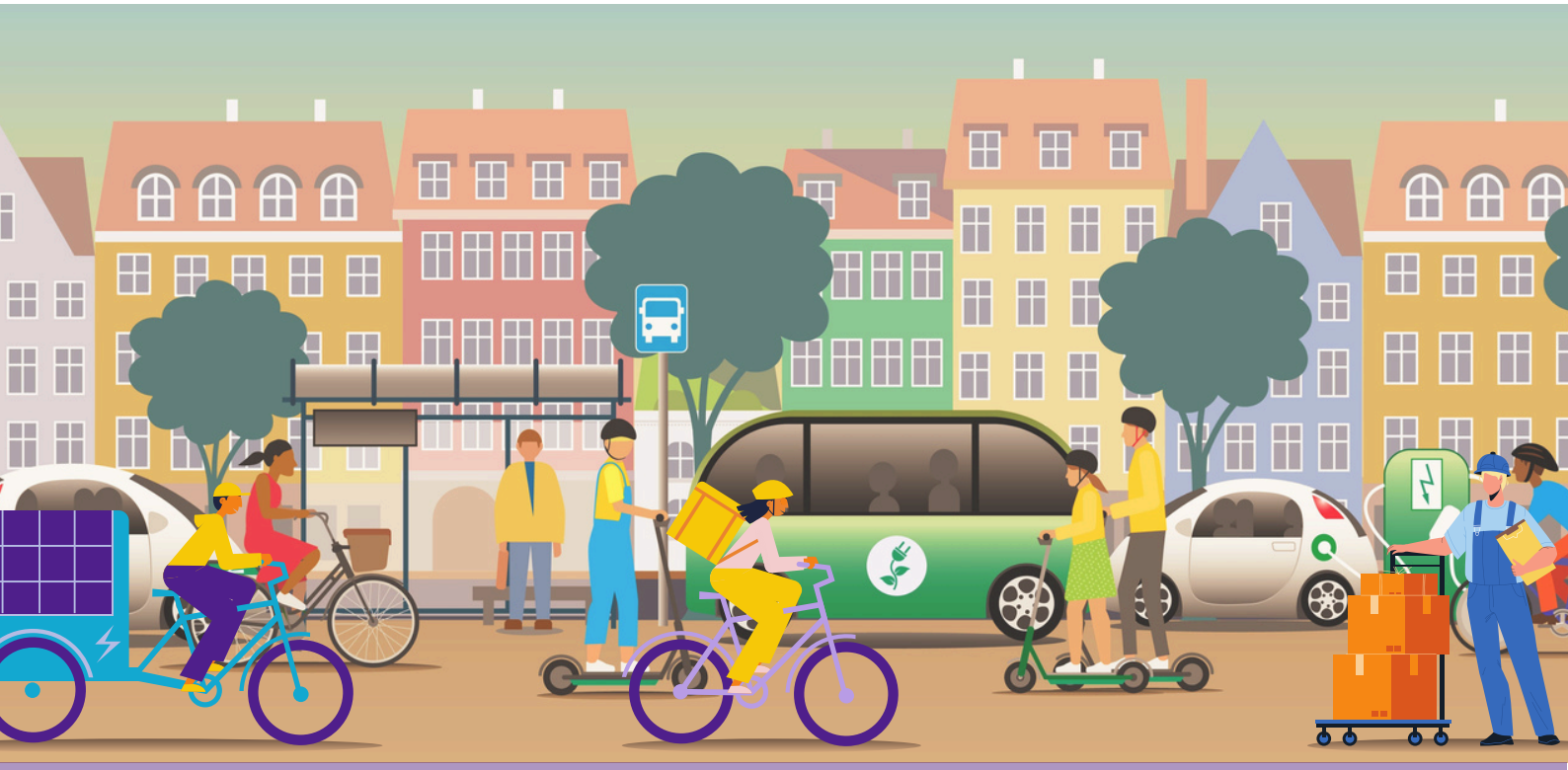
2024

WHITE PAPER WORKING TOGETHER

PUBLIC-PRIVATE COLLABORATION IN URBAN MOBILITY AND LOGISTICS



Legal disclaimer

This project has received funding from the European union's Horizon 2020 research and innovation programme under grant agreement N 953939.

Table of Contents

Editors

Geiske Bouma
Senior researcher Urban Innovation
TNO

Johan Granberg
Governance and innovation manager
RISE

Tiina Ruohonen
MOVE21 Project Coordinator
City of Oslo

Anne-Charlotte Trapp
Project Coordinator - Mobility
Eurocities

Raffaele Vergnani
Urban Freight Cluster Lead
POLIS

Contributors

Mauro Borioni
Mobility Technical Officer
Metropolitan City of Bologna

Live Hua Søraas Røstadsand
Mobility Advisor
City of Oslo

Suzanne Green
Project Manager
City of Gothenburg

Christopher Hoff
Senior Advisor
IKT-Norge

Kornilia Maria Kotoula
Transport Engineer, Researcher
CERTH / HIT

Maria Morfoulaki
Evaluation Manager
CERTH / HIT

Jan-Hendrik Müller
Project Coordinator
City of Munchen

Jan Tore Pedersen
R&D Manager
MIXMOVE

Julia Peleikis
Project Manager
City of Hamburg

Melina Pusch
Desk Officer
City of Hamburg

Julian Sahr
Project Manager
City of Hamburg / District of Altona

Isak Solomon
Mobility Advisor
City of Oslo

Olga Stepanova
Senior researcher Local and regional transformation
RISE

Marco Surace
Statistician
Roma Servizi per la mobilità

Rodrigo Tapia
Researcher
Università degli Studi Roma 3

Howard Weir
Researcher
TØI Norwegian Centre for Transport Research

Managing Editor: Tiina Ruohonen / City of Oslo
Editing and layout: POLIS

Foreword

The transport sector stands for 30% of EU climate emissions, and this number is expected to increase in the next eight years. In Oslo, where I am the Governing Mayor, emissions from road transport account for half of the overall emissions in the city.

An important ingredient in city development is the way we organise, regulate and offer transport options and services to citizens and businesses. Everyone has a relationship to transport. It touches almost every aspect of our lives – from our daily errands, to where companies choose to locate their businesses, where job opportunities are, and where people choose to live.

This paper gives its readers insights on how local authorities work together with the private sector to innovate tomorrow's urban mobility solutions. It highlights critical success factors for private and public collaboration such as risk-sharing and organisational aspects. The insights in this paper are derived from the work that has taken place in the EU-project MOVE21, which is an innovation project funded by the European Commission. MOVE21 helps European cities transform their transport systems in line with EU's ambitions for emission cuts from European and urban transport and the goals of increased connectivity and more sustainable transport modes in urban areas.

The City of Oslo is the Coordinator of MOVE21, and for us in Oslo it is clear that local authorities and private sector partners must work together to solve complex societal challenges. No city will be able to achieve ambitious climate emission reductions or provide forward-looking, abundant, affordable and green mobility services to its citizens on their own. I hope this paper inspires future innovation projects in Oslo and elsewhere, and that it helps to form specific public-private collaborations and agreements to the benefit of cities, citizens and businesses.

Eirik Lae Solberg
Governing Mayor for the City of Oslo

Introduction

This White Paper highlights how public-private collaboration and partnerships can promote sustainable and innovative urban mobility and logistics solutions, and how collaboration between private and public stakeholders can help accelerate the uptake of good solutions across European cities. Traditional public procurement often falls short or fails to deliver intended effects and impacts for endeavours with high innovation potential. This is why public-private collaboration is often crucial to bring about desired societal changes.

The introduction of new mobility concepts, notably all forms of on-demand transport and micromobility offers but also new or augmented versions of mobility hubs, blur previous distinctions between public and private transport offers. The challenges to public-private collaboration are many and well-known, but the potential gains include new transport offers, more liveable cities, climate emissions reductions and new business opportunities.

MOVE21 is an innovation project that helps cities transform urban mobility and logistics solutions to be more forward-looking: greener, cleaner and seamless. MOVE21 calls for an integrated approach across different domains such as passenger and logistics transport, different governance levels, and sector domains such as urban development and transport planning. Public-private collaboration is necessary to succeed in developing integrated measures in complex urban settings.

The following White Paper is not an exhaustive account of all aspects in public-private collaboration, nor does it provide a full overview of all that has taken place as part of MOVE21. Its primary purpose is to gather important lessons and learnings on the topic and to inspire future innovation endeavours in urban mobility and logistics.

What is public-private collaboration and is it important?

Public-private collaboration is increasingly important when addressing complex societal challenges. Combining resources, knowledge, and innovation capacity from both the public and private sectors can offer effective solutions that benefit society as a whole.

While there are several ways for public and private entities to do things and work together, several of them are governed by rules for public procurement which aim to ensure competition and efficient use of public funds while also setting conditions for transparency, fairness and accountability. Traditional public procurement procedures have proved efficient and suitable for commodities and simple, readily available goods and services limited in scope and complexity. In areas with significant uncertainty or complexity this is often not the case. Large infrastructural or innovation projects are examples where traditional procurer-supplier relationships often are insufficient or ineffective. This is also the case in MOVE21, which calls for more integrated approaches for public and private entities to work together.

Two key concepts which are not mutually excluding and are sometimes used interchangeably are public-private collaboration and public-private partnerships:

- Public-private collaboration is a broad term that refers to cooperative arrangements between public and private sectors. These can take various forms and do not necessarily require formal agreements or long-term contracts. The parties collaborate because there are mutual benefits for doing so.
- Public-private partnerships are a more specific type of collaboration that typically entails long-term formal contracts which often centre around the provision of a public asset or service and where the private parties bear risk and management responsibilities.

In Europe, the history of more formalised public-private partnerships dates back to the late 1980s with the implementation of the Private Finance Initiative (PFI) in the UK (van de Hurk & Liyanage, 2013). This concept gained broader recognition as it spread to other countries in Europe (Savas, 2000; Yescombe, 2007). However, private sector involvement in public infrastructure dates back even further with France introducing concession-type agreements for the construction of inter-urban motorways in the 1950s (Bonnet & Chomat, 2013).

Partnerships are often seen as a subset of a wider variety of collaboration schemes. From a governance perspective, the same desired effects can be achieved either through more loose collaborations or more formal partnership arrangements.

In MOVE21, the focus has predominantly been on broader collaboration schemes although several examples also exist of public-private partnerships as part of activities that centre on testing and rolling out innovations. The two concepts can be viewed as ends of a continuum. In MOVE21 the full continuum is important.

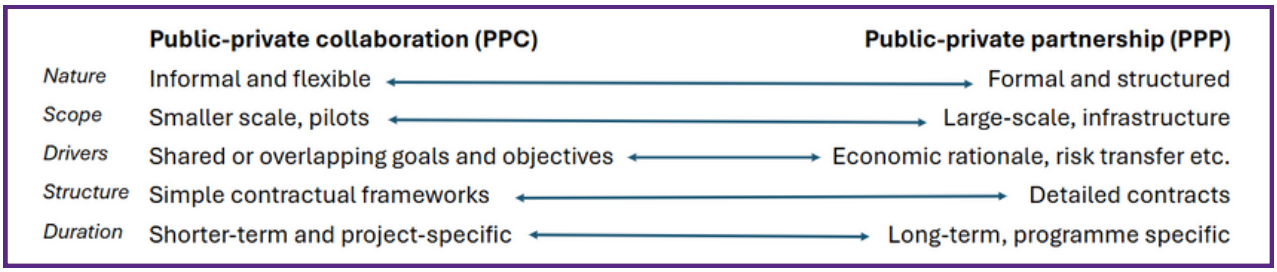


Figure 1: *Differences between public-private collaboration and public-private partnership*

Many measures and governance models emphasise co-creation towards shared objectives over detailed contractual agreements. This is further elaborated in the MOVE21 project deliverable *Governance innovation: solutions in MOVE21 and implications for other cities*. Private and public entities explore these approaches and the continuum in the innovation co-creation partnerships developed in MOVE21 with the aim to create sustainable solutions to mobility and transport challenges. The innovation co-creation partnerships are detailed in subsequent chapters.

One key advantage of these types of collaborations is the ability to share and manage risks more effectively, something that is explored in later chapters. By distributing responsibilities, both sectors can mitigate potential financial and operational risks. This collaborative approach also fosters innovation, as it brings together diverse perspectives and expertise, leading to the development of new solutions and technologies that might not emerge within a single sector.

Partnerships are particularly important in addressing large-scale societal challenges such as the development and maintenance of needs-based and sustainable infrastructure, healthcare, education, and environmental systems. If managed well, they enable systemic change by promoting social good and facilitating market incentives. Additionally, by attracting private investment, these partnerships can stimulate economic growth and development, especially in areas where public funding alone is insufficient.

For mobility services, a fully unregulated market might not be an attractive alternative considering societal goals such as accessibility, equality, congestion, safety and security. At the same time, a poorly regulated market may also have adverse effects such as fewer or more costly mobility service options.

Boardman and Vining (2010) identify two main motivations for adopting formalised partnerships. Normative motives, such as technical efficiency and economies of scope, and positive motives, such as postponing costs, reducing government debt, off-balance sheet

financing, increasing net cash flow, risk transfer, and diminishing political risk. Partnerships are often seen as more efficient than public procurement (Grimsey & Lewis, 2005; Hodge & Greve, 2010) and can help ensure projects are delivered on time, within budget, and according to specifications (Grimsey & Lewis, 2004). However, the success of public-private partnership projects is not guaranteed and they can fail to deliver promised benefits (Croce & Gatti, 2014).

Effective governance of partnerships is crucial, and the support provided by governments to both public and private actors play a critical role in their success. A recent doctoral thesis (Murwantara, 2023) underscores that successful public-private partnership implementation depends on three key dimensions: policies and political support, a robust legal framework, and supportive institutional arrangements. This is also well in line with the recommendations in a 2024 policy brief on Urban Logistics for Ambitious Climate Cities, co-authored by MOVE21, ALICE and C40, where specifically the need for political support for innovation is highlighted.

Strong and long-term political commitment, as observed in the UK and the Netherlands, is crucial. While countries like France, Portugal and Greece have well-developed laws governing public-private partnerships, these alone do not ensure their success. The presence of political and social will, a stable regulatory regime, and institutional support are necessary conditions for success.

A study by the European Investment Bank (2024) on the public-private partnership market in the EU-27, Turkey, Israel, the Western Balkans and the UK reveals that Germany is the most active market, followed by Israel and France. The transport sector led with investments totalling €9.1 billion in 2023, followed by environmental projects, public order and safety, and telecommunications. Over the past decade, there has been an overall decline in both the value and number of public-private partnership projects since 2013, when the market peaked at over €20 billion and more than 80 projects.

Looser collaboration schemes can be more suitable for innovative, pilot-scale, endeavours where the goals and objectives are clearer than the path to get there. The latter is not unusual for disruptive innovations, such as those aiming at a more sustainable society. In these cases, formal agreements, if needed, can often be made by using the research and development exemption from EU public procurement legislation. This has for example happened within MOVE21, where additional agreements with third parties have been formulated as R&D agreements that complement and reinforce activities and piloting taking place in MOVE21.

Examples from EU and local level

At the EU level, innovation is recognised as essential for progress and sustainability, with public-private collaboration playing a critical role. The EU actively promotes cross-functional and cross-border cooperation through its funded innovation projects, which are designed as complex public-private collaborations. This policy approach is primarily implemented through the Framework Programme for research and development.

To date, the EU has successfully completed eight Framework Programmes. Horizon 2020, one of the most notable, was considered the world's largest R&I funding programme at the time, accounting for approximately 8% of the European Commission's budget and a similar share of total government R&D spending across the EU. European innovation policies, both explicit and tacit, are gaining momentum. Horizon Europe, for example, explicitly considers innovation policy concepts such as the knowledge triangle and triple helix model, involving Government, Academia, and Industry and thereby fostering the development of public-private collaboration schemes.

The European public-private Expertise Centre (EPEC), established in 2008, supports the public sector across Europe in delivering better public-private partnerships. Its mission is to aid EU Member States, Candidate Countries, and other eligible nations in their endeavours. Today, EPEC operates within the Advisory Services Department of the European Investment Bank and comprises a team of experienced professionals. EPEC's members are national or regional public authorities responsible for policies or programmes in EU Member States, Candidate Countries, and certain other eligible countries. These members can include national ministries (such as those for transport infrastructure or finance), regional authorities, dedicated commissions, or agencies.

Joint Undertakings (JUs) and European Technology Platforms (ETPs) are well-known examples of public-private collaboration on EU-level. Through the JUs partnerships with the private sector, the EU pools resources to tackle large challenges, support competitiveness to deliver high-quality jobs, and encourage greater private investment in research and innovation. Active JUs in the transport sector include:

- Fuel Cells and Hydrogen 2 (FCH2) to accelerate market introduction of clean and efficient technologies in energy and transport.
- Clean Sky 2 (CS2) to develop cleaner, quieter aircraft with significantly less climate emissions.
- Europe's Rail Joint Undertaking to deliver a high-capacity, flexible, multimodal, sustainable, reliable, integrated EU railway network for European passengers and cargo.

ETPs are stakeholder fora led by industry that have been acknowledged by the European Commission as important players in promoting innovation, information sharing, and European competitiveness within their respective industries. Some active ETPs in the transport sector include:

- The European Road Transport Research Advisory Council (ERTRAC) delivers roadmaps for cross-cutting research that serve as input to future European and national transport research and innovation programmes.
- The European Rail Research Advisory Council (ERRAC) promotes innovation and research in the EU rail sector and advises the European Commission on R&D priorities.
- The ETP-ALICE develops a comprehensive strategy for research, innovation and market deployment of logistics and supply chain management innovation in Europe.

In the last few years, new or strengthened institutionalised programmes have appeared that enable a new approach to innovation in urban mobility in Europe. Some of them include:

- CCAM partnership: Co-programmed with the European Commission in the Horizon Europe Framework for connected, cooperative and automated mobility.
- 2Zero partnership: Co-programmed partnership to accelerate the transition to a European carbon-neutral road transport system by 2050.
- Driving Urban Transitions: Initiated by the JPI Urban Europe, it enables local authorities and municipalities, businesses, and citizens to translate global strategies into local action.
- EU Mission on Climate-Neutral and Smart Cities: Aims to create 100 climate-neutral and smart cities by 2030.

Gothenburg mobility agreements

These are arrangements between the city and property owners that aim to modify parking requirements and promote alternative transport options. Research indicates a strong link between parking availability, car ownership and car use. The agreements commit property developers and owners to reduce parking spaces for new construction and buildings in exchange for alternative transport options for residents. These agreements require mobility measures to be established before residents move in and maintained for at least 10 years. Since the pilot began in 2017, over 100 mobility agreements for residential buildings have been signed. These agreements are an optional part of the standard process for determining parking requirements, and the City of Gothenburg collaborates with researchers to monitor their impact. The reduction in parking spaces not only lowers construction costs but also fosters more sustainable commuting behaviours through effective collaboration between public and private partners.

At the local level, these types of partnerships are often part of urban investment packages. They can range from basic service contracts with limited asset ownership to sophisticated *Build-Operate-Transfer* projects where the private sector has full responsibility for operations and investment. Currently, under the EU Mission on Climate Neutral and Smart Cities, a total of 112 cities develop Climate City Contracts that contain a commitment plan, an action plan and investment plan. Public, private and civic organisations collaborate in joint partnerships to work towards climate neutrality under this mission. In MOVE21, five out of the six participating cities are mission cities.

A Eurocities' survey from 2023 highlighted that public-private collaboration is a commonly used financial scheme among cities. Cities like Barcelona, Braga, Espoo, Ghent, Grenoble-Alpes Métropole, The Hague, Prague, Riga, Tallinn, Terrassa, and Valladolid have utilized these types of collaborations extensively to raise capital for green buildings, infrastructure, clean transport, clean energy storage, and digital infrastructure. The collaborations can help alleviate budgetary pressures while bringing technological innovation, new governance models, and external expertise into project delivery. However, cities also face challenges in structuring and defining responsibilities, risks, benefits, and establishing clear legal definitions and provisions for effective risk management. Examples uncovered in the Eurocities' survey include:

- Dutch Metropolitan Innovation Ecosystem (DMI): Collaboration between Dutch cities, the Ministry of Transport, and the private sector on mobility and logistics data sharing.
- Ghent Economic Board: A consultative body involving the city administration and private partners in biotech, cleantech, and digital sectors, exemplified by the Bio Base Demo Plant for bio-based economy innovations.
- Braga's Mobility Collaborations: The city uses various public-private models to develop green and digital projects, including a Business Mobility Pact aimed at sustainable mobility solutions.
- Energy Performance Contracting (EPC): Cities like Prague, Espoo, Grenoble, and Valladolid have implemented EPCs to improve energy efficiency, with Prague modernizing 12 buildings and Valladolid retrofitting 400 dwellings and installing renewable energy systems.

Smart logistics hubs

Transnova (now part of Enova), a Norwegian public entity, initiated several projects aimed at reducing CO_2 emissions from transport. One of its flagship projects focused on urban logistics, where it partnered with ICT companies to create smart logistics hubs, integrating electric delivery vans, drones, and autonomous vehicles to minimize emissions in urban centres like Oslo and Trondheim. The collaboration between Transnova, logistics providers, and technology firms is a clear demonstration of how the public sector can fund and guide projects while the private sector contributes technological expertise.

The MOVE21 approach to public-private collaboration

MOVE21 works on tangible mobility measures and policy development. This work is organised into three streams: the deployment of innovations in cities, capacity building, and facilitating governance collaboration at the TEN-T corridor level. These streams emphasise the critical role of public-private collaboration in advancing sustainable urban mobility and logistics.

MOVE21 takes an integrated approach to mobility, addressing both passenger and freight transport in a cohesive manner. This requires collaboration between transport planners, engineers, urban planners, social scientists, business developers, and behavioural scientists. The goal is to assess policies and infrastructure in a unified way to help cities and regions advance sustainable transport options and offers, reduce emissions, and improve air quality.

Bridging the gap between urban logistics and person mobility

Researchers have long advocated for the cohabitation of passenger and freight transport, proposing classifications of potential solutions such as shared road capacities, public transport services, and consolidation facilities. Despite the promising potential, real-world applications have been limited due to the complex coordination required among diverse stakeholders.

A new area of focus for transport planning is the integration of passenger and freight flows for short-haul logistics in urban settings. Researchers and authorities have been investigating the potential of integrated solutions since its first mention in the Green Paper *Towards a new culture for urban mobility* (European Commission 2007). From a parcel and goods logistics standpoint, the first and last mile is normally the most inefficient and expensive step of supply chain management. It is described as the first-to-last stage of the transport chain in which goods are carried by a professional party to a consumer destination (i.e. a house, retail store, drop-off site or factory). In the context of passenger mobility, the first and last mile is a significant issue, particularly at the urban level, as it is frequently fragmented and uncoordinated, resulting in low vehicle utilisation, congestion and high externalities. The separation of freight and passenger transport is a key impediment to first and last mile improvements from a normative, regulatory, and planning standpoint.

Researchers Trentini and Mahléné proposed in 2010 a classification of potential solutions to integrate passenger and freight transport. This classification is based on three main groups: shared road capacities (including multiuse lanes, night deliveries and shared bus and lorry lanes), shared public transport services (buses, subway, tramway, car sharing) and shared consolidation facilities (including delivery bays, lockers in car parks or underground stations, and delivery stations in car parks).

The MOVE21 approach focuses on policies and governance that enhance synergies between sectors, and favours technological integration and interoperability, social interventions to support mobility uptake, and the development of multimodal transport hubs and last-mile solutions.

The project follows the eight principles for Sustainable Urban Mobility Plans and considers collaboration at different scales. Its methodology is rooted in an open innovation model where local quadruple helix partners co-create and upscale transport innovations. Recognising that many Living Labs collapse after external funding ends, MOVE21 emphasises lasting partnerships and self-sustaining models to ensure ongoing success and longevity beyond the project's duration.

MOVE21 supports the replication of successful innovations across European cities, promoting knowledge exchange between cities. Innovations co-created in the project are replicated in other cities, fostering widespread adoption of impactful solutions.
This replication process encourages cities to adopt collaboration models and engagement processes with the private sector. This methodology is further described in the MOVE21 deliverable Capacity Building and Replication Master Plan.

Urban nodes, introduced by the European Commission in 2013, play a crucial role in facilitating the movement of people and goods within the TEN-T transport network. Limited governance coordination and poor connectivity hinder sustainable transport development. All MOVE21's participating cities are located along the Scandinavian-Mediterranean TEN-T corridor. MOVE21’s work on the corridor level allows for governance collaboration and knowledge sharing at the corridor level, encouraging more coordination among cities, regions, transport operators, and infrastructure managers.

MOVE21 employs a three-level impact assessment methodology to evaluate performance and impact. The first level evaluates solutions across specific thematic areas, such as governance and technical integration. The second level monitors city activities to assess processes and implementations, focusing on increasing innovation capacity and policy coherence within local ecosystems. The third level develops impact-oriented indicators to measure long-term decarbonisation, sustainable mobility systems, efficient transport networks linked to the TEN-T, social cohesion, economic development, and public perception.

To assess the private-public collaborations developed in the project, specific indicators such as new business models and new collaboration schemes, have been developed. This approach addresses shortcomings in the CIVITAS evaluation framework, which does not fully capture impacts in this area.

MOVE21 highlights both collaboration across different scales and the importance of long-term sustainability as key to success. The MOVE21 Living Labs are designed to endure beyond the project phase by using a self-sustaining partnership model that build on existing strong partnerships for zero-emission solutions (MOVE21 deliverable Living Labs Establishment Report from 2022). Maintaining a Living Lab is challenging (Gascó, 2017), but MOVE21 takes specific actions to ensure their sustainability: promoting innovation through policy coherence, increasing cities' innovation capacity, and establishing long-term co-creation partnerships with a solid organisation and business model.

A key component of each Living Lab is an Innovation Co-creation Partnership, which leverages existing city partnerships to create effective and sustainable arenas for public-private collaboration. Participants include local authorities, industries, businesses, SMEs, infrastructure operators, public transport providers, utilities, knowledge institutes, and civil society representatives.

This quadruple helix innovation framework emphasises the interaction between four key sectors: Government, Industry, Academia and Civil Society. The Partnerships focus on co-creating, tailoring, deploying, and upscaling mobility and logistics innovations to fit local contexts. Quadruple helix partners also assess and review measures to accelerate the adoption of these innovations.

MOVE21's partnership model is replicable to other cities and contexts to foster zero-emission transport innovations across the EU. The model aims to enhance cooperation in local innovation ecosystems, foster an integrated approach to mobility challenges and solutions, accelerate the market uptake of effective solutions, and sustain the deployment and upscaling of innovations. The model is preferably built on existing partnerships, with initial steps focusing on engaging existing partnerships or collaborators to adopt MOVE21 principles.

The innovation co-creation partnerships can operate under the umbrella of an existing partnership or as a new one dedicated to co-creating and deploying mobility innovations. These partnerships are encouraged to develop organisational models and business plans and seek to develop and enhance local innovation capacities through adequate measures and priorities. For some partnerships, the natural next step is to develop joint operational services and facilities.

The innovation co-creation partnerships convene regularly to discuss proposed innovations, identify local opportunities and expected impacts, and to align with city policy goals. They also address potential obstacles and strategies for adapting innovations to local conditions, fostering an environment conducive to upscaling and market uptake. Continuous knowledge brokerage provides necessary expertise for these discussions, enabling partners to propose actions, discuss supporting policy measures, and develop local upscaling plans.

For cities to effectively facilitate urban innovation, their governments must have the necessary capacities in place. Literature highlights various skills, structures, and capabilities (Timeus & Gascó, 2018). Based on these insights and OECD findings (2019), MOVE21 focuses on three interdependent pillars to enhance innovation capacity in cities:

- Organisation: addresses leadership, dedicated teams, access to relevant departments, sufficient funding, and Human Resource Management (HRM) policies that reward innovative behaviour.
- Partnerships: involves the city's capability to engage with stakeholders, networks, and the local innovation ecosystem, including quadruple helix actors such as citizens and civil society representatives, governance and co-governance are seen as essential for fostering innovation capacity and facilitating the deployment and upscaling of innovations.
- Technology, Data and Knowledge Management: focuses on the capabilities required to manage relevant data, information, knowledge, learning, and technology necessary for designing, adopting, and scaling innovations.

Public-private collaborations must pay attention to the dynamics within the collaboration throughout their development to effectively connect and work on innovation capacity. Key aspects for building and sustaining partnerships include democratic and transparent conditions for discussions, fostering trust among actors, and ensuring equitable power distribution where all voices are heard in decision-making. Self-reflection is also crucial at various stages, requiring dedicated time to evaluate not only challenges but also achievements. This includes recognising successful initiatives, tangible outcomes, knowledge exchange, and effective collaboration processes.

Cases from MOVE21

In the evolving landscape of urban mobility, the integration of passenger and freight transport has emerged as a pivotal focus for enhancing efficiency and sustainability. Urban logistics, particularly the first and last mile, often represents the most inefficient and costly segment of the supply chain.

Similarly, passenger mobility in urban areas faces challenges of fragmentation and low vehicle utilisation, leading to congestion and high externalities. The traditional separation of freight and passenger transport exacerbates these issues, necessitating a paradigm shift towards integrated solutions.

MOVE21 exemplifies the potential of public-private collaboration and partnerships in overcoming these challenges. By fostering collaboration between local authorities, transport operators, logistics companies, real estate developers, mobility service operators, facility managers, hardware service technicians and many more, MOVE21 aims to create holistic solutions that reduce urban traffic density and environmental impact.

Case studies from Bologna, Gothenburg, Hamburg, Munich, Oslo and Rome underscore the transformative potential of public-private collaboration in reshaping urban mobility for a more sustainable future.

Combining people and goods

Solutions to integrate people and goods transport have been evaluated in a limited number of real-world situations, mostly because of complex vertical and horizontal coordination needs. A few previous pilot projects, often within EU-funded research programmes, have been carried out in particularly in Belgium, Germany, the Netherlands and Switzerland. In MOVE21, pilots in both Hamburg and Oslo show a willingness to radically rethink how urban mobility can look like if you integrate passenger and freight transport.

Mobility services for people have low use rates outside peak hours that city couriers and urban logistics operations could use, but these have often designed processes so efficiently that co-use without suitable logistic infrastructure, time and route flexibility is difficult. With this in mind, Hamburg has tested the combined transport of people and goods in an on-demand ride-pooling service. The city courier segment was selected in combination with a ride-pooling service provider MOIA. City couriers in Hamburg are usually responsible for single transport orders within the city, and a key objective was to see a reduction in empty runs and increase the use of the on-demand shuttles during midday hours. The goods offered for delivery where smaller shipments of up to 20 kg within the inner-city.

Various stakeholders worked together with different roles and responsibilities within a fixed project structure. A key factor for the success of this collaboration lays within the intention of MOVE21 to inspire new forms of collaboration between the private and public sector and partners' motivation and willingness to test new things. An initial test period showed that free capacities outside peak hours for passengers can be used for logistics services without large or customised changes to the operation of the MOIA on-demand fleets. This opens for interesting new business models centred on combined transport for people and freight.

In Oslo, the public-private collaboration between the public transport company Ruter, the logistics software company MIXMOVE, the shopping centre CC Vest and its parent company, the real estate company Mustad Eiendom, piloted the transport of goods from Oslo's largest shopping centre with on-demand public transport shuttles. Specific stores were offered the opportunity to test the service by offering customers the possibility of having their goods delivered to their doorstep with the purpose of reducing the number of private cars to/from the shopping centre. The centre is situated in an area in Oslo undergoing a large re-development away from a car-based urban development.

Use of information technology for ordering transport, organising it, including consolidating goods that have the same final address, and reporting on the status and confirming delivery of the goods is a prerequisite for its use. This requires the integration of solutions designed for logistics management with solutions designed for passenger transport. This was tested and validated in Oslo.

The regulatory, judicial, and technical aspects of combining people and goods in same vehicles or hubs should be receive careful consideration. The regulatory framework in EU member states is fragmented, and in some member states, combined transport is prohibited. Procurement practices must also be updated in those instances where passenger transport services and workers are not allowed to transport goods. Technical challenges are in many ways easier to overcome, and interoperability between service providers and domains should be a key priority. Potential technical modifications inside vehicles should also be considered. Insurance is also a topic that deserves more attention, and it is important to verify whether existing transport insurances are adequate or if new ones are needed for the combination. A challenge that deserves focus in future iterations is the juxtaposition between an on-demand service without a fixed route and fixed collection points for the logistics services. Personnel training should also receive focus as loading, transport and delivering logistics services on top of serving passengers presents a complex task.

New integrated services require public-private partnership agreements that demand more agile protocols and data sharing clauses to allow for deployment, maintenance, and adjustments of new digital mobility services. It also involves drawing up new types of legal contracts and the revision of procurement standards and practices.

The combination of passenger and freight mobility services require equally the cooperation of different types of stakeholders not used to cooperate. For local authorities, this means setting up new forms of collaboration between traditional public transport operators, new mobility services providers, logistics operators and private sector real estate developers and goods owners.

Private-public collaboration in the realm of micromobility, active modes of transport and public transport

Mobility points or hubs for passenger transport are strategically located physical sites designed to connect various modes of transport and to facilitate more seamless and multimodal travel. These points are sites where multiple mobility services and enabling facilities are aggregated to provide convenient access to sustainable transport options, and the aim is to simplify transitions between modes, offer shared mobility services such as car-sharing, bike-sharing, shared e-scooters and e-mopeds, bike parking, and to offer enabling services such as repairs, maintenance, battery-swapping and charging.

A key function of such points is to address the first and last mile challenge. Initial and final segments of a journey often present a significant obstacle to the use of public transport. Mobility points or hubs bridge this gap by offering multiple transport options that facilitate smoother and more efficient transitions. The selection of appropriate sites for mobility points or hubs is critical to their success. They are generally located at key public transport nodes, district centres, or points of interest where they can bridge gaps in public transport coverage.

By facilitating a shift away from the use of private cars, mobility points or hubs help reduce traffic congestion and lower climate emissions. In dense urban environments these hubs and points can play a pivotal role in enhancing space efficiency and improving the overall quality of urban life. By clustering shared mobility services at central locations, cities can reduce the demand for parking spaces, thereby allowing public areas to be repurposed for other uses such as green spaces, pedestrian zones, or recreational facilities.

In Munich, the establishment of mobility points within the metropolitan area is a key component of broader efforts to promote sustainable mobility. A total of 200 mobility points will be created by 2026 with the first points established in 2023. Several overarching goals underlie the development of mobility points in Munich such as reducing car use, fostering multimodal mobility offers, improving space efficiency and urban quality of life, and ensuring accessibility and availability of mobility offers.

The successful implementation of mobility points relies heavily on collaborative efforts between various stakeholders. In Munich, the development of mobility points required a concentrated effort to bring together both public and private entities to create a unified and integrated mobility network, requiring both public-private partnerships and public-public cooperation. One notable example of public-private collaboration is the MoveRegioM project, which was initiated by the City of Munich and involves numerous public entities and private shared mobility providers.

Image 1: Mobility point in G. Freundorfer Platz during the MOVE21 site visit in Munich *(Credits photo: R. Vergnani)*

Through these partnerships, private mobility service providers offer their vehicles at mobility points in Munich, where they are integrated into the existing public transport system. These partnerships enable the development of customized solutions that meet specific mobility needs. In Munich, this public-private collaboration has helped establish mobility points as integral components of a regional mobility strategy. Public-public collaboration is equally crucial to the success of mobility points in Munich, particularly in the context of functional urban areas when delivering mobility services across municipal borders. In the Munich region, public institutions such as the City of Munich, the Munich Transport Corporation (MVG), and the Munich Transport and Tariff Association (MVV) have developed a recognisable and uniform design for mobility points throughout the region which has enhanced the overall functionality of the mobility network.

In Bologna, temporary and secure mobility microhubs have been tested in occasion of major public events with the name BiciQui. The aim was to encourage the use of bicycles and cargo bikes during large-scale events within the city, and parking spaces were re-purposed to this end. Strong collaboration between public and private stakeholders was decisive for the conception, development and management of BiciQui. A public-private partnership was established, which included local authorities (the Metropolitan City and the Municipality of Bologna) and private partners in logistics and events organisation.

Collaboration between public-public stakeholders was fundamental for uncovering legislative and regulatory prerequisites, whereas the public-private partners worked together on the business model and communication efforts. The interest from private stakeholders has been very strong, both through willingness to use own land areas for events or by contributing financially to the success of BiciQui. The initiative has been well received by both the private and public sector, and numerous requests to replicate BiciQui suggests that public-private collaborations like this are in Bologna to stay.

Image 2: Biciqui at the Bicipolitana Bike Day
(Credits photo: 1Cinquantesimo)

In Oslo, the city administration took initiative to develop a network of mobility hubs outside the city centre, in the northwest suburbs of the Grorud Valley. The overarching goal of the network has been to make it easier to choose sustainable transport modes as the natural first choice in areas that have less well-developed public transport offers compared to other parts of the city. The intent was to co-locate a variety of mobility services close to key public transport such as train, metro and bus stations.

The network relies on the collaboration of many actors such as new mobility service providers, the municipality, housing corporations and national government agencies. The collaboration started with the city inviting key actors to an initial dialogue conference. The municipality also worked with land-owners to access space for mobility hubs. The design and services offered at the different mobility hubs are a result of the private-public and public-public collaborations throughout the project.

In Oslo, all actors involved share the vision of wanting to explore and learn from establishing a mobility hub network to reduce greenhouse gas emissions and the use of private cars. The hubs in Grorud were also an opportunity for the mobility service providers to test the use of their services in the outer city which has been an unexplored area so far.

The less central areas of the city have been seen as challenging for micromobility operators due to large land areas and long distances, particularly for the rebalancing of vehicle fleets. The biggest perceived hindrance to public-private collaboration for developing a network of mobility hubs has been local micromobility regulations. The City of Oslo will adopt a new regulation that will alleviate these challenges and take into account the need for mobility offers in the outer parts of the city. This, together with a framework for how private and public actors can work together beyond the realm of procurement or concessions, can ensure success for the further deployment of mobility hubs across the city.

Image 3: Mobility hub in Grorud, Oslo *(Credits photo: City of Oslo)*

In Rome, an important part of implementing their Sustainable Urban Mobility Plan is moving people over to more sustainable modes of transport. The creation of mobility hubs and the upgrading of existing ones play a crucial role in this, combining a range of services, including the installation of bicycle boxes and lockers and sharing services. The installation plan for bike boxes includes 2000 protected bike spaces in 40 stations of the metro and regional railway network. The introduction of bike boxes service required close collaboration between Mobility Department and Rome Mobility Agency through the establishment of a framework agreement for the installation of bike boxes. The private sector collaboration has followed a more traditional tendering process. Once a supplier was selected, the Public Transport Operator (ATAC), Rome Mobility Agency and the supplier INTECH identified the metro stations where the bike boxes were to be installed, followed by training of ATAC employees in the management of the service.

Image 4: Bike boxes at S.Paolo metro station during the MOVE21 site visit in Rome *(Credits photo: R. Vergnani)*

Experiments with augmented mobility hubs and hotels

Cities across Europe are increasingly experimenting with mobility hubs and how they can be augmented or reiterated to offer more complementary and enabling services to urban mobility beyond the basic trip offer. In this, local authorities often must seek new collaborations with private companies and associations, many times in adjacent or unrelated domains to the transport sector. Enhancing or reiterating the very meaning of mobility hubs can offer several advantages.

By integrating diverse services, such as sales, service, reloading, financing, pick-up points, storage or social support, hubs can become more accessible and convenient for a wider range of users. This fosters greater community engagement, reduces the need for separate facilities, and maximises the use of available space. The hubs can also unlock traditional value chains and enable new roles and business models needed for the transition into a circular business ecosystem. Furthermore, such integration can improve the sustainability and efficiency of urban infrastructure, while also creating new economic opportunities and enhancing the overall quality of life in the area.

MOVE21 offers insights on how public and private entities collaborated in the development of iterations of mobility and logistics hubs.

Hamburg neighbourhood hubs

Hubs can meet a larger variety of needs of a neighbourhood beyond addressing mobility needs, for example logistic services such as waste collection, or social services, cultural offerings and other improvements that increase the perceived quality of a location. Hamburg has developed a multi-functional concept which follows a modular approach that can be adapted to different structural conditions in different neighbourhoods and areas of the city.

The City of Hamburg works with a large number of private or semi-private companies on different contractual or co-operative bases. Hamburg is a city-state, and it is often not the administration of the districts, that can be understood as the communal level, that are in charge of framework contracts or other binding agreements.

In MOVE21, the development and implementation of the project's measures is led by the District of Hamburg-Altona, and collaboration and business models applied there are not necessarily the same that might be applied once measures are replicated or upscaled within the city. Neighbourhood hubs in Hamburg can include a wide variety of services and the number of actors and the sectors they come from are equally varied.

The neighbourhood hub in the city district of Altona combines social use cases with commercial logistics and mobility services. In addition, the distribution centre operated and opened by Deutsche Bahn in Holstenstrasse houses a transshipment point for last mile parcel shipments on cargo bikes. The parcel service providers GLS, Hermes and CityLog partner with DeinTopf e.V. that organises social services and primarily serves food and everyday necessities to the homeless and needy.

Image 5: Neighbourhood hub in Holstenstrasse, Hamburg
(Credits photo: DB AG / Oliver Lang)

In the future in Hamburg, solutions for freight transport, mobility and socio-cultural uses in Altona are combined in micro-depots for more resource-efficient urban transport. The commercial premises at Holstenstrasse are partly used for transport services in the redesign of the last and first miles. To ensure good integration of hubs into the surrounding area, additional services are designed with a keen eye for the needs of residents in the neighbourhood.

Another neighbourhood hub is being built in the parking lot along Stresemannstrasse between Kaltenkircher Platz and Plöner Strasse. The hub consists of a micro-depot container, a new parking zone for micromobility, and bicycle racks for improved transfer to public transport. The hub receives goods via established logistics networks for last mile distribution using emission-free small vehicles in the surrounding area. The current logistics user is the company Tricargo.

The micro-depot is a first of its kind container-type facility. It is a newly developed modular system of lightweight container modules designed to fit regular parking spaces. The City of Hamburg and Deutsche Bahn have developed a tender template for micro-depots, allowing municipalities or other parties to benefit from experiences and findings in Hamburg. The local cargo-bike manufacturer and courier company Tricargo uses the micro-depot and is looking to upscale the use of micro-depots to optimise their delivery structures.

The various sharing offers (Switch, e-scooter providers) at Kaltenkircher Platz feed public transport and are important building blocks for reducing motorised individual traffic by private vehicles. In addition to e-scooters, other vehicles are also conceivable in the micromobility area, such as e-mopeds, e-bikes and also providers of e-bike fleets for private or commercial customers. An expansion to suburban areas should lead to similar developments and optimise the current mobility offer. In the future, the hub will be a starting point for further development and exchange with other municipalities and districts of the City of Hamburg.

One model for collaboration the City of Hamburg uses to identify fields of actions and solutions for specific or strategic issues are Memorandums of Agreement (MoU) with the private sector. One MoU that has been important is the one between the Free and Hanseatic City of Hamburg and Deutsche Bahn AG on smart cities.

The agreement lists solutions both parties have identified as essential to rethinking mobility and logistics to enhance the quality of life in the Hamburg metropolitan region and to contribute to the UN's Sustainable Development Goals. The collaboration encompasses integrated mobility, railway stations, intelligent logistics and a smart city data platform. Learning from the pilots in Hamburg, Deutsche Bahn is looking to make railway station areas available for last mile logistics across Germany.

Rome micrologistics

The promotion and uptake of cargo-bikes is important in Rome's Sustainable Urban Logistics Plan and an ingredient towards more sustainable urban logistics. Doctorbike, a cargo-bike service provider, was entrusted with last-mile distribution in a specific neighbourhood close to the S. Paolo metro station. Doctorbike provides free rental services of cargo-bikes and used by local markets and residents of the area.

The launch of this service is the starting point for involving other similar service providers: thanks to the strong collaboration of RSM and the Department of Mobility with cargo bike providers, microhubs for temporary storage of goods will be identified and shared, to ensure sustainable distribution in the city.

Image 6: Open Day of the Doctorbike service in Rome during the European Mobility Week 2024 *(Credits photo: Roma Servizi per la Mobilità)*

Gothenburg mobility hotel

Gothenburg has a long-standing tradition of collaboration and networking between the public and private sector. Over decades, Gothenburg has nurtured connections with stakeholders, leading to significant initiatives such as the establishment of science parks, the operation of 60 active testbeds, and participation in national and international projects. Platforms like Gothenburg Green City Zone and strategies like the Environment and Climate Programme exemplify large-scale efforts.

Gothenburg's mobility hotel, situated in the shopping centre Nordstan in the heart of central Gothenburg, is a zero-emission micromobility hub with multiple functions.

In 2024 it included shared fleet of vehicles and bikes for service providers, mobility companies sharing space for the provision of services and sales, a battery swap station for micromobility operators, an unmanned 24/7 open warehouse store wholesaler for professional service providers and cargo bike hub with consolidation of goods and last mile delivery as well as a co-working space.

The Mobility Hotel supports Gothenburg's mission towards a climate neutral city by 2030. Central Gothenburg faces challenges with congestion, environmental quality, safety and vacant shop premises. A shift from cars to micromobility will make the city centre more spacious, cleaner and more pleasant where services are located closer to the citizens.

The location, in a large business and shopping centre in the heart of the city, is a result of a collaboration between the three founders of the hotel: the Urban Environment Department in the City of Gothenburg, Business Region Gothenburg, and Nordstan business and shopping centre. All share a vision of sustainable urban development and saw the Mobility Hotel as a concrete step in the transition towards that vision.

Image 7: Inauguration of mobility hotel in Nordstan, Gothenburg
(Credits photo: Nordstan)

The Mobility Hotel was developed through close collaboration based on trust, common goals and knowledge of different stakeholders needs. The private partners in the collaboration represent micromobility operators, urban logistics operator, a B2B retail wholesaler, micromobility sale and service, battery swap and the property owners. The public partners are the Urban Environment Department of the City of Gothenburg and the public business development organisation. The different actors in the mobility hotel shares spaces, risks, successes and costumers, and develop new collaborations and services together.

The Mobility Hotel was developed by drawing on extensive experience, data collection, a thorough needs assessment and prior knowledge. A cluster analysis on micromobility was conducted, which revealed that many new SMEs have emerged in the fields of micromobility and micrologistics, spanning both the manufacturing and service sectors. The cluster analysis highlighted a need for closer collaboration within the industry and the need for more dialogue with the city and infrastructure partners that support micromobility and micrologistics such as reloading hubs.

Extensive co-creation with both private and public actors took place during the development of the hotel. The first six actors to offer services and collaborate in the mobility hotel are a sales and service company of electric mopeds and scooters (Urban corner), a sales and service company of in-store and mobile bike services (Bikefixxx), an urban logistics operator (Pling), a battery-swap company for electric micromobility (GoCiklo), an offer of bike trial for service providers (the City of Gothenburg), and a B2B wholesaler in the industry, construction, electricity and HVAC segment (Ahlsell). These actors have signed multi-year contracts to offer their services in the mobility hotel.

The Mobility Hotel in Nordstan opened in May 2024. Developing the mobility hotel remains a priority for the partnership and it has established three dedicated working groups to this end. This unique model fosters collaboration among all actors, allowing them to share risks and successes while developing new services. The benefits of collaboration are well known, for example maximising resource utilisation, efficiency gains, and increased visibility. By adding non-traditional services in a mobility setting, there are additional gains to be mentioned such as increased foot traffic, diversification of revenue streams, building of ecosystems and enabling innovation and experimentation.

The Mobility Hotel benefits not only logistics and mobility but also the real estate sector, construction industry, retail sector and the city itself. By incorporating multiple perspectives, the hotel has created new connections and business opportunities, reducing risks for individual actors while showcasing innovations and new ways of doing things.

Bologna automated micro-hubs for logistics

Automated logistic for consolidation and trans-shipment of parcels by three dedicated lockers from conventional vans to zero emissions vehicles, and last-mile delivery in the Limited Traffic Zone and historical centre of the city has been tested in Bologna. The pilot is characterised by high level of automation (unattended and automated management) and an open multi-operator concept. A strong public-private partnership was formed to implement the pilot, and a formal agreement between the City of Bologna, the Metropolitan city of Bologna, Institute for Transport and Logistics, TNO, Due Torri and Salerno Trasporti was signed.

These partners together comprised owner of parcel lockers, owner of the Bologna Sustainable Urban Mobility Plan, coordinator of operations and logistics operators. The agreement guarantees for mutual commitments, financial liabilities, but also for data and knowledge sharing.

Image 8: Automated microhub located in via Calori, Bologna
(Credits photo: Institute of Transport and Logistics, ITL)

Kaia mobility hotel in Oslo

Oslo's first mobility hotel aims to facilitate and enable more bicycle-based urban logistics in the centre of Oslo and in the area designated as a future zero-emission zone. The hotel is a one-stop shop for vehicle purchase, financing, service and maintenance, and vehicle modification. It also provides a rest area for workers, storage and charging facilities. The Mobility Hotel will be expanded to include small-scale consolidation, an outdoor battery swapping station and a small-scale warehouse.

The Kaia Mobility Hotel was established in 2024 in collaboration with Mobility Solutions, Wolt, Nordic FM Group (KeySec) and the Norwegian postal service Posten/Bring in Filipstad. The Filipstad area is in the inner city in an area under re-development and is adjacent to the Aker Brygge and Tjuvholmen waterfront developments. Mobility solutions is responsible for the development and operation of the hotel, while Wolt, KeySec, and Posten are customers. These customers represent three different market segments within urban logistics and users of a mobility hotel: direct transport (Wolt), last-mile distribution (Posten), and mobile services (KeySec/Nordic FM Group). The hotel is open for additional partners to join from both the private and public sector.

The partnership is formalised through a legal R&D agreement where partners share risks and costs. The agreement places great focus on learning from each other and from different solutions that can contribute to a modal shift in favour of heavy-duty cargo bikes rather than cars or light duty vans. An important additional element is the sharing of logistics data and insights that will help partners determine the best possible configuration of services at the mobility hotel and subsequent iterations. For the City of Oslo, data and insights will help the city determine the upscaling potential for such hotels, their impact on modal shares in urban logistics, and how they fit into the mobility ecosystem in Oslo.

Image 9: Kaia mobility hotel in Oslo
(Credits photo: City of Oslo)

Viehhof bike logistics hub in Munich

In Munich, a pilot project for sustainable logistics with five public and private partners uses the Viehhof bike logistics hub to shift almost all of their last-mile logistics transport to cargo bikes. Currently, logistics operations of courier, express and parcel logistics service providers (KEP), which directly emit almost 220 tonnes of greenhouse gases per year. Additional greenhouse gas emissions caused indirectly by traffic effects such as double-parking have not yet been taken into account. The project examines both the direct potential for reducing greenhouse gas emissions through the use of cargo bicycles and the indirect potential for improving the traffic situation in the city.

According to a preliminary estimate, the changeover to heavy-duty bicycles at the Viehhof could reduce the number of kilometres travelled by 250,000 per year and thus reduce greenhouse gas emissions by six tonnes or 2.8%. The pilot project includes traditional parcel and courier logistics, construction site logistics and general cargo and pallet logistics. One of the partners in the field of construction site logistics will supply the entire City of Munich from the Viehhof bicycle logistics hub.

The project is being carried out by the City of Munich in cooperation with the project partners which include the logistics companies DHL and Hermes, the transport company Tiramizoo, the construction site logistics and catering company GVO and the Munich transport company MVG.

Image 10: Opening of the Vienhof bike logistics hub in Munich
(Credits photo: LHM, Nagy)

Navigating salient topics in public-private collaboration

Public private collaboration varies in form and function (George et al., 2024), but often builds on a culture of trust, problem solving based on shared goals and mutual dependency (Smith et al., 2016). Public private collaboration starts where parties see mutual benefits, and these can for example be optimisation of resources, improving efficiency and quality of services or creating synergies. At the same time, tensions can occur, for instance on different objectives, on transparency and accountability, and on risk allocation or organizational cultures.

We will highlight four focus areas where potential challenges and tensions can occur and that warrant attention in public-private collaborations. These focus areas are formalisation of collaboration, goal attainment and shared goals, funding and risk sharing.

Formalising public-private collaboration

Formalising public private collaboration is about the way public-private collaboration is designed and shaped into a (fixed) structure or set of rules. This often involves creating formal agreements that define roles, responsibilities and expectations of all parties involved. These formal agreements can take various forms such as a Memorandum of Understanding (MoU) which is often used to outline initial agreements and intent to collaborate, all the way up to Public-Private Partnerships where a contract or agreement covers various aspects of collaboration, organisation, financing and allocation of risk. It is important to carefully consider the purpose and scope of the collaboration when choosing the type and level of formalisation for a public-private collaboration. The choice between a less and a more formal collaboration should be guided by the specific goals, context, and needs of the collaboration.

In the case of the automated logistic microhubs tested in Bologna a formal agreement was signed to put in action a strong partnership between the local and metropolitan public authorities and the private logistic operators. This formal agreement regulates respective responsibilities and financial relations. After several meetings held to agree and develop the initial business model and flow of operations, all the partners were committed to share the progress of the delivery service in weekly meetings. Further legal contracts were stipulated bilaterally to regulate the details of the economic aspects between the partners involved. More specifically, thanks to MOVE21, the Metropolitan city of Bologna signed a contract with Salerno Trasporti, the last-mile delivery operator, in charge of the last-mile parcels' delivery in the Bologna limited traffic area.

In the case of Gothenburg's mobility hotel, the location, in a large business and shopping centre in the heart of the city, is a result of a productive collaboration between the Urban Environment Department, Business Region Gothenburg and Nordstan business and shopping centre. These public and private partners share a joint vision of enabling the necessary transition to more sustainable transport and sustainable urban development. The Urban Environment Department and the business centre signed a collaboration agreement underlining the ambition to collaborate towards a mobility hotel.

Further legal multi-year lease agreements were signed between the participating actors in the mobility hotel and the business and shopping centre. Three collaborative bodies were formed to keep the collaboration on track: a strategic, an operative, and a communication group. These operate on a more informal basis and are driven by shared interests and ambitions rather than being bound by contractual agreements. This approach fosters a flexible and innovative environment, enhancing the overall effectiveness of the partnership.

For the Kaia Mobility Hotel, a formal R&D contract was signed between the collaboration partners. The contract lays out the purpose of the agreement, the responsibility of each actor, as well as the financial and in-kind contributions from each partner. The contract is also open for opt-ins, meaning that actors not involved in the original contract are able to take part in the hotel at a later stage. The whole purpose of Kaia Mobility Hotel is to test out new solutions and business models across verticals and supply chains and be open to new participants and not be constrained by the original signatories.

Goal attainment in public private collaboration

Achieving goals in public-private collaborations requires a strategic alignment of objectives, resources, and expertise from both sectors to drive innovation, efficiency, and sustainable outcomes. Vos et al. (2017) describe how governance must employ balancing mechanisms to address three inherent tensions.

These include promoting collective sense-making to resolve cross-organisation tension, creating goal alignment to address the cooperation-competition tension, and enforcing joint management to balance rigidity and flexibility. These tensions directly impact goal attainment in public-private collaboration and partnerships by influencing the effectiveness of collaboration and the ability to achieve desired outcomes.

Cross-organisation tension and mismanagement of this tension can lead to miscommunication, conflicts, and distrust, which hinder the alignment of efforts towards common goals. Effective management involves creating collective awareness and understanding of each partner's roles and objectives, which is crucial for coordinated action and achieving shared goals.

Cooperation-competition tension and the balancing of joint and individual objectives is essential for maintaining a productive partnership. If partners focus too much on their own goals at the expense of the collective mission, collaborations may fail to achieve their intended outcomes. Aligning interests and fostering mutual cooperation ensures that both joint and individual goals are met, enhancing overall goal attainment.

Rigidity-flexibility tension may also occur, and the ability to adapt to changing circumstances while maintaining a clear direction is vital for the success of public-private collaboration. A rigid approach can stifle innovation and responsiveness, while too much flexibility can lead to a lack of focus. Balancing these forces through joint management and skilled leadership helps partners navigate uncertainties and stay on track towards their long-term objectives.
To overcome these tensions, goal setting and alignment is an important requirement for goal attainment in collaborations with multiple stakeholders with diverging interests such as in the case of urban logistics. Logistic service providers, carriers, shippers, shops, final consumers, and public authorities all have different concerns.

For example, logistic service providers tend to prefer larger shipments due to cost minimisation strategies, while their clients, the shops, tend to prefer smaller shipment sizes due to space and inventory constraints (particularly in dense urban areas). This is often also the case in the context of sustainability and traffic reduction goals. Even when relevant actors are interested (or understand the need for) measures to decrease congestion, measures and how they are implemented can differ. Logistic service providers are more inclined to support off-hour delivery services because of the lack of size restrictions, while shops and final consumers tend to prefer low traffic zones where smaller vehicles are allowed to circulate.

Public authorities need a forum to debate and mediate the diverging interests of the urban logistic stakeholders when managing this complex policy topic and when defining goals, policies and measures. By including stakeholders in the policy process, public authorities can align the objectives of both the stakeholders and internal (governmental) objectives. A local standardised engagement process with the private sector can help facilitate focussed and inclusive knowledge exchange on urban logistics that will feed into fit-for-purpose policies. The focus should be on the three “C”s: collaboration, communication, and consolidation as discussed at a public-private roundtable on urban logistics in Oslo (Urban Logistics for Ambitious Climate Cities Policy Brief, 2024).

A forum format often used is Living Labs. These are spaces that allow for open innovation and the co-creation of solutions by encouraging collaboration, knowledge sharing, transparency and trust across participants. They encourage the relationship between stakeholders and a deeper understanding of their motivations and needs. Living Labs are particularly useful in the context of urban mobility and logistics since, as stated before, the different relevant actors often have conflicting interest and can benefit from a transparent co-created approach to reduce the resistance towards the implementation of new measures.

The Logistics Living Lab of Rome was set up in 2020 and involves private sector stakeholders, public authorities and universities. Participatory processes within the Living Lab have helped prioritise the main actions that the city administration will take to tackle the externalities that urban logistics have, while taking into consideration the importance of the sector and their interests.

The Rome Sustainable Urban Logistics Plan provides a strategic outline of the policies although it does not necessarily have the implementation steps needed to reach the goals stated in it. For this, the Logistics Living Lab of Rome has been given the task to discuss and implement the zero-emission zone, a key policy in the Rome Sustainable Urban Logistics Plan. In this work, the Lab determines in which areas of the city a zero-emission zone is viable and under which conditions. It not only takes into account public authority's sustainability and liveability goals, but also business needs. The Logistics Living Lab is therefore by design made to converge on goals by agreeing to jointly determine the tactical and operational objectives needed to successfully implement a zero-emission zone, together with the infrastructure and complementary policy requirements needed.

In Oslo's MOVE21 Living Lab, a dialogue meeting was held with startups offering mobility solutions in order to gauge interest, share knowledge and develop understanding of the potential services that would be well suited to a mobility hub in the Grorud valley, a traditionally underserved district on the outskirts of Oslo. The availability of e-scooters at the mobility hub was envisioned as one of several services that could be provided to increase residents' mobility options.

Multimodal hubs have specific requirements that must be met in order to function well and local contexts, laws and regulations can vary considerably from country to country and city to city. In general, it is important to have formal agreements between property owners and public authorities (public transport and road authorities) regarding access to specific locations. Mobility and transport companies will be concerned about cost effectiveness of a hub, something which can be influenced heavily by legislation, as was the case in Oslo where Oslo's own micromobility regulation and the regulatory cap on the number of micromobility vehicles proved to be the biggest barrier for constructive private-public collaboration and goal attainment/convergence.

In Gothenburg's MOVE21 Living Lab, extensive facilitation and matchmaking were essential for aligning goals between different stakeholders. The collaboration process commenced with workshops that engaged project partners and key stakeholders in needs assessments and potential solutions. This ensured that stakeholders shared the same objectives. These sessions fostered an environment of open dialogue, enabling participants to express their priorities and expectations. This was critical for achieving goal alignment. Additional dialogue meetings provided further opportunities for matchmaking among partners, and reinforced relationships and clarified roles that support common goals.

A significant milestone was the creation of a concept drawing that visually represented the project and helped align stakeholders around a unified vision. This facilitated negotiations and agreements with potential new collaborators and ensured commitment to shared objectives. The initiative included a market analysis report and stakeholder mapping, which provided valuable insights into the local mobility landscape and further reinforced goal alignment.

In preparation for the deployment of the neighbourhood hub Holstenstrasse, the Hamburg MOVE21 team quickly agreed on the goal of combining urban logistic purposes and social interests. The concept of helping the homeless was just as convincing as it helped to get the location approved more quickly by the authorities. In ongoing operations, however, the goal of social counselling was not directly achieved, but in 2024 it was jointly renewed and new paths agreed. Setting realistic targets is very important among the partners, and an iterative process is encouraged.

Image 11: Neighbourhood hub in Hamburg Holstenstrasse
(Credits photo: LHM, Nagy)

Another example is public-private digital collaboration. Here, public-private collaborations are crucial for driving innovation, economic growth, and societal advancement in the digital age. These frameworks leverage public sector support and private sector expertise, particularly in data, IT, and digital infrastructure. Public-private collaboration fosters digital innovation by enabling tech companies to integrate advanced technologies into public projects, creating a synergic environment for digital transformation.

However, negotiating IT-contracts can be complex, involving the definition of responsibilities, risks, and legal provisions. Aligning the digital objectives of public and private entities can be challenging, as the public sector may prioritise transparency and public good, while the private sector focuses on innovation and profitability. Success in IT-focused collaborations also depend on supportive regulatory and cybersecurity environments, requiring strong political commitment, a robust legal framework, and effective institutional arrangements.

In Oslo's MOVE21 Living Lab, the public-private collaboration between the public transport company Ruter, the logistics software company MIXMOVE, the shopping centre CC Vest and its parent company, the real estate company Mustad Eiendom, piloted the transport of goods from Oslo's largest shopping centre with on-demand public transport shuttles. This collaboration consisted of a technological innovation, where the use of information technology in transport involves ordering, organising, consolidating goods with the same destination, and tracking deliveries. This requires integrating logistics management solutions with passenger transport systems. It became clear that new services need public-private partnerships with agile protocols and data sharing agreements for deployment, maintenance, and adjustments. It also necessitates new legal contracts and revised procurement standards. Combining passenger and freight services requires cooperation among diverse stakeholders who are not typically used to working together, and thus this asks for close alignment of goals, referring to combining people and goods in one vehicle, but also alignment on targeting technological innovation to foster digital collaboration.

It also necessitates new legal contracts and revised procurement standards. Combining passenger and freight services requires cooperation among diverse stakeholders who are not typically used to working together, and thus this asks for close alignment of goals, referring to combining people and goods in one vehicle, but also alignment on targeting technological innovation to foster digital collaboration.

Financing and funding public-private collaboration

Working together, private companies and government entities can combine their strengths to develop, design, finance and operate projects soundly. Civic organisations can also play a role in public-private collaboration. Joint funding of pilots and projects involving private, public, and civic organisations can be structured to leverage the unique strengths and resources of each sector.

Private companies may provide capital investment, commercial debt, or in-kind contributions such as technology, expertise, and management skills. Government entities can contribute through direct funding, grants, public debt, or equity participation. They may also offer tax incentives or subsidies to encourage private investment. Non-profits and community groups can contribute through fundraising, volunteer efforts, and advocacy. They may also provide valuable insights into community needs and ensure the projects align with public interests.

Resources from all sectors are often pooled together to maximise efficiency and impact. This includes financial resources, human capital, and technological assets.

Public authorities must also consider the role they wish to play in driving innovation. Municipal budgets are naturally structured such that everyday operations are prioritised.

However, allocating more funding in budgets to testing, experimenting or piloting could also be considered as a way of creating more predictability and enabling better planning for both the private and public stakeholders.

For example, if a mobility hub is intended to be a permanent installation with support from a city administration, then the city council should allocate funds accordingly. Predictability and the associated potential to develop a long-term strategy will make such innovations more attractive for private partners to participate in.

In Oslo, funding of the mobility hub network has so far been divided between real estate companies and housing associations and the city administration. In the case of the Kaia Mobility Hotel, all partners contribute with cash and in-kind contributions for a set time period with the aim to provide sufficient runway to test and launch new and economically sustainable business models.

In Bologna, BiciQui has showcased how pooling smaller private, public and non-profit funds have made it possible to test small-scale pilots that can later turn into more stable features in the city. The non-profit association Piazza Grande covered the costs related to the availability of equipment and communication together with the metropolitan authority. The public success of BiciQui has made private sector partners and organisations positive towards covering costs of future implementations.

In Hamburg, the partnership between Deutsche Bahn and the City of Hamburg exists on several levels. On the one hand, Deutsche Bahn bears a risk in the measures it finances with its own funds for investments. On the other hand, the company advises Hamburg and its districts on the financial participation from the state authorities or the districts for improvement of measures, among other things. In MOVE21, the company also contractually passes on part of the funding to B2B companies, such as logistics companies.

Risk-sharing in public private collaboration

One of the critical aspects that determine the success of public-private collaborations is the effective management and sharing of risks. Risk-sharing is not merely a financial arrangement but a strategic approach that aligns the interests of different parties towards common goals. It involves identifying, assessing and distributing risks in a manner that optimises resource use, enhances project sustainability, and ensures equitable outcomes.

Risk-sharing mitigates the potential adverse effects of uncertainties and unforeseen events, which can derail projects and lead to financial losses. Both public and private partners can safeguard their investments and ensure project continuity by an appropriate distribution of risks. This collaborative approach fosters a balanced risk profile, encouraging private sector participation in projects that might otherwise be deemed too risky.

The World Economic Forum (2024) shares different perspectives of priorities on risk-sharing, from both the public and private sector. For public sector priorities, they list the following elements linked to risk-sharing:

- Risk offsetting: collaboration can facilitate the sharing of financial risks in transitioning to sustainable practices by leveraging public sector stability to attract private investment through various financial mechanisms. Governments also support long-term investments in sustainable technology by setting procurement conditions and providing financial incentives for high-risk, cost-intensive innovations.
- Long-term visibility of demand: misaligned planning timelines between the public and private sectors impede effective collaboration and risk management. By providing companies with early visibility of long-term public demand, the public sector can enable better planning and proactive risk management.
- Funding risky parts of innovation: innovation inherently involves risk, and the private sector may often be too risk-averse to invest significantly in certain areas. In these cases, the public sector plays a crucial role, particularly in basic research and the "valleys of death" of innovation, where traditional government funding is non-existent and private sector interest has yet to emerge.

For the private sector priorities, the World Economic Forum lists the following elements linked to risk-sharing:

- New profit models: by adopting profit models that prioritise collective resilience efforts, like joint investment funds and risk-sharing agreements, companies can foster a culture of mutual support. This approach strengthens the entire supply chain network, moving away from zero-sum competition.
- Grounded risk assessment: from the private perspective there is a need to assess how risks are evolving and determine acceptable risk levels in different areas. This understanding then helps to make informed decisions and manage risks effectively.

In Oslo, in the case of the mobility hub network, the mobility service providers took risks to make their services available in areas previously not covered by micromobility companies. The financial costs proved to be too great for some of the mobility service providers which resulted in their withdrawal of their services the following spring. This underscores the importance of having supporting regulation in place, which makes it financially viable to provide services to a larger user group in a larger geographical area.

In Gothenburg, the mobility hotel concept is based on sharing various aspects, including risks, successes, competencies, customers and space. This risk-sharing approach facilitates public-private collaboration. It enhances logistics and mobility while it also benefits non-traditional services of multimodal hubs, such as real estate and construction sectors. The actors involved operate in shared and individual spaces, similar to coworking environments, which fosters collaboration grounded in both trust and formal agreements.

From this, new business models have emerged, for example on how an existing cargo bike hub now manages the delivery of bike service pop-up tents, and the bike shop now oversees rentals and maintenance of bikes in the bike pool. In this setup, the success of one actor contributes to the overall success of the initiative, reinforcing the idea that shared outcomes benefit all stakeholders involved. This framework not only supports sustainable mobility solutions but also promotes a cooperative environment that strengthens community ties and business opportunities in Gothenburg.

A note on EU funding for public-private infrastructure projects

The Trans-European Transport Network (TEN-T) policy addresses the development of a Europe-wide network of railway lines, roads, inland waterways, maritime shipping routes, ports, airports and railroad terminals. The aim of the policy is to create a seamless cross-border transport network without bottlenecks and technical barriers. With the recent revision of the TEN-T Directive, the EU has outlined a comprehensive strategy aimed at enhancing mobility and sustainability in Europe's transport infrastructure, recognising the local level as an essential contributor to the performance of the network.

Over the last few decades, the EU has promoted the use of public-private collaboration to speed the development of the TEN-T, assuring economic, social, and geographical cohesion and boosting accessibility inside the EU.

The Connecting Europe Facility (CEF) Transport programme is a key EU funding instrument for the development of high performing, sustainable and interconnected TEN-T, with a focus on the nine core network corridors. The programme co-finances projects that enhance multimodality, improve infrastructure and advance innovation and new technologies. Public-private collaboration plays an important role in funding CEF projects, particularly large-scale infrastructure efforts that require major capital investment. Collaboration allows public and private sector actors to share project risks and gains.

Several examples of large infrastructure projects show that EU funds can be combined with a public-private partnership structure to bridge financing gaps in large-scale rail projects. The Øresund Bridge is an example of this where both the Swedish and Danish governments partnered with private investors to finance, build, and operate the bridge. This cross-border partnership has been pivotal in strengthening connectivity between the Scandinavian peninsula and the rest of Europe.

Other notable European high-speed rail projects, such as the Rail Baltica, the Porto-Lisbon and the Brenner Base Tunnel projects, which have employed public-private partnership models attract substantial private investment and enable more efficient development processes.

The European Court of Auditors (ECA 2018) has highlighted concerns and drawbacks about public-private partnership implementation, mainly in terms of negotiation, complexity, and

accountability. Drafting and maintaining contracts require extensive experience to ensure that terms are fair and public interests are maintained through time. Long-term agreements must be carefully drafted to avoid locking governments into disadvantageous conditions. Transparency and accountability are particularly important when using public funds.

The conference *Planning urban and trans-European mobility together in Oslo* in 2024 discussed, among other things, how to bridge the gap between long and short distance infrastructure planning. Large infrastructure projects in the STRING megaregion such as the Fehmarn Belt fixed link, the Hamburg node, and the Gothenburg – Oslo rail stretch also have direct impact on short distance infrastructures, investments and opportunities. Helsinki is currently making investments in the tram network with €1.3 billion going towards tram and light rail infrastructure in the years leading up to 2030. The majority of the investments come directly from the city with smaller funding from the national government. Local authorities are often overlooked by the national, European and private sector in decision-making processes related to infrastructure planning and its integration within the functional urban area.

The establishment of links between long distance transport infrastructure and the local, regional, and national transport networks within urban nodes is crucial for facilitating smooth transfer functions along TEN-T corridors. So far, both the CEF and the EIB resources have been primarily funding large infrastructure projects but should also pursue models and initiatives aimed to enhance and decrease bottlenecks in metropolitan areas such as ports, waterways, and rail links.

More flexible forms of funding and governance where the local level has a role to play should be pursued. Public local and regional authorities work with the private sector in a range of ways, and these relationships should also be leveraged on member state and EU-levels.

Image 12: Plenary during the conference *Planning urban and trans-European mobility together (Credits photo: Rikke Dahl Monsen)*

Eight Recommendations

Cities face growing challenges related to transport, climate emissions, traffic congestion, pollution, lack of adequate infrastructure, and rising mobility demands. In parallel, they face growing budget constraints for both small and large-scale transport projects like roadways, rail systems, and airports. Public-private collaboration has emerged as a powerful tool for cities to develop, maintain, and improve their transport systems. Cities and regions are looking for innovative ways to deliver high-quality, efficient, and resilient transport infrastructure. Based on the experience and learnings from MOVE21, we have developed eight recommendations:

01 Promote flexible processes and forms to enable innovation

Due the rapid pace of technological advancements, more flexible forms of collaboration can foster innovation. These more flexible forms of collaboration can allow the public and private sectors to experiment with shorter, iterative collaboration models without being locked into rigid, long-term contracts that are difficult to change. Local governments and commercial partners can work on smaller but scalable projects that can change over time based on performance and technological improvements.

02 Make the model of cooperation simple

Start with a simple model that aligns with core goals or visions and work from there. For example, Memorandum of Understandings can allow for easier execution and greater flexibility for involved parties and can also be valuable during exploratory phases of projects or pilot initiatives, as the example in Hamburg shows.

03 Leverage the technological expertise of private companies

The private sector is often at the forefront of innovations in many transport domains, such as smart mobility infrastructure, traffic management systems, urban logistics innovation and digital innovation. Cities and regions are excellent test beds for new solutions and can gain valuable insights in how they can improve, organise and regulate urban mobility and logistics.

04 Use co-creation processes as accelerators

Co-creation models, like the ones deployed in MOVE21, can accelerate the deployment and execution of seeding innovation ideas. For example, MOVE21 gave the push needed to existing city partnerships to create effective conditions for the execution of a long-term for public-private collaboration such as the Mobility Hotel Nordstan in Gothenburg.

05 Engage with local communities in the decision-making process

By involving residents, citizens and community organizations, public-private collaboration consortiums can better understand local needs and challenges, thereby designing solutions that take into account the social dimension and are more relevant and impactful in local and hyper-local contexts such as in Bologna (BiciQui) and Hamburg (Neighbourhood hub in Altona).

06 Revenue or risk-sharing can be an important success factor

Public-private collaboration can help spread risks and costs over several entities. Risk-sharing allows involved stakeholders to take greater risks than if they would operate alone. Some collaboration models also involve the sharing of costs, making it easier to test and experiment in a financially less risky way while also encouraging new business models to emerge either in one vertical or across value chains. In some instances, the sharing of revenues may also be an important success factor.

07 Go beyond the mobility scope

The scope of public-private collaborations can be broadened to pursue for example climate neutrality as a fundamental objective, transcending the boundaries of mobility alone. This can foster a more holistic approach to urban development, sustainability and urban mobility and logistics, and also showcase commitment to important societal goals. The open innovation approach encourages the sharing of knowledge, resources, and ideas to facilitate the co-creation of innovative solutions that can move beyond the mobility scope. The EU can support local and regional efforts and opportunities on this by creating stronger links to important policy packages such as the European Green Deal.

08 Seek out opportunities to enhance innovation capacities

Actively look out for competencies and expertise that, when combined, enhance the innovation capacities of public-private collaboration models. For private entities this may mean greater regulatory support and understanding, and for local authorities an improved understanding of technological developments. The EU should actively seek to support efforts by providing training, technical assistance and funding opportunities.

References

Publications

- Boardman, A. E., & Vining, A. R. (2010). **Normative and positive motives for public-private partnerships: Efficiency, economies of scope, and debt reduction**. *Journal of Comparative Policy Analysis*, 12(3), 235-255.
- Bonnet, C., & Chomat, E. (2013). **Concession agreements in France: A historical overview and modern trends**. *Journal of European Transport and Infrastructure Research,* 13(2), 123-140.
- Casady, C. B., Eriksson, K., Levitt, R. E., & Scott, W. R. (2019). **(Re)defining public-private partnerships (PPPs) in the new public governance (NPG) paradigm: an institutional maturity perspective**. *Public Management Review*, 22(2), 161–183. https://doi.org/10.1080/14719037.2019.1577909
- Croce, R., & Gatti, S. (2014). **The financial structures of public-private partnerships in the EU: Performance, risk, and governance**. *Journal of Public Economics*, 6(1), 30-45.
- European Commission. (2005). **The Trans-European Transport Networks (TEN-T): Overview of public-private cooperation**. Retrieved from https://www.europeancommission.europa.eu
- Eurocities. (2023). **Green and digital infrastructure: A survey on PPPs in European cities**. *Eurocities Urban Mobility*, Retrieved from https://www.eurocities.eu
- European Court of Auditors (2018). **Public Private Partnerships in the EU: Widespread shortcomings and limited benefit**, *Special Report*, No.9
- European Investment Bank (2024). **Market update; Review of the European public-private partnership market in 2023**, March 2024, https://www.eib.org/attachments/lucalli/20240030_epec_market_update_2023_en.pdf
- Gascó, M. (2017). **Living labs: Implementing open innovation in the public sector**. *Government Information Quarterly*, 34(1), 90-98.
- George, G., Fewer, T. J., Lazzarini, S., McGahan, A. M., & Puranam, P. (2024). **Partnering for Grand Challenges: A Review of Organizational Design Considerations in Public–Private Collaborations**. *Journal of Management*, 50(1), 10-40. https://doi.org/10.1177/01492063221148992
- Gonzalez Fernandez, S., Kubus, R., & Mascarenas Perez-Iñigo, J. (2019). **Innovation ecosystems in the EU: Policy evolution and Horizon Europe proposal case study**. *Sustainability* 2019, 11(4735). doi: https://doi.org/10.3390/su11174735
- Grimsey, D., & Lewis, M. K. (2005). **The economics of public-private partnerships**. *European Investment Bank Papers*, 10(1), 32-54.
- Hodge, G. A., & Greve, C. (2010). **Public-private partnerships: Governance scheme or language game?** *Australian Journal of Public Administration*, 69(1), S8-S22.
- Hodge, G. A., & Greve, C. (2017). **On Public–Private Partnership Performance: A Contemporary Review. Public Works Management & Policy**, 22(1), 55-78. https://doi.org/10.1177/1087724X16657830

- JPI Urban Europe. (n.d.). **Driving urban transitions: Sustainable future for cities through research and innovation**. Retrieved from https://jpi-urbaneurope.eu
- McKinsey & Company. (n.d.). **Public-private collaborations for transforming urban mobility**. Retrieved from https://www.mckinsey.com
- MOVE21 (2022). **Living Labs Establishment Report, Project deliverable D6.5**, June 2022, https://move21.eu/wp-content/uploads/2024/02/MOVE21-WP6-D6.5-Living-Labs-Establishment-Report.pdf
- MOVE21 (2023). **Governance innovation: solutions in MOVE21 and implications for other cities**, Project deliverable D4.2, December 2023 governance innovation: solutions in move21 AND IMPLICATIONS for other cities
- MOVE21(2022). **Capacity Building and Replication Master Plan**, Project Deliverable D.7.1, June 2022
- MOVE21 (2023). **Replication action plans for Oslo Gothenburg Hamburg Munich Bologna and Rome,** Project Deliverable D7.2, August 2023 https://move21.eu/wp-content/uploads/2023/09/MOVE21-WP7-D.7.2-Replication-action-plans-for-Oslo-Gothenburg-Hamburg-Munich-Bologna-and-Rome.pdf
- MOVE21 (2024). **Policy brief - Urban Logistics for Ambitious Climate Cities**, https://move21.eu/wp-content/uploads/2024/10/Policy-brief-Urban-Logistics-for-Ambitious-Climate-Cities.pdf
- Murwantara, R. (2023). **Government support for enhancing public-private partnerships (PPPs): Comparing, explaining and studying the effects across European countries**. *Journal of Public-Private Partnerships*, 15(3), 201-222. https://repository.uantwerpen.be/docstore/d:irua:16525
- OECD (2019), **Enhancing Innovation Capacity in City Government**, *OECD Publishing*, Paris, https://doi.org/10.1787/f10c96e5-en
- OECD (2024). Urban Logistics Hubs, ITF Roundtable Reports, No. 195, OECD Publishing, Paris, https://doi.org/10.1787/da4dee9f-en.
- Research and Innovation. (2023). **Horizon Europe: Strategic plan 2025-2027**. *European Commission*. Retrieved from https://research-and-innovation.ec.europa.eu
- Savas, E. S. (2000). **Privatization and public-private partnerships**. *New York: Chatham House Publishers*.
- SHOW (2023). **Best practices for implementation and application guidelines for Industry**, **Operators and Cities**, *D17.2. Horizon-2020 SHOW Project, Grant Agreement No. 875530*.
- Smith, E.M., Thomasson, A., **The Use of the Partnering Concept for Public–Private Collaboration: How Well Does it Really Work?**. Public Organiz Rev 18, 191–206 (2018). https://doi.org/10.1007/s11115-016-0368-9
- Timeus, K. and Gascó, M. (2018) **Increasing innovation capacity in city governments: Do innovation labs make a difference?**, *Journal of Urban Affairs*, DOI: 10.1080/07352166.2018.1431049 and OECD (2019), Enhancing Innovation Capacity in City Government, OECD Publishing, Paris, https://doi.org/10.1787/f10c96e5-en
- Trentini and Mahléné (2010). **Towards a Shared Urban Transport System Ensuring Passengers & Goods Cohabitation**, *July 2010TeMA - Journal of Land Use*, Mobility and Environment 3(2)

- Valkokari, K., Paasi, J., & Rantala, T. (2012). **Managing knowledge within networked innovation**. *Knowledge Management Research & Practice*, 10(1), 27-40.
- Verhoest, K., Carbonara, N., Lember, V., Petersen, O.H., Scherrer, W., van den Hurk, M. (2013). **Public Private Partnerships in Transport: Trends & Theory** P3T3, COST Action TU1001, 2013 Discussion Papers , Part I Country Profiles
- Vos, P., Tjemkes, B., Klaver, M., Verner, D.R. (2017). **Enhancement of public-private partnerships within critical infrastructure protection programs**, in: *Critical Infrastructure Protection Review*.
- Warsen, R., Nederhand, J., Klijn, E. H., Grotenbreg, S., & Koppenjan, J. (2018). **What makes public-private partnerships work? Survey research into the outcomes and the quality of cooperation in PPPs**. *Public Management Review*, 20(8), 1165–1185. https://doi.org/10.1080/14719037.2018.1428415
- World Bank. (n.d.). **Public-private partnerships overview**. Retrieved from https://ppp.worldbank.org
- World Bank **Public-Private Partnership Resource Center**, Public-Private Partnership Resource Center | Public Private Partnership (worldbank.org)
- World Economic Forum, **The New Era of Industrial Strategies: Tackling Grand Challenges through Public-Private Collaboration**, *White Paper*, January 2024

Websites

- https://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships https://www.britannica.com/money/public-private-partnership
- https://www.mckinsey.com/capabilities/sustainability/our-insights/public-private-collaborations-for-transforming-urban-mobility
- https://muenchenunterwegs.de/2035
- https://www.slimnaarantwerpen.be/en/news/antwerp-mobility-continued-positive-trend-in-2023
- https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/horizon-europe-strategic-plan-2025-2027-analysis-now-public-2023-05-25_en
- https://www.theparliamentmagazine.eu/news/article/the-problem-with-publicprivate-partnerships-and-the-role-of-the-eu https://sciencebusiness.net/news/Partnerships/new-horizon-europe-public-private-partnerships-are-making
- https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/603934/EPRS_BRI%282017%29603934_EN.pdf https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
- https://www.weforum.org/agenda/2022/01/how-to-harness-transformative-potential-public-private-partnerships/ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
- https://jpi-urbaneurope.eu/urbanlivinglabs/ https://www.eiturbanmobility.eu/city-club/mobility-living-labs/

About MOVE21

The main objective of MOVE21 is to transform European cities and functional urban areas into climate-neutral, connected multimodal urban nodes for smart and clean mobility and logistics. MOVE21 will do this through an integrated approach in which all urban systems are connected, and which addresses both goods and passenger transport together. As a result, MOVE21 will improve efficiency, capacity utilisation, accessibility and innovation capacity in urban nodes and functional urban areas.

The integrated approach in MOVE21 ensures that potential negative effects from applying zero emission solutions in one domain are not transferred to other domains but are instead mitigated. It also ensures that European transport systems will become more resilient. Central to the integrated approach of MOVE21 are three Living Labs in Oslo, Gothenburg, and Hamburg and three replicator cities Munich, Bologna and Rome. In these, different types of mobility hubs and associated innovations are tested and means to overcome barriers for clean and smart mobility are deployed. The Living Labs are based on an open innovation model with quadruple helix partners. The co-creation processes are supported by coherent policy measures and by increasing innovation capacity in city governments and local ecosystems. The proposed solutions deliver new, close to market-ready solutions that have been proven to work in different regulatory and governance settings. The Living Labs are designed to outlast MOVE21 by applying a self-sustaining partnership model.

The project partners

The consortium consists of 24 partners from seven different European countries, representing local city authorities, regional authorities, technology and service providers, public transport companies, SMEs, research institutions, universities and network organisations.

Find us

www.move21.eu

MOVE21: Zero Emission 21st Century

@move21eu