

GOVERNANCE ARRANGEMENTS FOR SMART MOBILITY HUBS

SUMMARY



ABSTRACT

English

The sustainable and smart transformation of the mobility sector affects governance on local, national, and supranational levels. Thus, the governance of smart mobility is assumed to be at a critical stage, with a wide range of intervention options available to policymakers to pave the way for a more sustainable mobility system. Multimodality and the implementation of mobility hubs are increasingly perceived as part of the shift. With the *governance arrangement*, we developed a theoretical framework that considers organizational and ideational factors. To answer the question of how mobility hubs shape a specific governance outcome and vice versa, we analyzed expert interviews and policy documents. The analysis of the four cases (living labs in Munich, Rotterdam, Brussels, and Vienna) uncover various factors that influence mobility hub planning, implementation, and operation. Organizational factors limiting the processes are undefined responsibilities, fragmentation of governance structures, and interdependencies of administration departments, mobility providers, and regional transport associations. Ideational factors i.e., include discursive disagreements regarding priorities and space allocation. We conclude that knowledge integration for these obstacles should be expanded to equip practitioners with appropriate skills and resources.

This research was carried out within the SmartHubs project. The document presented is a summary of Deliverable 2.3 and outlines the key findings on the governance of smart and sustainable urban mobility in the living labs.

Deutsch

Die nachhaltige und smarte Transformation des Mobilitätssektors beeinflusst die Governance auf lokaler, nationaler und supranationaler Ebene. Die Entwicklung smarterer Mobilität befindet sich in einer kritischen Phase. Politischen Entscheidungsträgern steht eine breite Palette von Interventionsmöglichkeiten zur Verfügung, um den Weg für ein nachhaltigeres Mobilitätssystem zu ebnet. Multimodalität und die Einrichtung von Mobility Hubs werden zunehmend als Teil dieses Wandels betrachtet. Mit dem Governance-Arrangement haben wir einen theoretischen Rahmen entwickelt, der organisatorische und ideelle Faktoren berücksichtigt. Durch die Analyse von Experteninterviews und Policy Dokumenten kann die Frage beantwortet werden, welche Einflüsse Mobility Hubs und das Governance-Arrangement aufeinander nehmen. Die vier analysierten Fälle (Living Labs in München, Rotterdam/Den Haag, Brüssel und Wien) zeigen verschiedene Faktoren auf, die die Planung, Umsetzung und den Betrieb von Mobility Hubs beeinflussen. Hindernde organisatorische Faktoren, sind unklare Zuständigkeiten, die Fragmentierung der Governance-Strukturen und die gegenseitigen Abhängigkeiten von Verwaltung, Mobilitätsanbietenden und regionalen Verkehrsverbänden. Zu den ideellen Faktoren gehören u.a. diskursive Unstimmigkeiten über Prioritäten und Raumaufteilung. Wir kommen zu dem Schluss, dass die Wissensvernetzung in Bezug auf diese Hindernisse ausgeweitet werden sollte, um die praktischen Akteur:innen mit entsprechenden Fähigkeiten und Ressourcen auszustatten.

Diese Forschung wurde im Rahmen des SmartHubs-Projekts durchgeführt. Das vorgelegte Dokument ist eine Zusammenfassung von Deliverable 2.3 und umreißt die wichtigsten Erkenntnisse über die Steuerung smartere und nachhaltiger urbaner Mobilität in den Living Labs.

Français

La transformation vers des mobilités durables et intelligentes affecte la gouvernance aux niveaux local, national et supranational. Ainsi, la gouvernance de *smart mobility* est considérée comme étant à un stade décisif, les décideurs politiques disposant d'un large éventail d'options d'intervention pour paver la voie à un système de mobilité plus durable. Des plus en plus, la multimodalité et la mise en place de pôles d'échange de mobilité (*mobility hubs*) sont perçues comme partie intégrante de ce changement. Avec le *governance arrangement*, nous avons développé un cadre théorique qui prend en compte les facteurs organisationnels et idéationnels. Pour répondre à la question de savoir comment les *mobility hubs* façonnent le résultat d'une gouvernance particulière et vice versa, nous avons analysé des entretiens avec des experts et des dossiers politiques. L'analyse des quatre exemples (living labs à Munich, Rotterdam/la Haye, Bruxelles et Vienne) met en évidence divers facteurs qui influencent la planification, la mise en œuvre et le fonctionnement des *mobility hubs*. Les facteurs organisationnels qui limitent le processus sont les responsabilités floues, la fragmentation des structures de gouvernance et les interdépendances entre les services administratifs, les fournisseurs de mobilité et les associations régionales de transport. Les facteurs idéationnels, entre autres, comprennent les désaccords discursifs concernant les priorités et l'allocation de l'espace. Nous concluons que des connaissances concernant ces obstacles devraient être mieux intégrées afin de doter les praticiens des compétences et des ressources appropriées.

Cette recherche a été réalisée dans le contexte du projet *SmartHubs*. Le document présent est un résumé du Deliverable 2.3 et expose les principales conclusions sur la gouvernance de la mobilité urbaine intelligente et durable dans les living labs.

Nederlands

De duurzame en smart transformatie van de mobiliteitssector is van invloed op governance op lokaal, nationaal en supranationaal niveau. De governance van smart mobiliteit wordt daarom beschouwd als in een kritieke fase, met een breed scala aan interventiemogelijkheden voor beleidsmakers om de weg vrij te maken voor een duurzamer mobiliteitssysteem. Multimodaliteit en de realisatie van mobiliteitshubs worden steeds meer gezien als onderdeel van deze verandering. Met het *governance arrangement* hebben we een theoretisch kader ontwikkeld dat rekening houdt met organisatorische en ideële factoren. Door interviews met deskundigen en beleidsdocumenten te analyseren, kunnen we de vraag beantwoorden welke invloeden mobiliteitshubs en governance op elkaar hebben. De analyse van de vier cases (Living Labs in München, Rotterdam/Den Haag, Brussel en Wenen) laat diverse factoren zien die de planning, implementatie en werking van mobiliteitshubs beïnvloeden. Organisatorische factoren die de processen belemmeren zijn onduidelijke verantwoordelijkheden, de versnippering van bestuursstructuren en de wederzijdse afhankelijkheid van overheden, mobiliteitsaanbieders en regionale vervoersautoriteiten. Tot de ideologische factoren behoren onder andere discursieve meningsverschillen over prioriteiten en ruimteverdeling. Wij concluderen dat kennisnetwerken met betrekking tot deze belemmeringen moeten worden uitgebreid om de praktische actoren uit te rusten met passende vaardigheden en middelen.

Dit onderzoek werd uitgevoerd in het kader van het *SmartHubs* project. Het gepresenteerde document is een samenvatting van Deliverable 2.3 en schetst de belangrijkste bevindingen over de governance van smart en duurzame stedelijke mobiliteit in de Living Labs.

1. INTRODUCTION

The transition towards a sustainable mobility system compatible with climate mitigation and sustainable development goals requires the reduction of individual motorized transport towards more sustainable alternatives, such as walking, cycling, and public transport. Instead of using a single mode of transportation, the advantages of several transport modes need to be combined as seamlessly and attractively as possible into an inter- and multimodal transport system (Dacko & Spalteholz, 2014; Deutsch, Beckmann, Klaus, J., Gertz, Gies, Jürgen, Holz-Rau, Christian, & Huber, 2016; Gebhardt et al., 2016; Gebhardt et al., 2017).¹

New mobility services available on demand are increasingly perceived as part of the shift towards more sustainable modes (Storme, Casier, Azadi, & Witlox, 2021). International and national mobility politics are characterized as a (vertically and horizontally) multi-level governance structure with multiple actors in a multi-sector and multi-process field (Bandelow, Lindloff, & Sikatzki, 2016; Docherty, Marsden, & Anable, 2018; Marsden & Reardon, 2018a; Sack, 2014; Tschoerner, 2016). In the context of smart mobility governance, Marsden and Reardon (2018b) point to the dispersed power of states. Spatially and functionally distinct networks composed of public, private, and voluntary organizations are at the center of interaction. The governance of smart mobility is assumed to be at a 'critical juncture'; a narrow time frame when policymakers will have a relatively broad range of options for intervention open to them to have a significant impact on subsequent outcomes before a new mobility regime becomes established (Docherty et al., 2018, p. 122).

While mobility policy is subject to political debate, it is also highly dependent on the built environment, such as the general structure of a city or rural area or the distribution of dwelling areas and workplaces. With regard to political decision-making, it can be differentiated between planning, financing, building, and maintenance of infrastructures (Bandelow et al., 2016). Since mobility hubs aim to connect public transport and sharing options, their distribution needs to follow already existing infrastructures of public transport. Each city has a specific historical, geographical, and sociocultural background, administrative structure, and local stakeholder constellation. This unique inner logic within cities (Berking & Löw, 2008; Kern, 2019; Zimmermann, 2008) influences how the local level reacts to different challenges, such as a sustainable mobility transition. However, European cities face the same contextual factors regarding the global climate crisis, the effects of 'glocalization' (Swyngedouw, 2004), and sociocultural narratives, like predominant automobility or 'taboos' in transport policies (Gössling & Cohen, 2014; Manderscheid, 2014). As described, the sustainable and smart transformation of the mobility sector will affect the mobility system and implicate changes in power dynamics and governance. Cities and municipalities will play an essential role in these dynamics.

From each SmartHubs Living Lab, one exemplary hub was chosen to be studied in detail: The Place du Conseil/Raadsplein in Anderlecht/ Brussels Capital Region, the mobility hub at Bruno-Marek-Allee in Vienna, a planned mobility hub in The Hague nearby Haagse Market, and a planned hub nearby the campus of the Technical University Munich (TUM). Along these cases, the report aims at reconstructing the multi-level governance framework of the four SmartHubs Living Lab Areas. It examines how European, national, regional, and local policies on mobility and transport facilitate smart, sustainable urban transport in the form of mobility hubs and aims to answer the research

¹ This is a short summary of Deliverable 2.3, which results from task 2.4, "Policy and governance frameworks" of the SmartHubs project. To find additional information on the project or the specific deliverable, please go to the SmartHubs Website (<https://www.smartmobilityhubs.eu/data>). Smart hubs are "a physical location where different shared transport options are offered at permanent, dedicated and well-visible locations and public or collective transport is available at walking distance" (Geurs & Münzel, 2022, p. 32). For a more comprehensive state-of-the-art on sustainable and smart urban mobility please refer to the extended version of this report

question: In which way does the governance framework on sustainable and smart urban mobility influence multimodality and mobility hubs in specific?

This summarizing report is structured as follows. Section 2 elaborates on the existing academic literature on governance concerning mobility hubs. It will furtherly explain the research design, which methods were used, and what data was conducted. The empirical findings will be shown separately; first in the European context (section 3) and then in the four cases from the Living Lab areas (sections 4-7). The last section 8 summarizes the overall learnings and concludes the empirical results.

2. THEORETICAL FRAMEWORK OF POLICY ARRANGEMENT AND RESEARCH DESIGN

Policy arrangements describe a specific situation for regulation and steering at a specific point in time and space. They are defined as "the temporary stabilisation of the content and organisation of a particular policy domain at a certain policy level or over several policy levels -- in case of multi-level governance" (Leroy & Arts, 2006, p. 14). The arrangements help us to understand how a governance subject – here mobility hubs – shapes a specific governance outcome. Based on the distinction between content (ideational) and organization (organizational) and additional considerations drawn from academic literature², we differentiate four analytical dimensions (see figure 1): Structural components which set the frame for governance arrangements, like actor constellations, their networks, and resources. Policy instruments which describe the legal circumstances and the means which are launched to reach a specific end (here mobility hubs are measures for sustainable transport), for example local/regional mobility plans, city development plans or strategic development goals. Structural components and Policy instruments form the organizational dimension. The ideational dimension consisting of normative drivers and discursive negotiations, is the second pillar of the governance arrangement. Normative Drivers make a claim on how things ought to be in the future. They may encompass societal goals like sustainability, resilience, security, and many more. Discursive negotiations are a mirror for the public debate in governance arrangement. They draw on civil society engagement, public participation, informal corporations, and semi-institutionalized co-production. It is important to note that there is no clear-cut distinction between these dimensions. Much more, they serve as an analytical heuristic to access a governance arrangement and are highly interlinked with one another.

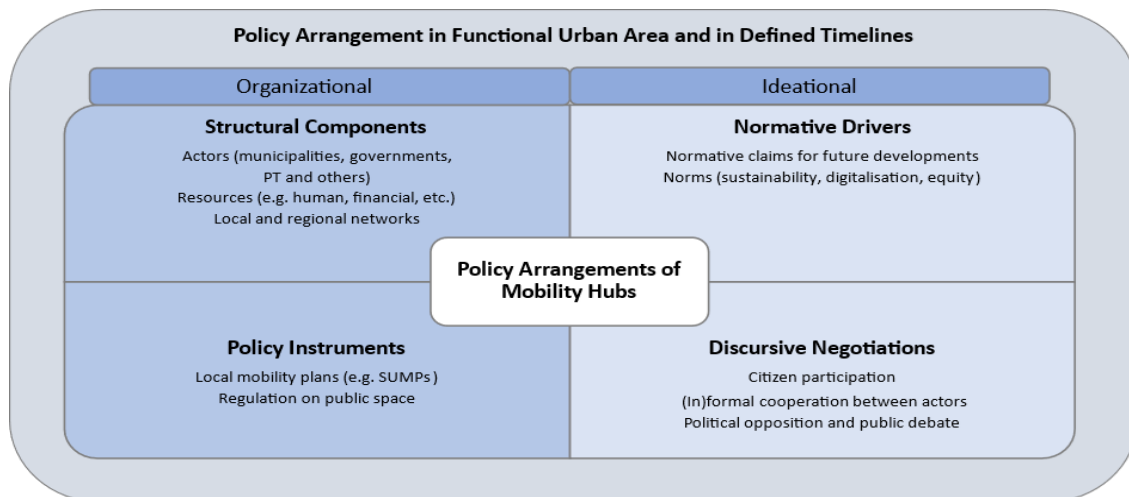


Figure 1 Arrangement in Functional Urban Area and in Defined Timelines

² See Section 3 *Theoretical Explanation of the Governance Framework* of the Deliverable 2.3, see footnote 1.

The governance arrangement in our investigation requires a qualitative, and abductive research design. We use case studies to develop and complement theories, as well as to exploratively formulate theses (Flyvbjerg, 2006; Nullmeier & Kuhlmann, 2022). The methodological approach is oriented toward a kind of process tracing (van Meegdenburg, 2022; Vennesson, 2013). An interpretive perspective on process tracing allows examining particular facts and their interlinkage to another. It investigates not only the particular 'mechanisms' themselves but also the context in which they occur.

To access the empirical cases, predefined by the consortium members in the SmartHubs project, the text corpus consists of two types of data: the local mobility plans of each city and additional policy documents and semi-standardized expert interviews conducted between November 2021 and May 2022. The data collection process started with desk research on the political system of the four case studies. The aim was to identify important policy documents and suitable experts for the semi-standardized interviews (Mosley, 2013). The format of semi-standardized expert interviews, with a non-random sampling strategy, was chosen to cover comparable data and gain insights into specific aspects of the governance system in each context (Matrakova, 2021; Prainsack & Pot, 2021).

The study of the material was carried out with a qualitative content analysis using the software MAXQDA. According to an abductive coding process (Schwartz-Shea & Yanow 2012), different coding processes were carried out. Additional codes directly drawn from the material completed the first code system. Here sequences of the material are analyzed in more detail and assigned to different categories (Rädiker and Kuckartz 2019).

3. EUROPEAN CONTEXT

The governance arrangements of mobility hubs are embedded in the European multi-level-governance system, which is polycentric, split into multiple overlapping arenas and characterized by loose coupling (Benz, 2009; Knodt & Große Hüttmann, 2012; Sack, 2016). Although the transport sector and a unified transport policy within the EU had been sought since its inception, it took until the mid-1980s to act in forms of regulation. Referring to the 'implementation gap in transport' (Banister & Hickman, 2013), Gössling and Cohen (2014) explain the failure of EU sustainable transport policies with a series of 'taboos' that need to be overcome to achieve significant sustainable transport policies.

The EU Urban Mobility Strategy is mainly a communication strategy and can be categorized as soft law (EU1 23, European Court of Auditors, 2020). Therefore, policy implementation's responsibility relies primarily on local or regional governments. Nevertheless, the European Commission issued several impulses to the components of the governance arrangements with policy documents, funding opportunities, institutions, and actors in the mobility sector. Some actors and EU regulations related to urban mobility policies unfold direct or indirect influence on the local or regional level. The most important impulses are

- The Commissions Directorates-General Mobility and Transport division (DG Move), DG Regional and Urban Policy (DG Regio), and DG Research and Innovation (DG RTD) set transport policies, provide financial support for transport infrastructure projects for the trans-European transport network (TEN-T) and research projects.
- The Urban Mobility Package from 2013 (COM (2013) 913 final) reinforced the support for European cities to tackle urban mobility challenges. The package focused on adapting sustainable urban mobility plans (SUMPs), particularly emphasizing the involvement of citizens and stakeholders, coordinating policies between sectors, and broad cooperation across multiple layers of government and private actors (Ruprecht Consult, 2019). The implementation of the SUMP framework varies strongly amongst the Member States (EU11 85).
- The 'Sustainable and Smart Mobility Strategy – putting European transport on track for the future' was adopted in 2020 and sets a shared European vision for the future development of sustainable, smart, and resilient mobility. The strategy refers to the goals of the European

Green Deal (European Commission, 2019) to become climate neutral by 2050 and reduce at least 55% of greenhouse gas emissions by 2030.


- The revised EU Urban Mobility Strategy was released in 2021 after a long-term coordination process of about three years (EU1 55). Internally, other working units from DG Move and other related DGs were consulted. Externally the urban mobility unit cooperated with city networks such as POLIS or Eurocities and with consultation groups on the national level. In the case of urban mobility, there is a member state expert group with representatives of transport ministries of each member state (EUI1 62f.).
- In the context of the EU Green Deal, the European Commission announced a European Mission on Climate Neutral and Smart Cities in 2021. The mission aims to support 100 European cities of different sizes and amongst all member states to become frontrunners and best-practice examples for climate neutrality by 2030 (European Commission, 2022). The Hague, Munich, and Brussels Capital Region are part of the mission, therefore, aim to become climate neutral by 2030 (European Union, 2022). Ambitious goals to reach climate neutrality can put additional pressure on more sustainable transport development and increase the willingness toward more sustainable transport policies.

Multimodality and mobility hubs have become increasingly important and are highlighted in all recent policy documents. The concept is specified as a guiding principle for urban mobility. Under the so-called Flagship 2, "Making interurban and urban mobility more sustainable and healthy", the European Commission stresses the importance of MaaS applications and multimodal mobility hubs. Mobility hubs are also mentioned in the context of better transport management by using mobility hubs and digital solutions to increase system-wide efficiency (European Commission, 2021, see also EUI1 94).

Additionally, European law on environmental standards, infrastructure funds, or the European Green Deal initiative can substantially impact policies on the national, regional, or municipal level. Many European experts point to the importance of the new proposal for the trans-European transport network (TEN-T) regulation (EUI1 98, EU2 69ff., EUI3 63f.) Article 40 defines requirements for urban nodes in this network: By the end of 2025 these urban nodes should adopt a SUMP in line with the EU framework and include measures towards zero net-emission transport. By the end of 2030, multimodal passenger hubs equipped with electric charging infrastructure should be developed to facilitate first and last-mile connection (European Commission, 2020b, EUI1 86). Still, TEN-T urban nodes are about long-distance infrastructure; this regulation does not necessarily cover small and medium-sized cities. Also, networks of small neighborhood hubs are not covered either (EUI3 65).

To summarize, urban mobility policies are mainly based on communication strategies, voluntary guidelines, and networks. However, the European Commission and DG Move aim to build a more coherent and interlinked framework. The predominantly soft measures in urban mobility policies are strengthened by setting financial incentives and stronger links between the European SUMP framework and (financial) policies.

4. LIVING LAB BRUSSELS
 4.1 OVERVIEW ANDERLECHT



Place du Conseil / Raadsplein

Anderlecht, Brussels Capital Region (BCR), Belgium


City: 122,000 in 2021
 Region: 1,220,000 in 2021

Net-zero target: 2030


Operator: SmartHubs Consortium
 Operation Start: 2022

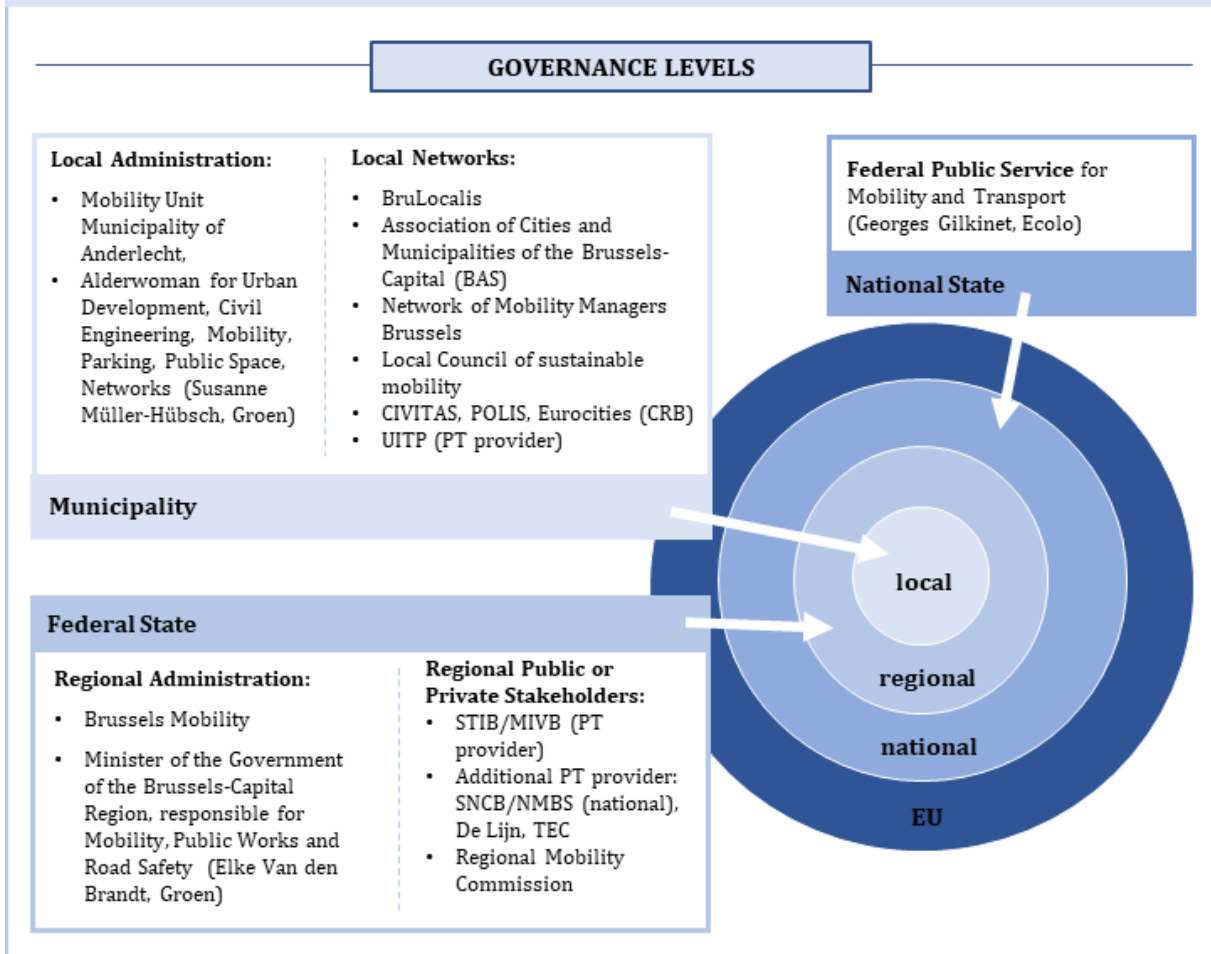
Urban and socio-economically challenged district, square in front of the municipal building with tram station and different shops nearby. No permanent hub; only temporary measures are planned during the SmartHubs project.

*Minister-President of BCR since 2013: Rudi Vervoort, social democratic party (PS)
 BCR since 2019: Flemish: green, social democratic, liberal; French: social democratic, green, conservative coalition
 BCR 2014-2019: Flemish: liberal, social democratic, conservative; French: social democratic, conservative, centralist coalition*



Available modes





POLICIES

"Good Move" Regional Mobility Plan 2020-2030

Time frame of document: 2020-2030

Author: Brussels Mobility

Main characteristics:

The Good Move plan takes part in the city's sustainable development planning. It was developed in a participatory process that started in 2016. It includes a regulatory framework as well as an action plan. It divides into six strategic focuses:

- good neighborhoods (mobility management in neighborhoods, quality of life for inhabitants)
- good network (organize transportation networks and efficient service)
- good service (provide integrated services)
- good choice (guide individual and collective choice)
- good partner (ensure partnership governance)
- good knowledge (update and evaluate mobility data)

Important regulations and buzzwords are:

- "STOP"-principle (hierarchy of transport modes: pedestrians, bike, PT, cars)
- speed limit of 30km/h in the regional area
- multimodal specialization of routes

Policies regarding multimodality or mobility hubs

Multimodality is described as one of six major levers to be improved.

- Central measures are the pacified neighborhoods ('quartiers apaisés') and local circulation plans
- Intersections of these neighborhoods could create potential mobility hub locations

Development of strategic changing points ('pôle d'échange') at big (international) intersections such as train stations

- these should follow specific standards and be measured due to user satisfaction and other parameters
- Additional park&ride stations to be planned
- No specific number of stations, schedule or budget defined in the plan

Other related transport policies

Local mobility contract for the network of Cureghem/Kuregem ("Contrat Local de Mobilité de la maille « Cureghem »") (work in progress)

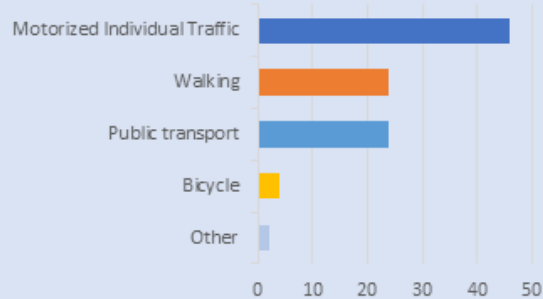
The local mobility contracts are planned as part of the "Good Move" Regional Mobility Plan. They define circulation schemes on a detailed district level in order to define what kind of modes and traffic should be on which streets. Additionally, the plan includes an action plan how to realize, finance and organize the implementation of the new schemes. The plan for Cureghem includes the square in front of Conseil/Raad in Anderlecht.

BRUSSELS MODAL SPLIT

MODAL SPLIT ANDERLECHT

No data available for the City of Anderlecht.

MODAL SPLIT CAPITAL REGION (2019)



Sources:

Brussels Mobility (2021): Good Move: Gewestelijk Mobiliteitsplan 2020-2030.

Environment Brussels (2022): Contexte bruxellois. <https://environnement.brussels/outils-et-donnees/etat-des-lieux-de-lenvironnement/contexte-bruxellois#mobilite-et-transport-en-region-bruxelloise> (24.04.2023).

SmartHubs (2023): Raadsplein - Place du Conseil. <https://data.smartmobilityhubs.eu/wiki/Hubs/6> (24.04.2023).

4.2 SUMMARY GOVERNANCE ARRANGEMENT IN ANDERLECHT

Structural Components

- No encompassing mobility hubs system in place, no defined responsibilities, but general interest in implementing hubs on the municipal and regional level
- Brussels Capital Region (BCR) has a highly fragmented governance arrangement, which hinders the implementation of mobility hubs and sets up high demands for policy integration
- Local governance lacks financial and human resources to expand infrastructure
- STIB, the regional public transport provider, cooperates closely with the regional mobility department and develops a Mobility as a Service tool

Policy Instruments

- Regional Good Move plan serves as the main mobility planning document; it does not directly oblige the 19 municipalities in Brussels
- Implementation of the plan faces the difficulty of a fragmented governance arrangement
- Local circulation plans are a central part of the Good Move plan and aim to pacify districts; they are coordinated and implemented on the municipal level (Municipality of Anderlecht) and are financed by regional budgets (BCR)
- Major exchange points between pacified districts could serve as locations for mobility hubs automatically; they are not explicitly planned
- The municipality of Anderlecht faced difficulties with the implementation of a local circulation plan in Cureghem due to vandalism and accusations of lacking participation and acceptance

Normative Drivers

- STOP-principle in the Good Move plan serves as a guiding norm; it is described as traffic calming principle and changes the hierarchy of mobility modes; therefore pacified neighborhoods are successively implemented
- Additional regional drivers are to raise the sense of safety and accomplish vision zero plus the achievement of climate neutrality by 2030
- New mobility services, like shared mobility to encourage more sustainable mobility behavior

Discursive Negotiations

- Political pressure due to congestion, bad air quality, and safety issues
- Critique of tax advantages for company cars, free access into the city and availability of car parking and lack of political will to make changes
- Regional strategy refers to 'tactical urbanism', making small but strategic changes in the urban infrastructure to create high visibility and effectiveness with relatively small measures
- Public transport as the central mode for mobility, but high amount of commuters
- Strengthening active modes also in light of limited resources and availability of public space
- Local mobility plan in Anderlecht resulted in political tension and withdrawal Citizen participation is crucial to realize projects

5. LIVING LAB ROTTERDAM/ THE HAGUE
 5.1 OVERVIEW HAAGSE MARKET/ HOBBERMAPLEIN



Haagse Markt/ Hobbemaplein

The Hague, Netherlands

 City: 550,000 in 2021
Region: 2,700,000 in 2021

 Net-zero target: 2030

 Currently, only a public transport stop is located next to a large market in a heterogenous urban neighborhood. The municipality is redesigning the square with a mobility hub in mind. During the SmartHubs project, temporary measures are planned.

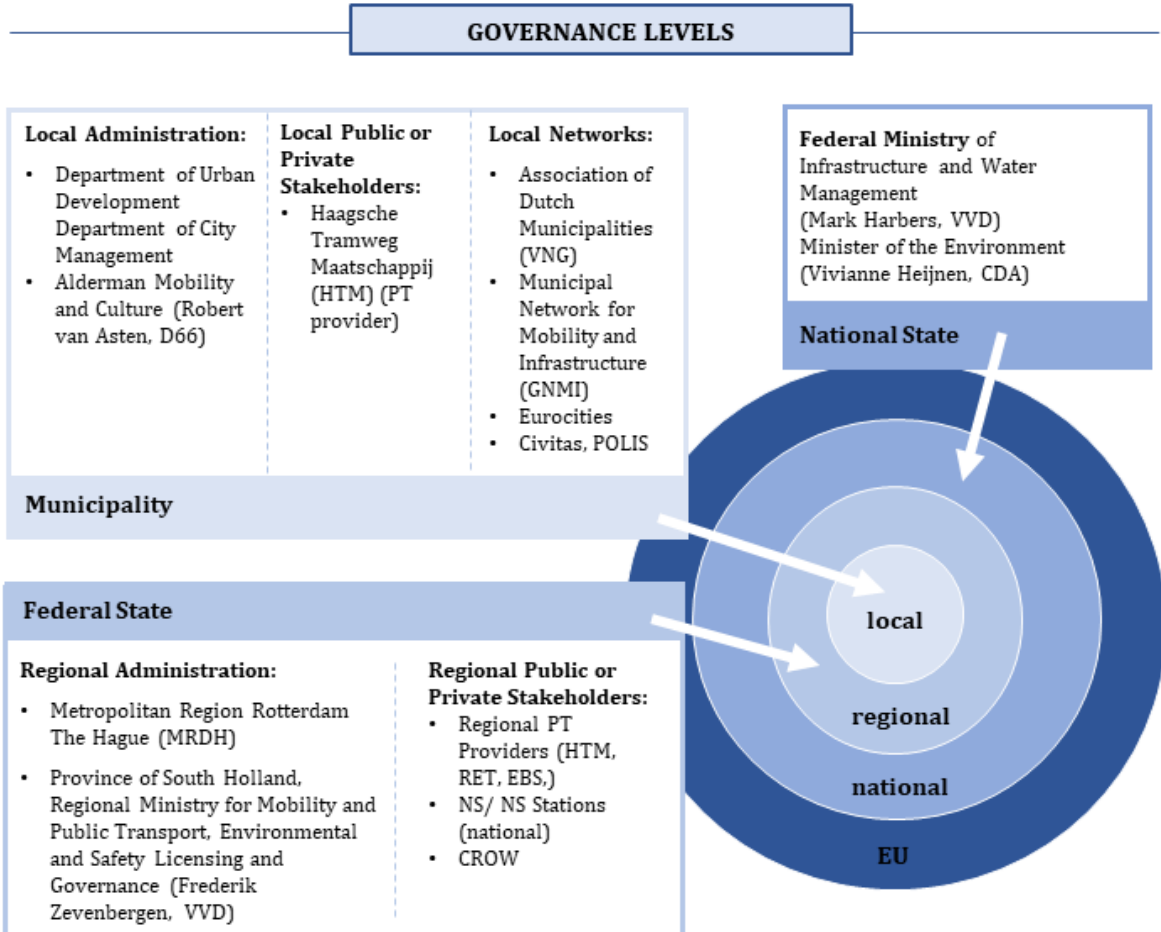
 *Mayor since 2018: Jan van Zanen, conservative-liberal party (VVD)*
Since 2022: conservative, liberal, green, Christian democratic, and social democratic coalition
2018-2022: conservative, liberal, and green coalition

 Operator: N.N. / SmartHubs Consortium
Operation Start: 2024



Available modes






Mobility Transition Strategy The Hague 2040

Time frame of document: 2022-2040

Author: Municipality of The Hague, Mobility Division

Main characteristics:

Four themes and corresponding strategic choices:

1. "the compact city" - Prioritizing pedestrians and cyclists; achieving safe and slow traffic
2. "mobility on a human scale" - Putting the traveler in the center by making shared mobility, cycling, and public transport more user-friendly by a target group and area-oriented approach
3. "city-friendly transport" - Address safety and waste management considerations in the creation of new and existing spaces
4. "region and node development" - Mobility hubs are the key for a mobility network

Area-based opportunity maps, incl. instruments for district types (center environments, pre-war city districts, post-war city districts, regional context, and mobility hubs)

Guiding principle: STOMP (hierarchy of transport modes: pedestrians, bike, PT, cars)

Policies regarding multimodality or mobility hubs

Area-based approach:

- Emphasis within the mobility transition will differ per area or district; tailor-made mobility system

Efficient use of existing space:

- Shared mobility is an instrument for making space in public areas,
- Smart logistics mobility hubs
- Cars preferably parked on private property

Accessible mobility networks:

- Mobility hubs as a key instrument for a mobility transition
- Neighborhood hubs and regionally connected hubs

Other related transport policies

Smart Mobility Vision Den Haag (2021)

Summary:

Overall goal: Everyone has a mobility system at their disposal that is tailored to their needs, safe, sustainable, clean, affordable, and connected.

Vision of Smart Mobility: three pillars of mobility

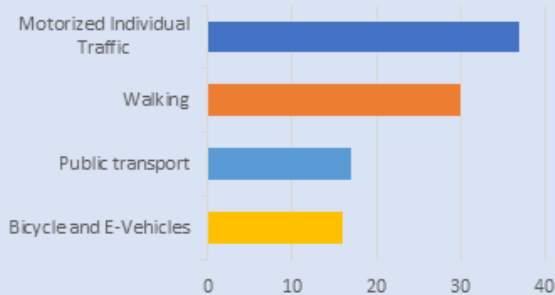
1. Physical and digital infrastructure
2. Mobility solutions
3. Community-oriented bottom-up approach for initiatives, on-site update of travel information

New approach: "wave" technic

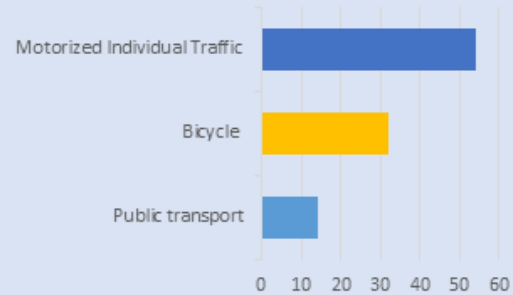
Smart mobility team of the municipality identifies new applications (waves), twice a year status update, local government can decide which wave they want to surf

THE HAGUE MODAL SPLIT

MODAL SPLIT CITY (2018)



MODAL SPLIT MRDH (2018)



Sources:

MRDH (2018): Verkeersmodel MRDH 2.0. https://mrdh.nl/sites/default/files/documents/rapport_verkeersmodel_mrdh_2.0_-_001594.20181026.r1.02.pdf (24.04.2023).

The Hague (2020a): Haagse visie Smart Mobility: Optimale inzet van innovatie voor de Haagse reiziger.

The Hague (2021): Strategie mobiliteitstransitie Den Haag 2022 - 2040.

SmartHubs (2023): Haagse Markt. <https://data.smartmobilityhubs.eu/wiki/Hubs/4> (24.04.2023).

5.2 SUMMARY GOVERNANCE ARRANGEMENTS IN THE HAGUE

Structural Components

- No encompassing mobility hubs system in place yet, also no defined responsibilities or working groups, but foreseen in the local mobility plan
- Mobility department relatively strong in terms of financial and human resources
- Relatively new local government and mobility strategy
- Close cooperation within administrative departments and on regional level with the MRDH, and public transport provider
- National ministry is currently working on implementing mobility hubs with a common branding as well as national railway company NS Stations

Policy Instruments

- Local mobility plan Mobility Transition Strategy The Hague 2040 from 2022 includes the implementation of mobility hubs in different sizes and functionality (adding new small-scale hubs at minimum walking distance)
- Implementation strategy recurs on already existing stops at public transport locations and upgrades them into more sophisticated multimodal mobility hubs
- Mobility plan aims at meeting climate ambitions, enabling affordable and regionally connected mobility, and uses shared mobility to redistribute public space
- A permit system for shared vehicles was established to limit negative consequences in public space

Normative Drivers

- Policies are driven by a sense of urgency: congestion, safety, and environmental effects
- STOMP principle (reversed hierarchy of mobility modes) as guiding norm: Active modes prioritized over private vehicles
- Referring to concepts of planning on human scale, '15min city', and inclusive mobility: making mobility physically accessible and safe for all residents
- Mobility plan is based on a data-driven and informative approach
- Allowing shared mobility but protecting space on sidewalks, driven by concerns about inclusiveness and transport poverty

Discursive Negotiations

- Climate crisis as a 'window of opportunity' for changes in the mobility sector
- Growing number of inhabitants puts additional pressure on the already congested road system
- High importance of regional perspectives on mobility in MRDH area
- Mobility policies are a very controversial topic on the local and national level
- Recently, strong political influence of car-friendly positions in local government
- Limited and contested urban space
- Redevelopment at Haagse Market raises concerns about the danger of starting a gentrification process

6. LIVING LAB EASTERN AUSTRIA
 6.1 OVERVIEW BRUNO-MAREK-ALLEE



Bruno-Marek-Allee

Vienna, Austria



City: 1,900,000 in 2021
Region: 1,900,000 in 2021

Net-zero target: 2040

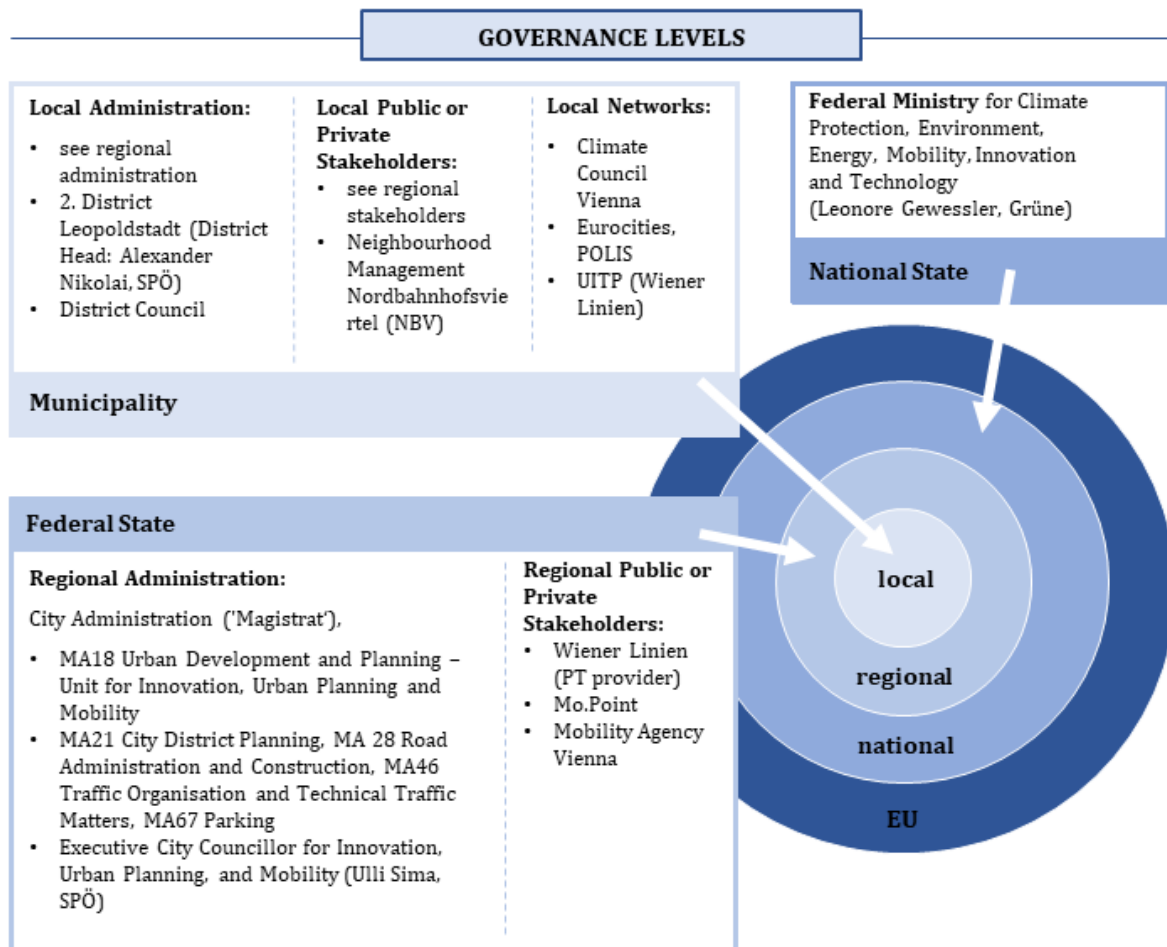
Housing-based, decentralized hub, with car- and (cargo-)bike-sharing and PT nearby, parking zone for micro-mobility
 Urban development area, operated by MO.Point and branding of WienMobil Stationen

Mayor since 2018: Michael Ludwig, social democratic party (SPÖ)
Since 2020: Social democratic and liberal coalition
2018-2020: Social democratic and green coalition

Operator: MO.Point, Wiener Linien
Operation Start: 2020

Available modes





POLICIES

MOBILITY PLAN - STEP 2025 Urban Mobility Plan Vienna

Time frame of document: 2015-2025
Author: Vienna City Administration, MA18
Main characteristics:
 Mobility plan as part of a strategic city planning process (STEP 2025), following SUMP guidelines of the European Commission, targets objectives of 'Smart City Vienna Framework Strategy' (renewed into "Smart Climate City Strategy Vienna" in 2022)
 The City of Vienna is committed to prioritizing public transport, pedestrians, and cycling as the most environmentally friendly mobility modes, emphasizing the human scale. Therefore, Vienna embodies a future-oriented urban mobility policy that is not only ecologically but also economically and socially acceptable and hence sustainable.
Objectives: Fair, healthy, compact, eco-friendly, robust, and efficient mobility system

Policies regarding multimodality or mobility hubs

Objective 36 of STEP 2025 plan
 Multimodal Stops:

- PT stops with added services
- Special attention to the design and surroundings of potential hubs (crucial: clear arrangement and barrier-free design)
- Great potential for urban nodes with regional bus line connection & PT network of the region

Depending on needs, stops can be given added value, e.g., in the shape of bicycle parking facilities, bike-sharing systems, car-sharing spaces, kiss-and-ride zones

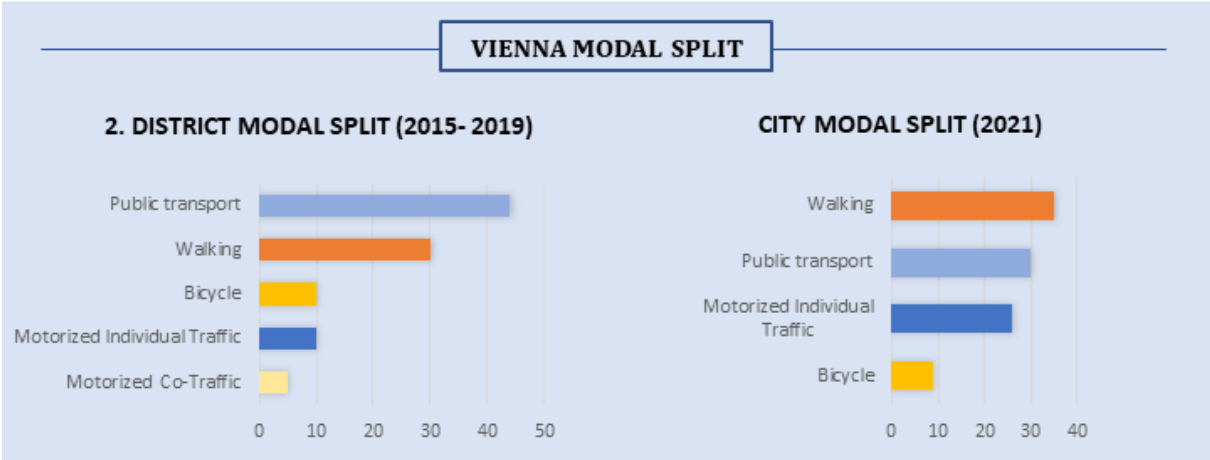
Other related transport policies

Smart Climate City Strategy Vienna (2022)
 Smart City Strategy adjusted in terms of climate adaptation and mitigation goals for the mobility and transport sector:

- Increase share of extended environmental alliance (PT, cycling, walking, sharing) up to 85% until 2030
- Mobility guarantee (without private car use)
- 15-minute-city and redistribution of public space
- Reduce private car ownership to 250 cars / 1.000 inhabitants by 2030
- Reduce energy consumption by 40% and CO2 emissions by 50% per person by 2040

Vienna Climate Roadmap ('Wiener Klima-Fahrplan', 2022)
 A strategic planning document to achieve climate neutrality by 2040, including measures on mobility and transport

- Parking management and access regulation
- Expansion, densification, and acceleration of public transport, walking, and cycling infrastructure
- Support for shared & on-demand mobility
- Price differentiation according to environmental impact



Sources:
 Vienna (2015): STEP 2025 - Thematic Concept: Urban Mobility Plan Vienna. Wien.
 Vienna (2021): Aktive Mobilität in Wien. https://blog.stadtentwicklung.wien.gv.at/wp-content/uploads/sites/57/2021/03/Vert_Ausw_Aktiv_Mobili_Endb_21.01.2021.pdf (24.04.2023).
 Vienna (2022): Smart Klima City Strategie Wien: Der Weg zur Klimamusterstadt. Wien.
 SmartHubs (2023): Mobility Point Bruno Marek Allee. <https://data.smartmobilityhubs.eu/wiki/Hubs/8> (24.04.2023).

6.2 SUMMARY GOVERNANCE ARRANGEMENT IN VIENNA

Structural Components

- First pilots of mobility hubs initiated by Wiener Linien in 2018, followed by institutionalization of developed structures
- Clearly defined responsibility at public transport provider Wiener Linien and working group on mobility hubs with involved local stakeholders (i.a. city administration)
- Contract between Wiener Linien and city administration, including public funding, aim to build 100 WienMobil Stationen by 2025
- Informal networks of like-minded actors, limited communication among opposing groups
- Districts as very influential players in regulation of public space, veto-power
- Missing regional integration with surrounding federal state

Policy Instruments

- Mobility hubs as part of strategic mobility & climate plans
- Critique raised by experts: no quantifiable goals and indicators, undefined responsibilities, and long timeframe and slow implementation
- Additional instruments: encompassing pricing system and parking restrictions
- Incentives for private urban developers to build mobility hubs, supporting with limited parking regulations and informative instruments
- Request: Car-Sharing Law to facilitate planning procedure

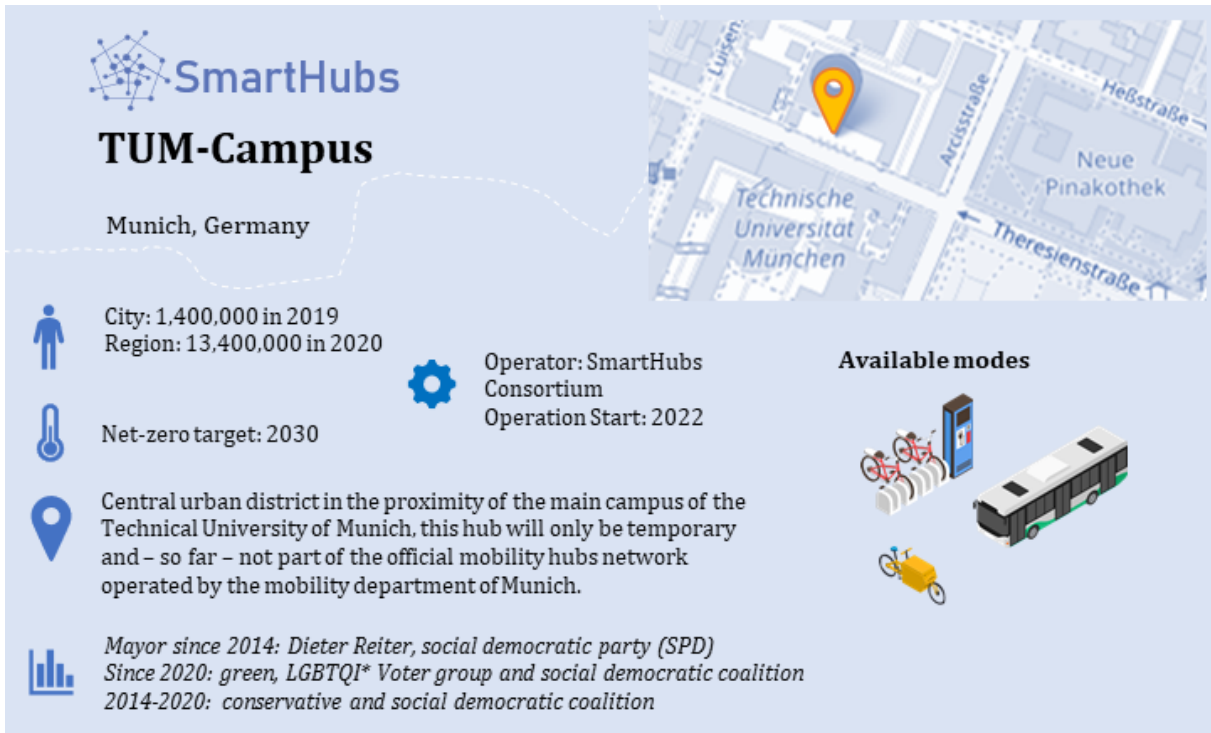
Normative Drivers

- Stronger focus on climate neutrality than on mobility transition
- 'Mobility guarantee' (Mobilitätsgarantie) to ensure car-free mobility for all residents promoted by strategic planning documents, like local mobility plan STEP 2025
- Business logic: Public transport and mobility providers operate profit-oriented
- Fuzzy understanding of social justice dimension of shared mobility

Discursive Negotiations

- Mobility is a highly political topic; conflicts among political parties
- Political opposition along geographical location (city center vs. periphery)
- Conflicts over priorities & public space: 'old school transport planners' vs. transition-oriented people
- Tendency to avoid conflicts: Car parking as "holy" & focus on creating alternatives instead of limiting car use, difficult redistribution of public space
- Fear of change or loss

7. LIVING LAB MUNICH
 7.1 OVERVIEW TUM CAMPUS

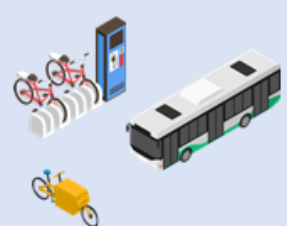


SmartHubs
TUM-Campus
 Munich, Germany

City: 1.400.000 in 2019
 Region: 13.400.000 in 2020

Net-zero target: 2030

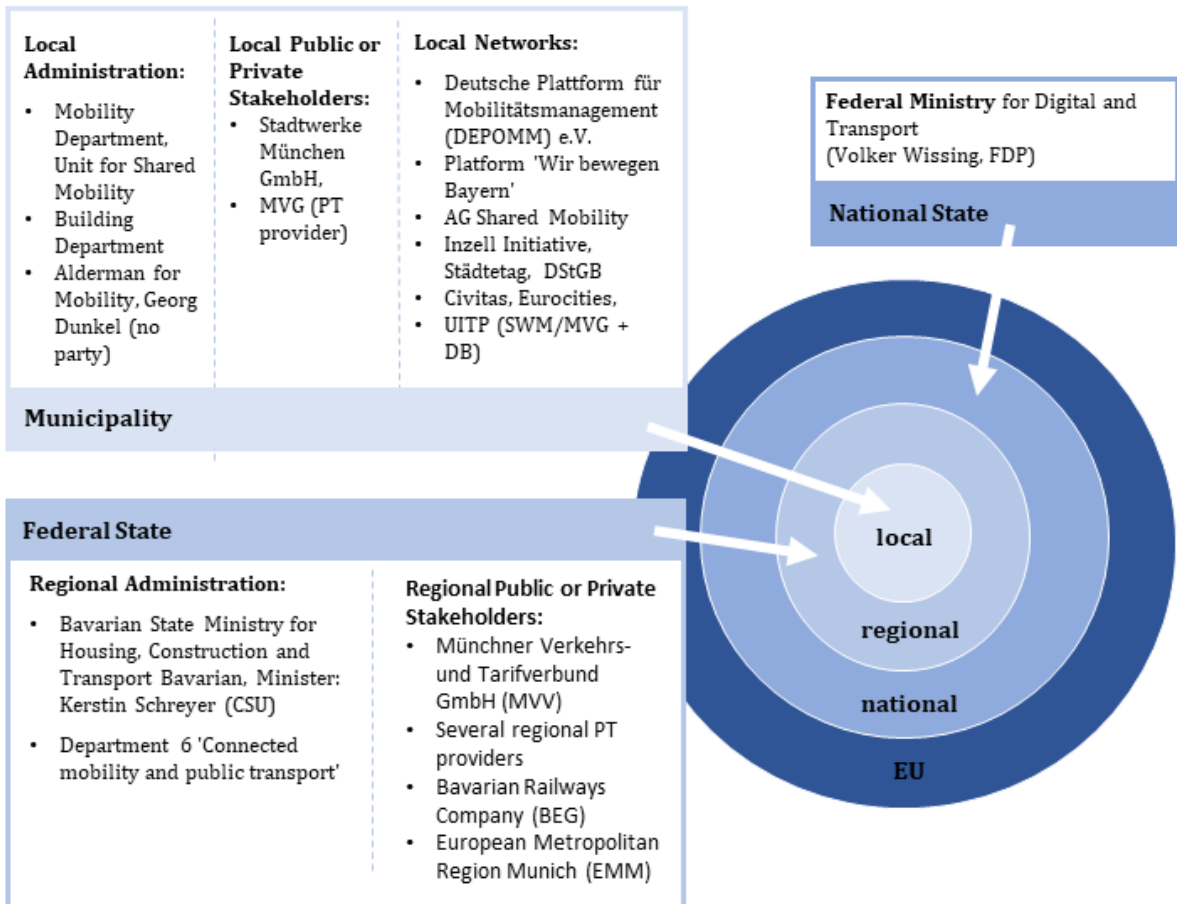
Operator: SmartHubs Consortium
 Operation Start: 2022

Available modes: 

Central urban district in the proximity of the main campus of the Technical University of Munich, this hub will only be temporary and – so far – not part of the official mobility hubs network operated by the mobility department of Munich.

Mayor since 2014: Dieter Reiter, social democratic party (SPD)
Since 2020: green, LGBTQI Voter group and social democratic coalition*
2014-2020: conservative and social democratic coalition

GOVERNANCE LEVELS



POLICIES

Mobility Strategy 2035 ('Mobilitätsstrategie 2035')

Time frame of document: 2021-2035

Author: City of Munich, Mobility Department

Main characteristics:

Mobility Strategy 2035 as central document for mobility planning in Munich. It replaces old mobility development plan (Verkehrsentwicklungsplan, VEP). Overall goals of the strategy:

- At least 80% of inner-city traffic by emission-free vehicles, PT, cycling, or walking by 2025
- Climate neutrality until 2035
- Additional specialized goals in sub-strategies

Planned: 19 sub-strategies:

- One per mode (PT, walking, cycling, shared mobility + MaaS, individual motorized traffic)
- Additionally on specific topics, such as safety, justice, digitalization, financing, regional traffic, etc.
- Strategy on Shared Mobility + MaaS decided on in 2022

Policies regarding multimodality or mobility hubs

See Strategy on Shared Mobility and MaaS

Other related transport policies
Sub-Strategy Shared Mobility (2022)

Author: City of Munich, Mobility Department

Main characteristics:

The Sub-Strategy Shared Mobility is part of the overall mobility strategy 2035; see above.

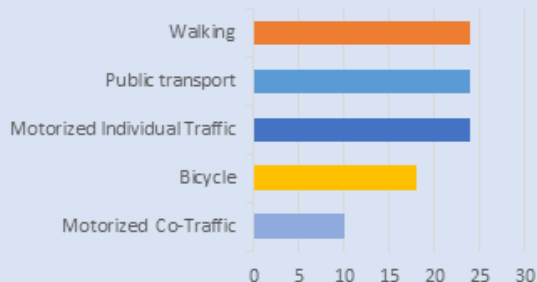
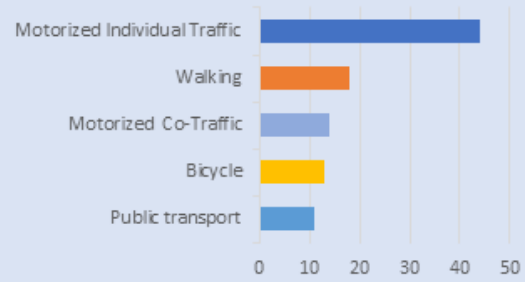
Policies regarding multimodality or mobility hubs:

The goal for 2026: Built at least 100-200 mobility hubs in the municipal area of Munich.

- Working group 'shared mobility' will meet regularly (every second meeting with representatives of the political parties)
- Citizens will be involved in the implementation process of the strategy
- Existing hubs will be transferred into the new concept
- A regional expansion of mobility points will be supported in cooperation with the MVV and MVG
- Building department supports with equipment and signage

Related policies:

- All providers (public and private) shall be included and be booked over one central platform, shall include
- Regulation of car-sharing will be revised, strengthened regulation on e-scooters
- 600 parking spots for station-based and 1.000 for free-floating car-sharing will be defined until 2026
- Redistribute car-parking spaces for alternative modes and climate adaptation

MUNICH MODAL SPLIT
MODAL SPLIT CITY (2017)

MODAL SPLIT SURROUNDINGS (2017)


Sources:

Munich (2021): Mobilitätsstrategie 2035: Entwurf einer neuen Gesamtstrategie für Mobilität und Verkehr in München Beschluss über die Finanzierung ab 2021.

Munich (2022): Einstieg in die Teilstrategie Shared Mobility: Etablierung von Mobilpunkten und Angebotsausweitung in München.

Munich (2023): Verkehrsdaten: Erhebungen und Prognosen. <https://stadt.muenchen.de/infos/verkehrsdaten.html> (24.04.2023).

SmartHubs (2023): TUM Hub. <https://data.smartmobilityhubs.eu/wiki/Hubs/10> (24.04.2023).

7.2 SUMMARY GOVERNANCE ARRANGEMENT IN MUNICH

Structural Components

- Institutionalization of local networks and cooperation after first pilots in 2015, institutional changes regarding the organization of mobility hubs
- City administration planning and implementing mobility hubs instead of PT provider MVG, inhouse implementation and maintenance
- Intensive regional and inner-communal coordination, i.a. in a sub-working group on mobility hubs

Policy Instruments

- Mobility plan and shared mobility strategy include a (regional) network of mobility hubs
 - Aim: implementing 100-200 hubs by 2026 and reducing 500 parking spaces per year
 - Already included: designated budget of 6,7Mio EUR for hubs and personal resources
 - Different models of hubs according to spatial and functional context
- Survey on potential regulation of shared micro-mobility; aim to create stronger links with hubs
- Federal Car-Sharing law facilitating car-sharing regulation for municipalities
- Partly unclear funding schemes and definitions for shared mobility services and hubs

Normative Drivers

- Multiple goals associated with mobility transition such like environmental improvement, safety, economic prosperity, quality of stay
- 'Efficiency of space' ("Flächeneffizienz")
- Self-perception of city administration as an 'enabler' for private companies, guideline of as little regulation as possible
- Increase traffic safety and reduce disorder in public space with mobility hubs

Discursive Negotiations

- Focus on creating flexible and various mobility options (pull measure), hesitant push measures
- General consensus on goals, but conflicts in the concrete implementation on-site (conflictive lines along political parties and municipal-district level) and over-prioritization of measures
- Lack of courage for unpopular decisions; conflict and debates on principles are being avoided
- Citizen and district-level participation during the development of mobility plan and partly concrete planning process of hubs

8. MOST IMPORTANT LEARNINGS AND CONCLUSION

Cities and municipalities across Europe face the challenge of transforming towards a more sustainable urban mobility system. One central concern is the reduction of individual motorized transport towards more sustainable alternatives, such as walking, cycling, and public transport. The concept of multimodality has gained increasing attention in mobility policies. Mobility hubs can facilitate the desired last-mile connectivity and multimodal mobility behavior. While Munich and Vienna have already conducted the first pilots and have started to establish a city-wide network of mobility hubs, The Hague and Anderlecht are at the beginning of dealing with mobility hubs. The analysis of the governance arrangements of the four cases shows various factors that influence the planning, implementation, and operation of mobility hubs which will be summarized in the following.

Organizational components

The organizational dimension shows highly fragmented and complex governance structures around mobility hubs. While local governance is essential in urban mobility, it is also part of multi-level and multi-sector governance and, therefore, dependent on other vertical and horizontal levels of governance. At the same time, municipalities rely on different public and private actors, which **requires new forms of cooperation**. The four cases can describe many examples of horizontal and vertical interdependencies. On the one hand, different public administration departments must cooperate, from strategic planning and urban development to mobility, construction, energy supply, and signage. On the other hand, mobility providers of public transport and private shared mobility providers need to be involved. Regional transport associations might be able to support and network with the surrounding municipalities, especially in cities surrounded by metropolitan areas (see Munich and The Hague).

In the beginning, new developments and innovations often face what Hajer (2003) called an institutional void in the form of unclear institutional arrangements and regulatory frameworks. The hierarchical nature of road infrastructure can complicate coherent planning or limit municipal autonomy regarding mobility policies. In all arrangements, competencies are fragmented among regional and municipal actors as well as actors on the district level. To put it differently: there is simply no one responsible for the planning and implementation of hubs. In many cities, this creates several potential or actual veto players and can delay the implementation of mobility hubs (see Brussels, Munich, and Vienna).

As a solution, **working groups with all relevant stakeholders are essential**. Preferably such working groups do not only meet regularly to inform and exchange with each other but **hold decision-making power** to set concrete plans for the implementation. At least one designated meeting to find common understanding and binding decisions might enable local governance to overcome institutional fragmentation. These working groups would coordinate the concrete, on-site implementation of publicly discussed and politically agreed planning documents, such as local mobility plans or SUMP.

The four case studies show that especially **two resources are crucial for implementing mobility hubs: public space and funding**. Since municipalities mostly decide over the public space, they have a strong lever on affecting mobility. But urban space is limited and highly contested - in all cities, experts point to the relevance of stationary traffic and more ambitious parking management to create more space for sustainable mobility. Local authorities must carefully negotiate between different interests (mobility modes, climate adaptation, social and economic activities) and redistribute urban space. The other important resource is funding. Mobility hubs demand financial support for their implementation but also maintenance. Depending on the location of mobility hubs, service providers need subsidies to also operate (shared) mobility modes in economically less attractive areas. Also, appropriate capacities of human resources are required at the responsible institution to plan, implement, and operate mobility hubs.

Regional, national, and EU-level institutions can **support local governance** in many ways. For instance, with public funding schemes, general guidelines concerning hub design, the development of MaaS applications, or joint planning, booking, and payment applications. Also, municipalities would profit from harmonized data-sharing regulations. In terms of public funding, overall flexibility with openness towards innovation is needed. In some cases, the regulatory framework does not fit to multimodal mobility hubs but to classical park&ride stations; others do not include shared mobility services or leave uncertainty on its applicability.

Regarding policy instruments, mobility hubs can only be one part of an **integrated mobility plan**, and additional supportive measures such as cycling lanes, improved public transport, access regulation, or parking regulation are needed. With the SUMP guidelines, the European Commission provides an exemplary structure for sustainable urban mobility plans. Furthermore, sustainable urban mobility indicators (SUMI) may help to define priorities in planning processes due to the specific contextual factors in a city (such like the geographical or economic situation). Changes in the mobility system unfold consequences in everyday life of all citizens, making a public discussion about mobility policies crucial. The SUMP guidelines highlight citizen participation during the discussion, planning, and implementation process. Although these guidelines are voluntary in most countries, it is planned to stronger link European funding to these planning documents, which might serve as an additional incentive for cities to follow the guideline. To gain acceptance and legitimacy, changes in urban infrastructure measures need to be publicly discussed and explained transparently.

Local experts criticized the lack of implementation and missing targets of mobility plans. Therefore, **local mobility plans should define concrete goals, responsibilities, and financial resources** for the implementation and indicators of measuring success. The complex system of concessions for public transport providers often needs revision in terms of multimodality. Additionally, some shared mobility services need financial support or fair balancing between geographical locations.

Ideational Components

Considering the ideational dimension of the governance framework, the case studies show that almost all stakeholders and political parties can accept normative claims regarding **sustainable development**. There is a broad consensus that environmentally friendly modes must be strengthened. Mobility hubs and shared mobility are considered supportive of the extended environmental alliance. Still, many additional goals are associated with sustainable mobility, such as improved environment, health, safety, or quality of stay. This variety can lead to conflicts between different normative drivers or make normative claims random or fuzzy. Mobility hubs are also judged based on an **entrepreneurial perspective**. As shared mobility is provided at hubs, these are considered successful according to their economic performance. Depending on the local organization of mobility hubs, this might lead to the closing of non-profitable mobility hubs even though they might cause improvements in terms of the societal or environmental dimension of sustainability.

With regard to discursive negotiations, many experts described a **tendency to avoid conflict by agreeing to general strategic documents** and opposing single measures during the implementation process. Although there is a broad consensus that environmentally friendly modes must be strengthened, there is still a persistent strong role of car use and car-friendly policies. Car use is omnipresent as a reference point in all cities, so alternative forms of mobility are always compared to car use. In many municipalities, conflictive discursive positions display along the question of taking back privileges in favor of sustainable mobility modes, such as reducing car parking, including urban vehicle access regulation (UVAR), or redistributing public space. This conflictive line also shows in the actors' constellation, and limited inter-actor exchange.

The balance between pull and push measures is crucial for transitory processes but seems to be out of step in many cases. There is a stronger focus on pull than push measures which bears the danger of an implementation gap. According to experts, pull measures are considered less conflictive and easier to implement but cannot suffice alone to generate substantial changes in the urban mobility system. Since public administrations face limited financial resources, planning capacities, and urban

space, measures in the mobility sector need to be prioritized. An implementation gap is widely observed in the mobility sector. This observation also applies to the SmartHubs cases, where overall targets in modal shift or concrete numbers of mobility hubs are missed or – according to local experts – are expected to be missed. Mobility hubs can have the potential to combine both (push and pull) approaches by reusing car parking spots in favor of mobility hubs. An integrated approach would enable the redistribution of urban space and promote alternative mobility at once.

To gain acceptance and legitimacy, changes in urban infrastructure measures need to be publicly discussed and explained transparently. Therefore, the SUMP guidelines demand citizen participation during the process. All local/regional mobility plans included participatory elements during the development process. However, this refers to the general mobility hubs and not necessarily to on-site participation during the hub development. Local experts from Munich and Vienna claim on-site stakeholder involvement to be an important pillar of the development process of mobility hubs. Especially research projects or first pilots give more opportunities to organize participatory events with construction firms, elected district representatives, local shop owners, and residents.

General conclusion

This summary shows the importance of governance if and when changes are made in the urban infrastructure. By systematically examining governance structures in the context of four mobility hubs of the SmartHubs project, this report is able to outline ways in which the political framework on sustainable and smart urban mobility influences multimodality. Urban mobility is a dynamic policy field crucial for cities' sustainable development. Many innovations, like smart mobility hubs, are being discussed and aimed to implement. However, changes manifest slowly or are limited by undefined responsibilities, organizational fragmentation, and interdependencies. Policy documents need clear goals and sufficient resources and partly show a lack of implementation. Various overlapping or contradicting normative drivers and discursive disagreement in terms of priorities or space distribution complicate the implementation of mobility hubs. To especially overcome the lack of implementation, further research on governance questions would be desirable. This knowledge can enable practitioners to identify and address these factors proactively.

COLOPHON

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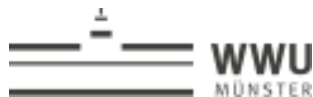
OTHER INFORMATION:

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