growth and driving dynamic economic expansion.

In terms of transportation, Hanoi's bus network comprises 127 routes, covering 34 districts and serving 78% of communities, 93% of hospitals, 42% of schools, 86% of industrial zones, and 96% of new urban areas. In 2019, the total public passenger transport volume reached 948.5 million passengers, with buses accounting for 510.5 million, meeting 17.03% of travel needs—a 3.2% increase from 2017. The urban railway system and BRT bus contribute positively, reducing traffic congestion. However, with 5.3 million gasoline motorcycles daily, increasing at 10% yearly, and a projected 7.5 million

motorcycles and 1 million cars by 2030, air pollution is a significant concern. Urgent deployment of cleaner transportation, particularly e-mobility solutions, is crucial for improving air quality and ensuring sustainable development in the city.

DEMONSTRATION ACTION IN HANOI

Hanoi's demonstration project focused on exploiting the potential of shared electric two wheelers to serve as first- and last mile connection to the currently operating Bus Rapid Transit (BRT) system and the upcoming metro rail through facilitating last mile connectivity to these services. The shared vehicle system for last-mile connectivity is piloted in two major locations: at the BRT station and the AEON shopping mall, within 2 kilometers. The project seeks to increase public transport ridership and efficiency while reducing greenhouse gas emissions and improving air quality. The initial phase involves testing a of 50 shared electric moped-scooters.

INFORM

One key stakeholder group for sustainable urban mobility are national and local governments. Together with UNDP, the SOLUTIONSplus team organised a "National Training on E-Mobility" in Hanoi City. The objective was to support the Vietnamese government in integrating e-mobility into the city development plan and to implement mitigation measures from the transport sector noted in Vietnam's Nationally Determined Contributions (NDC). Topics of the training comprised policy instruments to promote e-mobility, technical infrastructure including battery swapping systems, and the integration of shared mobility offers with collective transport systems.

Hanoi stakeholders benefited from the knowledge products related to the demonstration activities and e-mobility in a local context, such as shared mobility systems, charging infrastructure, and vehicle integration services, that were incorporated in the SOLUTIONS- plus online toolbox. Stakeholders from Hanoi joined the Asian regional and Hanoi-specific trainings on e-mobility over the entire project lifetime.

INSPIRE

In May 2021, a first regional training for Asian cities was conducted, focusing on the contribution of e-mobility and integrated urban mobility planning to achieving the SDGs in Asian cities. Due to travel restrictions, the training was held online. The subsequent, 2nd Asia Regional training in October 2021 consisted of 3 modules:
Module 1 provided introductory knowledge about the e-mobility ecosystem and synergies/policy integration with other local concerns, including energy efficiency and conservation, air quality, and public health. Module 2 dived into policies and regulations to promote e-mobility, and Module 3 focused on setting up charging infrastructure, including different kinds of charging, standards and specifications, and operation models.
A Hanoi City training was held in November 2022 as a 2-days event in Vietnamese language. Topic areas covered the planning and implementation of low emission zones, the implementation, operation, and maintenance of electric vehicles, and planning for electric vehicle infrastructure. Contributions focused on the role of national and local administrations in promoting e-vehicles; on the opportunities and barriers of infrastructure development in Vietnam and Hanoi city; on identifying the key stakeholders of the e-vehicle ecosystem; on technical standards for vehicles and charging infrastructure; and on financing mechanisms for the replacement of ICE vehicles with electric counterparts. Finally, experts provided insights into the development emission reduction scenarios and assessments.
In November 2022, a 2-day national training on e-mobility was organised in Hanoi jointly with UNDP. Various national and inter- national experts discussed local and international experiences on integrating e-mobility into planning, technical details on electric vehicles and charging infrastructure. Representatives from local government, academia and private sectors actively participated in the training.
The SOLUTIONSplus team organised an international training on advancing electric two-wheeler initiatives in Hanoi in April 2024. The workshop focused on shared electric vehicles in Hanoi: its current status, needs, barriers and opportunities; the

legal framework, institutions and operating models; the integration of Mobility-as-a-Service into the collective transport system; on gender mainstreaming in the transition to electric transportation in Vietnam; and on a setting up a Monitoring Reporting and Verification (MRV) framework for electric two-wheelers. The set of participants comprised representatives of the national government, representatives of the Hanoi City People's Committee and administrative departments (Transport, Infrastructure, Environment, Industry and Trade, Finance), national and international experts and scientists, UN institutions, and development cooperation.

Hanoi stakeholders benefitted from several peer-to-peer exchanges and trainings on E-buses (organised by UITP in Kuala Lumpur, Malaysia), on electric two- and three-wheelers (organised by UNEP in Bangkok, Thailand), on e-mobility session at the Better Air Quality conference (organized by CAA in Manila, the Philippines), and on Decarbonising transport in India and the region, (organised by ITF and WI in 2024). In the context of SOLUTIONSplus, Hanoi stakeholders participated in site-visits to Hamburger Hochbahn AG (2022), EMT Madrid (2023) and Kuala Lumpur E-BRT (2023), showcasing e-buses and other e-mobility options.

INITIATE

A local start-up, QiQ Elevate Mobility, was initially charged with implementing and operating the shared e2-wheeler system in Hanoi. This included the development of an app for booking and returning vehicles and for monitoring battery status.

However, as QiQ was unable to fulfil its commitment to deliver the V-Share software prior to the deployment of the pilot, the team relied on Google Forms and UTT's IOT as an alternative. This alternative enables users with to register for an account, borrow and return vehicles, as well as supporting the operating, monitoring process of the system and store user information.

The German start-up Betteries (selected through the EU-Innovators call) provided a mobile charging unit, which was installed at a docking station. The BetterGen system uses second life batteries, which can be deployed as vehicle battery or provide intermittent battery storage capacity for vehicle charging hubs. The local SOLUTIONSplus partner, University of Transport Technology (UTT), is in close collaboration with UNEP for implementing a similar shared e-2-wheeler system in Hanoi and for expanding the services.

IMPLEMENT

The Hanoi demonstration activity connects the AEON shopping mall with a BRT station in a distance of 2 kms. The shared e-mobility system consists of 50 electric mopeds and was launched n November 2022. The main activities carried out in Hanoi comprised:

E-moped scooters for last mile connectivity: Fifty units of e-mopeds (Vinfast Ludo) were procured and operated to provide last mile services. In order to gain the permission to operate a shared e-mobility system, UTT carried out several meetings with local authorities. An approval from Hanoi People's Committee has been obtained. A dedicated E-2 wheelers parking hub has been set up. To ensure drivers' safety, helmets are provided in each e-mopeds and insurance documents (vehicle owner's liability insurance and accident insurance for passengers) were prepared. A trial operation of the e-moped took place prior to demo launch.

App and IoT: During the six months pilot period, the team utilised Google Forms and UTT's IOT. This enabled users to register for an account, and to to borrow and return vehicle. Operators used the software to monitor process and to store user information. The data on the pilot period was used to understand user flows, their demand and operation pattern. The Battery Management System (BMS) controls in real time parameters such as temperature and voltage and switches off the system if some of the cells exceeds the values pre-defined as safety limits. The data collection on the charging unit performance was carried out.

BetterGen charging: The BetterGen charging unit from Betteries was installed at Aeon mall. The charging unit was with a 220V, 50Hz power source (the AC Dock has 3 BetterPacks installed). Outside the operating hours (from 9pm to 9am) the e-scooters and the charging system are locked.

Master plan for shared two-wheeler stations: To support Hanoi City in developing and scaling up shared e-two wheeler systems, UTT developed a master plan and a detailed study of shared two-wheeler stations in 10 districts in Hanoi.

IMPACT

The impact assessment concluded that shared e-mopeds can contribute to reducing emissions of greenhouse gases and air pollutants. SOLUTIONSplus organised a workshop on 28th November 2022 to carry out the impact assessment of the shared e-2 wheelers demonstration actions in Hanoi. Ten key local stakeholders joined the workshop and discussed the priority indicators. Along with this, a scale-up concept note is being developed to improve ridership and to expand the services to another route. A policy paper on e-two-wheeler sharing systems in Hanoi is currently being prepared, considering barriers, opportunities and policy recommendations for a successful planning process.

REPLICABILITY

Along with the impact assessment, SOLUTIONSplus developed a scale-up concept to increase ridership and to expand the services to additional routes. A policy paper on e-two-wheeler sharing systems in Hanoi is currently being prepared, considering barriers, opportunities and policy recommendations for a successful planning process.

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