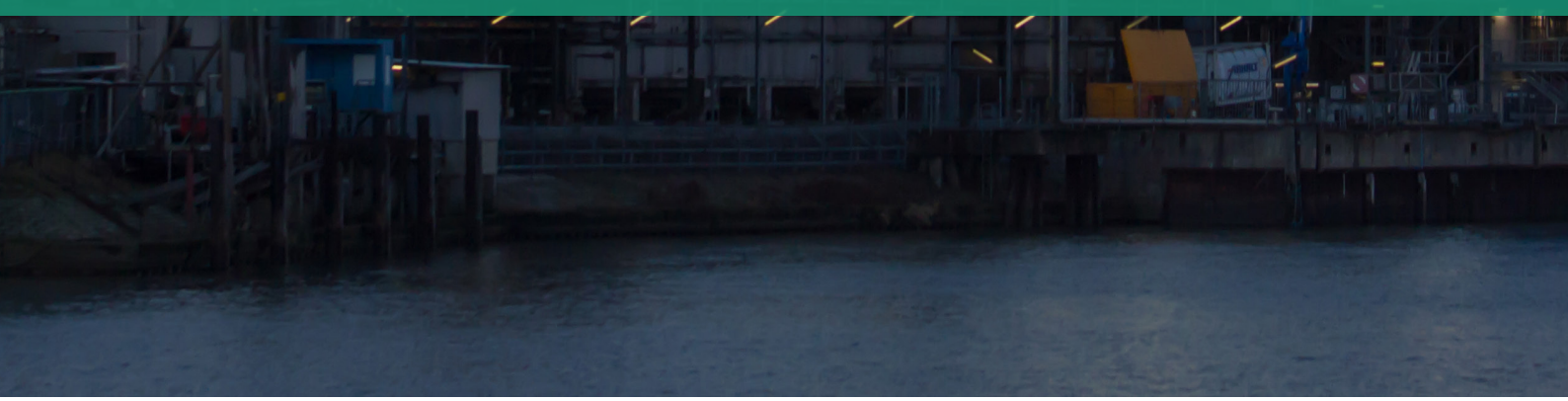
Hamburg, Germany

SOLUTIONSPLUS I LIVING LABS UPDATE



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PROJECT PARTNERS

ABOUT

This is a summary of the paper, submitted to the journal 'Sustainable Earth Review' developed under SOLUTIONSplus project. Currently the paper is under peer review.

TITLE

Capacity and market potential for local production and distribution of electric two-wheelers in Southeast Asia, focused on Thailand, Indonesia, and Vietnam

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DISCLAIMER

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LAYOUT

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PICTURES

All the pictures are provided by the ITDP

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HAMBURG, GERMANY

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**.

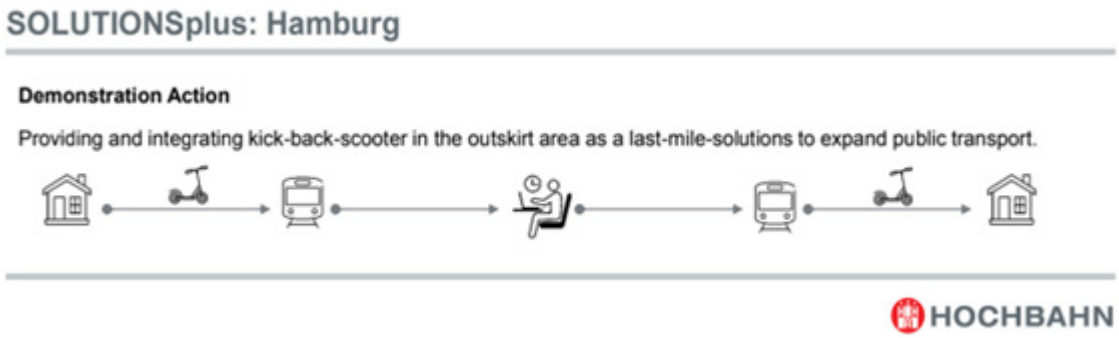
IMPACT

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 over 1.8 million, Hamburg is the second largest city in Germany and the eighth largest in the European Union. The city's metropolitan region is home to more than five million people. The 'Free and Hanseatic City of Hamburg' is one of the 16 federal states of Germany. That makes Hamburg both a federal state and a city. Internally, it consists of seven boroughs which are subdivided into 104 districts.
Hamburg's total CO2 emissions (excluding international aviation) fell from around 20.5 t CO2 in 1990 to 13.8 Mt in 2021, representing a 32.6% decrease during this period. Per capita CO2 emissions amounted to ca. 7.8t CO2, which is below the German average of 9.1t (in 2021). Hamburg's Climate Protection Law targets a 70% reduction in GHG emissions by 2030 compared to 1990 levels. It also aims to achieve net climate neutrality (-98%) by 2045. The Climate Plan outlines sectoral emission reduction targets, with a pathway for the mobility sector from 5.3 million tonnes of CO2 in 1990 to 2.5 million tonnes in 2030 and 6,000 tonnes in 2045. This represents a 25% reduction between 2020 and 2030.

DEMONSTRATION ACTION IN HAMBURG

The Hamburg demonstration project aimed at integrating new, privately operated technological mobility solutions into the existing collective public transport system. The objective of the demonstration activity was to encourage the shift from private car to a combination of public transport and shared micro-vehicles. Hamburger Hochbahn AG, a partner of SOLUTIONSplus, provided seed funding to a tendered subcontractor and repurposed car parking spaces into return zones for e-kick scooters. The modality was a combination of free-floating vehicles with defined return zones in the proximity of subway stations in Hamburg's suburbs. In parallel, shared e-scooters had been integrated into the public transport provider's mobility app.



INFORM

The Hamburg demonstration action **provided tools and different types of knowledge products** for the SOLUTIONSplus online toolbox, addressing the knowledge gaps identified in the course of the project. Moreover, a site visit to an e-bus depot in Hamburg was arranged in the context of the 2022 SOLUTIONSplus General Assembly. Examples of open-access knowledge products created and published include presentations on public transport and MaaS in Hamburg, the e-scooter project, and the integration of shared e-mobility into the transport system.

INSPIRE

Back-to-back with the 2022 SOLUTIONSplus General Assembly, 30 participants visited a e-bus depot at Hamburger Hochbahn, and to test the e-scooters in the demonstration areas. During the guided tour, participants from Asian, South American, African, and European cities were introduced into requirements and infrastructure to upgrade a depot for diesel buses into an e-bus depot. After that, participants were transferred to one public transport station in the demonstration area. In order to gain practical experience with shared micro-vehicles, participants took the opportunity to transfer to a second public transport station in the demonstration area on e-kick scooters.
Capacity-building activities comprised a comprehensive online workshop on the 5th & 6th of May 2022 to exchange experiences on shared e-mobility. The course was jointly organised by SOLUTIONSplus and MOBI-MIX. Topics covered the main challenges cities are facing with regards to new and shared e-mobility. Participants considered approaches to regulate new mobility offers (i.e. number of operators, providing parking); the integration of new mobility services into the collective transport system; and public-private cooperation. The 2-days online event gathered European frontrunners in the field of shared micro-mobility, including 13 cities and local authorities and several public transport and micro-mobility operators.
Regarding the electrification of Hamburg's taxi fleet, T-Systems and Polis organized the City Dialogue which took place on September 15th, 2021. The event gathered representatives from the city of Hamburg, the Taxi Association, several German cities and SOLUTIONSplus partners (UMEI, Wuppertal Institute, Polis) to discuss Hamburg's initiative to electrifying the taxi fleet. The session was organised in under the City Dialogues Initiative promoted by the World Economic Forum Zero Emission Urban Fleets and the SOLUTIONSPlus project.

INITIATE

Based on a public tender process, HOCHBAHN selected TIER mobility as provider and operator of shared e-kick-scooters TIER received a seed funding for implementing the scooters in the in the two demonstration areas in Lokstedt and Langenhorn. Already during the demonstration project, TIER mobility increased the number of vehicles in the area from the initially agreed 100 to up to 400. The operator also decided to continue its service even after the demonstration period ended. Additionally, several other providers of shared e-micro-vehicles followed and are currently active in the area.

The **Zukunftstaxi project** is an initiative of the city of Hamburg and the taxi sector. It aims at electrifying the the City's taxi fleet. The project is accompanied by a bi-weekly meeting with taxi owners and fleet operators. SOLUTIONSplus partner T-Systems fosters the replication in other cities and regions to ensure the long-term sustainability.

IMPLEMENT

The first e-kick-scooters were introduced in the demonstration areas of Lokstedt and Langenhorn in June 2021. HOCHBAHN designating dedicated parking zones at Metro stations. Throughout the testing period, spanning from June 2021 to the end of August 2022, over 160,000 business trips were completed, with an average distance of 1.7 km. This robust usage affirms the high demand for the service. A user survey that was carried out during the demonstration activity found that one third of all scooter rides were part of intermodal travel chains. Up to 400 e-scooters were deployed in the demonstration areas, surpassing the initially planned fleet of 200 vehicles. TIER Mobility has expressed its commitment to continue providing service in the demonstration areas beyond the project's scheduled duration. Notably, other e-scooter providers have followed, expanding their service areas to include the demonstration sites.

T-Systems initiated and coordinated the **electrification of the taxi fleet together with the city of Hamburg.** The demonstration project shows the potential to reuse the existing telecommunication infrastructure and the electricity distribution network of a telecom operator for the electrification of car fleets. After 18 months of the project the e-taxis fleet in Hamburg increased from 2 to 400. An emission reduction of 3000tons per year could be reached. **ComfortCharge installed the charging infrastructure** at the premises of Deutsche Telekom. T-Systems brought together all stakeholders, including car manufactures, taxi operators, taxi fleet management software companies, advertising companies and the German taxi association.

IMPACT

In the context of the e-scooter demonstration project, comprehensive data was collected to inform potential scale-up initiatives. Vehicle data and a user survey unveiled seasonal fluctuations, with February registering the fewest trips and August recording the highest number of trips. The peak demand occurred during the morning and late afternoon, indicating that e-scooters were predominantly used for commuting rather than leisure activities. The start and end points of trips were concentrated in parking zones around metro stations. The user survey corroborated that e-scooters were integrated into intermodal travel chains, serving as the first and last mile connections to public transport stations.

Simultaneously, the e-taxi project and charging activities in Hamburg incorporated the integration of a Low Carbon Mobility Monitoring (LCMM) tool to measure the fuel or electricity consumption and emissions of taxis. Over the first 18 months of the Zukunftstaxi project, it was demonstrated that eco-driving practices could result in savings of 10-15% in fuel consumption or electricity.

Ultimately, this approach aims to increase the number of residents with access to different kinds of mobility services, achieve the most effective mobility mix in the city, and support Hamburg in reaching its climate protection goals.

REPLICABILITY

More and more cities worldwide have begun regulating the provision and use of shared e-micro-vehicles. This includes parking regulations, but also the availability of shared vehicles in the entire urban area and the integration with collective transport systems. The demonstration activity is in line with this trend and can potentially be replicated, or inform similar approaches, in other cities.

The demonstration project tested the conditions under which last-mile mobility solutions, such as e-scooters, can be successfully linked to public transport in urban outskirts. The demonstration activity helped Hochbahn AG and the city to gather

practical experiences with this type of vehicle and driving technology. The city of Hamburg plans to replicate similar facilities at additional metro and subway stations, both within and outside the city centre. A '100 parking spaces for e-kick-scooters' programme is currently being developed as part of the hvv switch points (mobility hubs). The aim is to establish a strategic network of parking zones in combination with surrounding no-parking areas to prevent inappropriate parking of e-kick-scooters. In the city centre, the focus is on organising parking to increase the acceptance of micro-mobility services, while in the outer districts, the focus is on improving first/last mile mobility and providing additional mobility options.

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