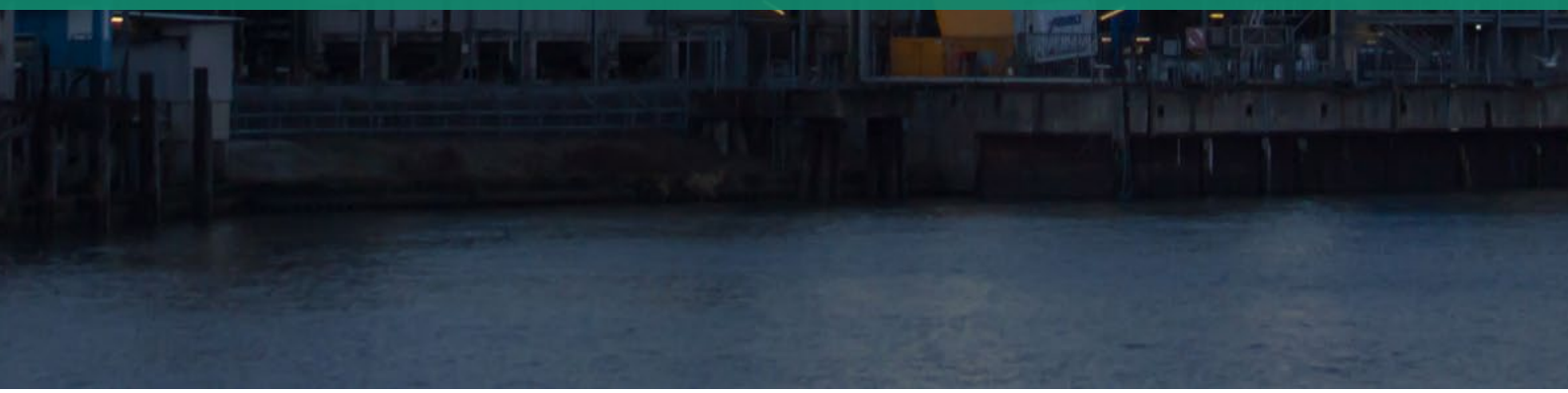
Hamburg / Germany

SOLUTIONSPLUS I SCALE-UP CONCEPT NOTE



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PROJECT PARTNERS

ABOUT

This paper has been prepared for the project SOLUTIONSplus to enhance the benefits of using e-kick-scooters in conjunction with public transport, particularly in the outer districts of Hamburg, while minimising any adverse effects.

TITLE

Solutionsplus Scale-Up Concept Note: Hamburg

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LAYOUT

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PICTURES

All the pictures are provided by the SOL+ partners

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Scale-Up Concept Note

100 additional parking spaces for e-kick-scooters in Hamburg

Hamburg / Germany

1. Background

With the demonstration project, the SOLUTIONSplus and Hamburg's public transport operator, HOCHBAHN, wanted to assess the potential of intermodal trips – as combination of shared e-micro-vehicles and public transport – to reduce private motorised trips in urban outskirts; and whether such integrated mobility offers can increase the attractiveness of the public transport system compared to private car use. The e-kick-scooters were supposed to be used as a feeder service to the conventional public transport system.

Two locations, one in the Lokstedt district and one in the Langenhorn district, were selected as demonstration sites. Both areas have an average population density, are located outside the city centre, and they have a combined population of 78,500 inhabitants. The selection of the locations was based on criteria such as the availability of complementary mobility applications or the insufficient connection to the public transport network. These areas were also supposed to be located outside the existing service area of e-scooter providers.

Previous studies on the users of e-kick-scooters found that the average user is in the age group between 20 and 45 years. Those findings had been confirmed during the demonstration activity. In the selected areas, this group should therefore be strongly represented in the sociodemographic distribution of the population.

A tender for seed-funding for the provision of e-kick-scooters in two suburbs of Hamburg had been launched. The successful applicant initially placed 100 e-kick-scooters in both service areas, and subsequently extended the fleet to a peak of 460 vehicles in summer 2022. HOCHBAHN provided dedicated parking spaces ('return zones') at four public transport stations. In addition, the regional public transport agency Hamburger Verkehrsverbund (HVV) integrated shared vehicles system into the existing public transport application (hvv switch) and incentives to promote intermodal use of scooters, such as reimbursement of basic fees when the scooter is parked in a dedicated return zone at one of the public transport stations were provided to the users.

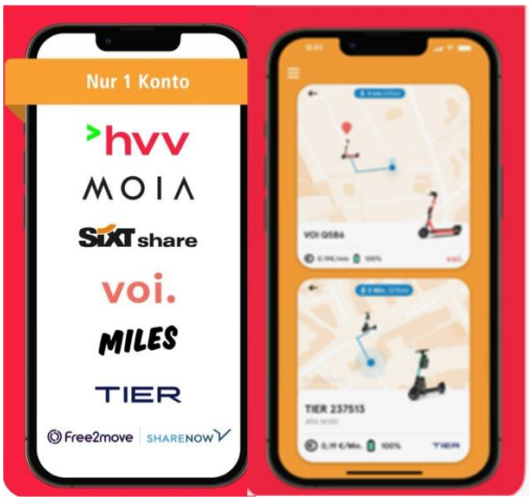

Figure 1 Integration of shared mobility services into the hvv switch app. Source: https://www.hvv-switch.de/

Already soon after the start of the demonstration activity, other providers of shared e-kick-scooters extended their service areas and started offering their service in the demonstration areas, and the initially selected provider decided to continue its vehicle offer in the Lokstedt and Langenhorn districts.

The demonstration project results (D 1.6) indicate that offering micromobility at public transport stops can lead to a limited shift from car trips to intermodal journeys. It is crucial to note that public transport benefits from an increase in the catchment area of public transport stops. It can be expected that the positive effects will be amplified by extending the service to more public transport stations as part of the scale-up concept. Experience has demonstrated that greater visibility and availability of services results in increased usage. This is especially crucial in the outer districts where e-kick-scooters are not yet prevalent. However, when expanding the use of e-kick-scooters, it is important to consider and minimize any potential negative effects. These may include the negative reputation that e-kick-scooters have among citizens due to issues such as improperly parked vehicles on the streets, illegal use on pavements, obstruction of pedestrians and cyclists, or an excessive number of vehicles in the city centre. Conflicts can arise between e-kick-scooter riders and cyclists on narrow cycle paths due to their different speed levels. In addition, e-kick-scooters have negative environmental impacts due to:

- the predominant replacement of journeys that were previously made on foot or by bike.
- the short life cycle of vehicles and batteries, as well as the poor environmental balance of their production process.
- operational journeys, such as moving the vehicles or replacing batteries, that cause additional car trips - often made with combustion vehicles.

Earlier assessments of the impact of shared micro-vehicles usually consider point-to-point trips. Findings from the demonstration project indicate that most micro-vehicle trips cover up to 2km distance and take 4-6 minutes. That means that point-to-point trips will not replace typical car trips – as those are usually longer – and tend to substitute walking and cycling. Accordingly, assessments assign only minor added value to shared vehicles, or even increased negative impacts (Deutsche Energie-Agentur 2021; EY 2020; Hollingsworth, Copeland, and Johnson 2019; International Transport Forum 2021; Severengiz, Schelte, and Bracke 2021). The demonstration activity, however, aims at shifting car trips to intermodal travel and thus uses a broader scope.

Finally, unlike other cities, which have begun regulating the provision and use of shared e-micro-vehicles, Hamburg still relies on voluntary agreements with e-mobility providers. Any expansion of the demonstration activity should be accompanied by efforts to better regulate new mobility options.

2. About the Project

2.1. Goal

The scale-up project aims to create 100 additional parking zones for e-kick-scooters at major public transport stations throughout the city, with a particular focus on improving first/last mile mobility in the outer districts of Hamburg. Implementing parking and return zones at major public transport stations should strengthen public transport as a whole and encourage a modal shift from private car use to intermodal trips.

A strategic approach has several dimensions:

- Privately operated e-kick scooters are integrated into the public transport system, for example via the HVV's mobility app, to facilitate intermodal trips.
- In the inner city, parking and using shared e-micro-vehicles is regulated to avoid oversupply, to reduce vandalism, and to minimise inconvenience to pedestrians and cyclists.
- In the outer city, shared vehicles are made available as first- and last-mile connection to public transport.
- Car use in the city centre is discouraged, for example through increased parking fees, re-allocation of urban and road space from cars to active mobility, or access restrictions.

The parking of e-kick-scooters will be organised and regulated in a way that parked e-kick-scooters do not obstruct other road users significantly, which shall increase the acceptance of micro-mobility services and improve the reputation of e-kick-scooters. This comprises the definition of dedicated parking zones in combination with surrounding no-parking areas. Centralised parking areas for e-kick-scooters at public transport stations will increase the visibility of micro-mobility services, leading to increased usage and access to new customer groups.

Figure 2: Shared micro-vehicles piled up on sidewalk. Photo: Stefan Werland

Complementary measures, such as integrating more shared micro mobility services into the hvv switch app or implementing stronger regulations, can enhance their positive effects and minimize their negative impact.

2.2. Scale-up Approach

The Senate and Parliament of the Free and Hanseatic City of Hamburg declared climate protection a key political objective. Hamburg is to become climate-neutral by 2050, and by 2030, climate-damaging emissions are to be more than halved compared to 1990 levels. In order to reach this goal, the transport

sector in Hamburg is to save 1.4 million tons of CO_2 by 2020. This can only be achieved if private car traffic is significantly reduced, and public transport attracts new passengers. With the 'Hamburg Takt' programme the city of Hamburg has set the goal of increasing the market share of public transport from 22% in 2017 to 30% by 2030. The centrepiece of the 'Hamburg Takt' is an expansion of the rapid transit network and a significant improvement in rail and bus services. Sharing and on-demand services are also to be expanded and better linked with the public transport services. The latter is intended to improve first and last mile mobility, in particular with a focus on the outer districts, where public transport services are less dense than in the city centre. The core elements of this multimodal mobility approach of the city of Hamburg are the hvv switch app and the hvv switch points:

- The hvv switch app serves as a digital link between various mobility options, allowing users to purchase public transport tickets and book and pay for sharing services directly. The goal is to make as many sharing services as possible available through the hvv switch app.
- The hvv switch points combine traditional public transport services with alternative mobility options. Currently, car-sharing vehicles from various providers are available at the switch points. Regular internal discussions within HOCHBAHN as part of the SOL+ project, along with insights gained from demonstration projects, are an important driver for the future integration of bike-sharing and e-micromobility services at the switch points.

The scale-up project also aims to minimize negative effects resulting from increased use of e-kick-scooters. The 2023 Hamburg mobility strategy acknowledges the potential of e-kick-scooters to enhance the accessibility of public transport stops and thus strengthen public transport. However, it also highlights existing conflicts and issues that need to be resolved (refer to above). As such, the expansion should go hand in hand with more formal regulation of new mobility offers:

In the initial phases, many cities lacked regulation on shared micro-vehicle systems and instead relied on voluntary agreements. However, an increasing number of cities are now shifting towards regulating private shared mobility services. This trend is reflected in the findings of the urban mobility policy action tracker developed in the CIVITAS SPROUT project. Approximately 37% of surveyed cities with shared e-vehicle systems either had non-binding agreements with private operators or had no regulations in place. In contrast, nearly half of the surveyed cities (46%) had enforced binding parking regulations for shared vehicles, with 23% of those cities also allocating parking spaces for shared vehicles at the expense of car parking.

In 2022, the German federal state of Berlin declared the provision of free-floating micro-vehicles as a 'special use' of public road space under the Berlin Road Code. This opened the option to require permits for offering sharing services on the public realm. While the permit was not linked to a tender procedure and did not limit the number of providers, the number of e-scooters in the inner-city districts was limited to 19,000. Berlin can also impose additional conditions on the permit. For e-kick scooters, for example, these include bans on parking, the provision of data, the naming of contact details, the organisation of complaint management and the carrying out of foot patrols to check the parked vehicles. In addition, an appropriate distribution of vehicles across the urban area can be encouraged through differentiated licensing fees, with higher fees in the city centre (Berlin: EUR 36 per year) and no or lower fees in the outer districts (Berlin charges no fees for vehicles in the suburbs).

Before completely banning shared e-scooters in 2023, the City of Paris had implemented regulations due to increasing complaints about their usage and improper parking. Through a competitive licensing process, three providers were selected based on criteria such as environmental responsibility (40%), sound business practices (30%), and safety (30%), as outlined in the tender documents. The licenses for operating an e-scooter-sharing system were limited to three years, with the possibility of revocation for non-compliance with regulations. The maximum number of shared e-scooters was reduced from over 20,000 to 15,000 (5,000 vehicles per operator). Additionally, the city provided 2,500 parking areas, mostly converted from on-street car parking spaces. The use of these parking areas was mandatory, and municipal law prohibited the irregular parking of e-scooters on footpaths and in pedestrian areas.

Recent life cycle assessments have highlighted that the emissions generated during the production phase of e-micro-vehicles by far exceed those occurring throughout their operational lifespan, including usage and maintenance (Deutsche Energie-Agentur 2021; Hollingsworth, Copeland, and Johnson 2019; International Transport Forum 2021). This finding underscores the importance of strategies aimed at optimising vehicle numbers (i.e. to prevent oversupply while ensuring availability) and extending their lifespan, both of which hold significant potential for mitigating the environmental footprint of micro-vehicles. Previous evaluations assumed a short vehicle lifespan ranging from 6 months to 2 years for shared kick-scooters (Deutsche Energie-Agentur 2021; International Transport Forum 2021). However, the International Transport Forum emphasizes that although energy consumption per kilometre during usage is comparatively low compared to other motorized trips, emissions per vehicle-kilometre rise considerably when considering the entire product lifecycle (International Transport Forum 2021, 30). As a result, the cumulative emissions embedded in these vehicles increase with higher usage rates and more frequent replacement of e-scooters and e-bikes. Consequently, extending the lifespan of micro-vehicles emerges as a central strategy for mitigating their climate impact.

Figure 3: Shared bikes, retrieved from a river. Photo: Stefan Werland

Despite technological advancements, vandalism continues to be a major issue for shared micromobility systems, leading to premature removal of vehicles from service. This includes instances of pushing them

down slopes and bridges or dumping them into water bodies. To address this problem, city authorities can collaborate with providers to implement designated no-parking zones along water bodies, bridges, and steep slopes. Geo-fencing systems are essential to ensure that shared micro-vehicle rides cannot be ended in prohibited areas.

During the operational phase, most CO_2 emissions result from servicing and relocating shared vehicles. Older models with fixed batteries required their collection for charging at service stations. This process often involves the use of vans, which contributes to increased traffic and emissions of noise, air pollution, and greenhouse gases. Using scooters and bikes with swappable batteries reduces the need to collect vehicles for charging. Instead of transporting entire vehicles, only the batteries need to be moved. This facilitates the use of smaller vehicles like e-cargo bikes and enables decentralized charging. Service kilometres for vehicle relocation can be shifted to smaller vehicles or electric vans. Cities should consider ways to influence the fleet of service vehicles and their operations during the licensing/tender process. This could include prohibiting the use of diesel vans and incentivising the use of cargo bikes for service and maintenance. As mentioned above, in the 2020 tender process for selecting three e-scooter operators in Paris, environmental performance was given the highest weighting at 40% of the total score, emphasising its paramount importance. Applicants had to provide detailed information about the energy efficiency of their service and maintenance fleet, including vehicle types and motorization.

2.3. About the scale up project

The aim of the scale-up project is to implement the following measures in detail:

- The '100 parking spaces for e-kick-scooters' programme is being developed as part of the hvv switch points and in close cooperation with the Department for Transport and Mobility Transition (BVM). The aim is to establish a strategic network of parking spaces. In the city centre, the focus is on organising parking and avoiding irregular parking of vehicles to increase the general acceptance of micro-mobility services. In the outer districts, the focus is on improving first/last mile mobility and providing additional mobility options. To this end, criteria will be developed to select locations for micro-mobility parking. An urban dashboard with data from all e-scooter providers will form the database for identifying hotspots where action is most needed. As part of the programme, extensive no-parking zones will be designated around the switch points to prevent inappropriate parking of e-scooters.
- The parking of e-kick-scooters/micromobility services will also be more strictly regulated, as the current voluntary agreement with providers lacks sufficient guidelines.
- Targeted media campaigns will accompany the programme.
- After implementing the programme, the effectiveness of the measures will be continuously evaluated to allow for necessary adjustments.

2.4. Timeframe

The '100 parking spaces for e-kick-scooters' programme is set to be implemented in 2024 and 2025 as part of the hvv switch project. In the short term - early 2024 - the programme will be designed. In particular, the criteria for the selection of stations and for the implementation of no-parking zones will be developed, their feasibility will be examined and a priority order for implementation will be determined. Implementation begins immediately afterwards. To give the programme visibility, the first parking spaces will be built in 2024.

In the medium term, measures will be taken to strengthen the regulation of sharing services, for example through tendering concessions for the operation of shared micro vehicles. This is done to achieve a higher level of acceptance among the population and to minimise negative impacts.

Concessions – or equivalent kinds of regulations – should limit the number of providers. To achieve an optimal number of vehicles the concession should cap the number of vehicles operating in the city centre while ensuring availability of vehicles beyond the inner city. This comprises a binding data sharing agreements between providers and the relevant public authorities in order to monitor the distribution of vehicles. Moreover, the tendering process should use environmental and social aspects as award criteria. The providers of shared e-micro vehicles and the various road user groups need to be involved in the decision-making process through a participatory process (see chapter 2.5) which should be set up. In this way, both the commercial interests of providers and the needs of different population groups, such as the elderly, children or working people, will be taken into account in the future design of shared mobility.

In the long term, additional measures should be implemented to support the increased intermodal use of e-kick-scooters and public transport. These include measures to discourage car use, such as stricter parking regulations and the reduction of parking spaces in the inner city, or pedestrianisation of streets in district centres. Infrastructural measures will also need to be implemented, in particular to improve road safety. Taking the needs of electric scooters into account when planning and expanding the bike network is just as important as adapting road designs and speed limits to less car-oriented mobility.

2.5. Stakeholder Engagement

Stakeholder engagements should represent several perspectives, including public authorities, public transport operators and associations, providers of sharing services, and representatives of civil society.

Public Authorities:

The Department for Transport and Mobility Transition (BVM) and Hamburg Hochbahn AG are collaborating closely to develop the '100 parking spaces for e-kick-scooters' programme. They hold weekly coordination meetings to ensure smooth implementation of the project. These institutions are also the primary partners responsible for scaling up the project.

BVM is responsible for regulating e-kick-scooter parking more strictly. On behalf of BVM, Hamburger Hochbahn AG implementing the parking areas. HOCHBAHN has the necessary expertise, structures, and processes for deploying parking areas for micromobility due to the establishment of hvv switch points.

Other public stakeholders comprise the Department of the Environment, Climate, Energy and Agriculture which is responsible for the climate action plan, and the city districts as owners of public space and as responsible entity for most of the secondary road network.

Public transport:

Besides HOCHBAHN, the regional public transport association hvv needs to be involved. hvv is inter alia responsible for tariff integration and the mobility app.

Private mobility providers:

Providers of shared e-micro vehicles are private enterprises. As the emerging market for shared micro-vehicle provision is currently entering a stage of consolidation, operators should be open to regulate the market, in order to close it against new market entries.

Housing companies:

By providing spaces for shared mobility hubs, housing companies may encourage intermodal trips. Housing companies can also explore specific agreements with public transport companies and shared mobility providers for their tenants, for example by concluding large customer contracts. Some housing companies in Germany are experimenting with free public transport subscriptions for tenants, which are generally included in new rental agreements.

Civil society:

Finally, pedestrian and cyclists' associations, and representatives of disability organisations need to be involved in participatory processes.

3. Budget

The demonstration activity has shown that private-sector operators of mobility services do not require continuous subsidies to provide their services in the outskirts. In fact, active providers, including TIER, BOLT and LIME, have extended their operation area beyond the inner-city districts in recent time.

As private operators are responsible for providing and maintaining the shared vehicles, the main cost factors for public authorities are the provision of public land for parking and return zones, and the construction of safe and smooth cycling infrastructure where required, as e-kick-scooters are required to be used on cycle paths or in the traffic lanes. Scooters are required to be used on cycle paths or in the traffic lanes where no biking infrastructure exists.

The project will initially receive start-up funding from the Free and Hanseatic City of Hamburg / BVM. In the future, the project is to be co-financed by fees charged by the micro-mobility providers in accordance with contractual regulations. Further investment in cycling infrastructure cannot be deduced, as this will be funded under the cycle network.

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