



MOBILITY HUBS IN SUBURBAN AND RURAL AREAS – AN OVERVIEW OF THE DEVELOPMENT IN GERMANY AND EXPERIENCES FROM THE RAMO PROJECT

Johann Grobe, Marie Werneke, Volker Bles

RheinMain University of Applied Sciences, Germany

Abstract

For a transition towards sustainable mobility, new and diverse mobility services are needed. Public transport, cycling, and sharing services bundled in a mobility hub may be an alternative to motorized private transport (MPT). Most mobility hubs in Germany are located in major cities. In suburban and rural areas, however, there is less demand for intermodal and multimodal mobility services. This is where the RaMo project plays a pivotal role. RaMo stands for “Space for New Mobility”. The project aims to set up a network of mobility hubs in Wetterau District, north of the city of Frankfurt on the Main. The quality of transport infrastructure, as well as population density, decreases from west to east in the district. In this context, we examined networks of mobility hubs in rural and urban areas in Germany. This analysis compares definitions of mobility hubs and implementation of modes of transport, operating models, and stakeholders. Additionally, we present lessons learned from the RaMo project and highlight opportunities and obstacles in the planning process of establishing mobility hubs in Wetterau District. Finally, we developed criteria for success when implementing mobility hubs in rural areas.

Keywords: mobility hubs, multimodality, intermodality, intermunicipal, suburban

1 Introduction

1.1 Background and current status

To promote a transition towards sustainable mobility in Germany and thus contribute to a better quality of life, a liveable environment, and climate protection, new mobility options are needed. Attractive public transport options are required and ease switching to sustainable modes of transport [1].

A transition towards sustainable mobility is mainly discussed in metropolitan areas. The development of sustainable transportation in suburban and rural areas has lagged behind. These areas are typically characterized by longer distances to central places, and thus amenities, as well as a lower population density. Outside major cities, usage of motorized private transport (MPT) is common due to lack of alternatives, which leads to a high level of dependency on MPT [2]. These areas could benefit from new offerings of mobility services [3]. Mobility is also a basic need in rural areas to have access to goods, places, and services [4]. To reduce dependency on MPT, there has to be a guaranteed access to mobility. Mobility needs to be accessible to all people and is regarded as a basic building block of services of general interest [5].

Mobility hubs are a building block for sustainable mobility. They help to closely link different modes of transport and supplement existing demand-actuated public transport services. They bundle mobility services in one place, link at least two modes of transport, and thus enable intermodal and multimodal mobility [1].

The quantity of mobility hubs in Germany has increased recently. Until 2015, mobility hubs were relatively unpopular in Germany [6]. These were only associated with urban areas. However, the city of Bremen was the first major German city to set up mobility hubs in 2003 [7]. Around ten years later, other major cities such as Hamburg, Munich, and Leipzig followed. Geographical extension of mobility hubs has been accompanied by a diversification of services. Initially, mobility hubs were linked to public-transport services. There is no consensus in the scientific community or practice whether mobility hubs must be directly linked to public transport services [8]. In Bremen, for example, mobility hubs have been set up in residential areas and are equipped with car sharing and bicycle parking [7].

According to the German Road and Transportation Research Association (FGSV), mobility hubs are defined as locations of mobility where a connection to scheduled public transport services is provided. Locations of mobility, in turn, are publicly accessible, spatially, and creatively linked infrastructure amenities in which at least one shared mode of transport is provided [9].

1.2 State of research and objective

Mobility hubs have rarely been established in rural areas yet [8]. Recently, there have been scattered district-wide and transport-association-wide approaches to establish mobility hubs in Germany. In general, new mobility services, including on-demand transport and shared mobility, are developing dynamically. Attempts are emerging in small- and medium-sized cities, and suburban and rural areas.

This is where the research project RaMo – Space for New Mobility plays a pivotal role. RaMo aims to bundle sustainable modes of transport and services through district-wide construction of mobility hubs in Wetterau District, north of Frankfurt on the Main in Germany. As part of the project, research was carried out on the current status of mobility hubs in suburban and rural areas in Germany, and established intermunicipal practical examples were analyzed.

This case study provides an overview of intermunicipal approaches to mobility hubs. Therefore, the status quo of establishment of district-wide or transport association-wide mobility hubs will be showcased. The study is based on desktop research as well as informal discussions with people working in the projects. Furthermore, insights of RaMo research project and possible criteria to establish intermunicipal mobility hubs are presented.

2 Case study regions of intermunicipal mobility hubs

Fig. 1 provides an overview of intermunicipal approaches to mobility stations in Germany. This research was conducted in 2023 and did not claim to be exhaustive. Five regions were analyzed more precisely: Rheinisch-Bergisch District, Hochtaunus District, Bamberg District, Ortenau District, and Munich Region. Case examples were chosen based on availability of information, communication with the project staff, and project development. Some regions shown in the map have already completed construction of mobility hubs, whereas others are in the planning stage.

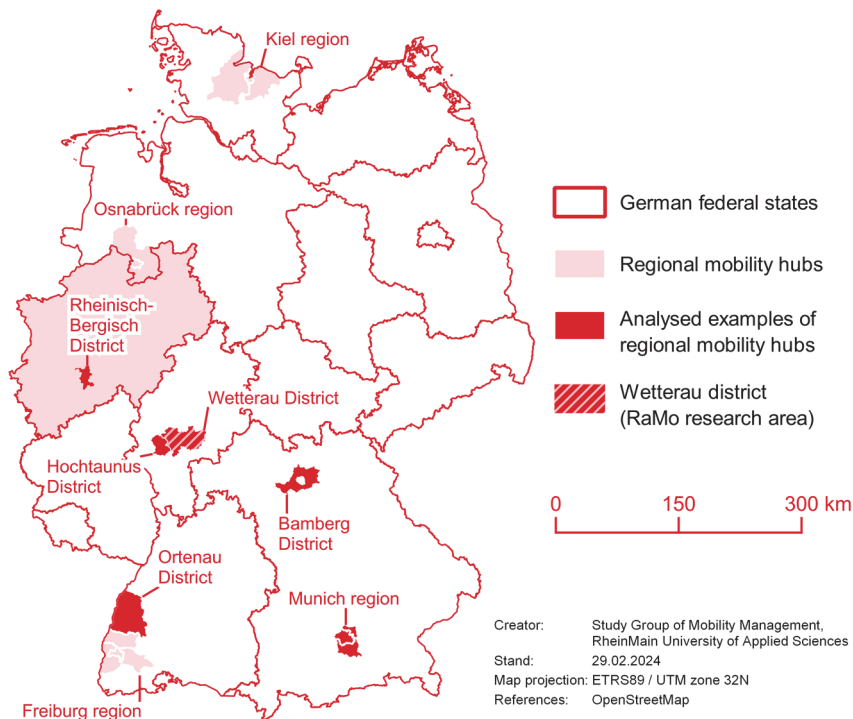


Figure 1 Overview of intermunicipal approaches to mobility stations in Germany

We considered five aspects for the analysis and comparison of mobility hub projects:

1. Reason: What is the reason for the establishment of mobility hubs?
2. Services: What are available services at the mobility hubs?
3. Coordination: Who is responsible for the central coordination of the mobility hubs?
4. Operation: Who is responsible for operating the mobility hubs?
5. Further details: What special features characterize this example?

2.1 Results of the comparison of the case study regions

All case examples show that it is possible to set up mobility hubs outside large cities. They unite the aim of strengthening sustainable modes of transport, accomplishing new mobility services, and thus offering an alternative to MPT. The examples show that there are various reasons for establishing mobility hubs. E.g. Hochtaunus District is a pilot project of the Rhine-Main transport association based on a federal funding guideline. On the other hand, Rheinisch-Bergisch District is funded by its federal state, North Rhine-Westphalia (NRW). NRW has an overall well-developed network of mobility hubs across the state, owing to the possibility of grants. Ortenau District is driving exceptional motivation of the municipal staff. The municipalities of the district accomplished the construction and operation of hubs by working closely together within an institution under public law [10]. In the region of Munich and Bamberg District, the expansion of bike sharing service area has been the main reason to establish mobility hubs.

The regions differ considerably in terms of available modes of transport and services. Bamberg District is mainly focused on bicycle infrastructure at public transport stations, such as collective bicycle garages, bicycle boxes, and bicycle repair stations.

Rheinisch-Bergisch, Hochtaunus, and Ortenau districts offer a broader selection of services ranging from car and bike sharing, charging stations to carpooling [11]. Munich region provides bike sharing services. If already locally available, car sharing services are incorporated. Subsequently, the presented regions do not have the same understanding of the term mobility hub as the components and services differ from another. However, information panels, that provide an overview of available services for customers, are part of every mobility hub in each region. Furthermore, the examples share a region-wide corporate design and umbrella brand for the value of brand recognition.

Regarding coordination, similar to services, the regions have a heterogeneous setup. In the region of Munich, Munich transport association has the lead. The same applies to Hochtaunus District. There, the Rhine-Main transport association works closely together with the local public transport company and municipalities. In the districts of Bamberg and Rheinisch-Bergisch the district itself hosts the coordination. In the latter, coordination of individual components, such as car sharing or bicycle parking, is transferred to the local public transport company or municipalities. As mentioned above, Ortenau District is an exception. This region does not have a central coordination. Instead, involved municipalities coordinate themselves by working together closely [11].

Operating mobility hubs is similar to coordination. In the region of Munich, Munich transport association takes care of the operation control. Rhine-Main transport association together with the municipalities ensure the operation in Hochtaunus District. In the districts of Ortenau and Bamberg, the municipalities are responsible for operation. Rheinisch-Bergisch District splits responsibilities for components of mobility hubs among project members. Municipalities take care of the maintenance of the physical presence of the hub, whereas mobility service providers are responsible for the operation of services.

In conclusion, organizational and operational frameworks vary depending on the specific circumstances, such as existing state funding guidelines, the drive of municipality staff to transition towards sustainable mobility, or existing contracts with established mobility service providers. The analyzed mobility hub networks also show that the project's understanding and definition of mobility hubs differs from another. Offered mobility services and modes of transport at mobility hubs varies greatly from bicycle garages at individual public transport stations to a comprehensive network of mobility hubs with sharing services. Similarly, the corporate design of mobility hubs varies across projects. The comparison of regional mobility hubs in Germany is summarized in Table 1.

Table 1 Similarities and differences between regional mobility hubs in Germany

Similarities	Differences
<ul style="list-style-type: none"> • Goals of the projects are to offer new mobility services, strengthen sustainable transport and provide an alternative to MPT. • Most mobility hubs are linked to public transport stations. • Each region has a common corporate design, logo, umbrella brand and naming. • Municipalities are supported by regional guidelines for planning, designing, constructing, and operating mobility hubs. • Cooperation agreements between municipalities, public transport organizations and mobility service were concluded. • Information panels are a base component. 	<ul style="list-style-type: none"> • Reasons to offer new mobility services range from funding guidelines, pioneering municipalities to pilot project. • Operation of mobility hubs is led by municipalities and mobility service providers, operating company, or existing organizations. • Available mobility services range from bicycle parking at public transport stations to shared mobility services. • Naming and branding differ between regions. • Available design elements range from information panel and greenery to guidance systems for customers.

3 Lessons learned from the RaMo project

Currently, planning and implementation of mobility hubs is no fixed task in existing organizational structures. The previously presented projects show that some tasks can be assigned to existing entities. It has, however, not yet clearly been defined which entities are responsible to coordinate mobility hubs. Furthermore, roles, responsibilities, and processes for planning and operating a network of mobility hubs are to be defined.

Establishing a network of mobility hubs requires collaboration of a wide range of entities that pursue the same goals and interests. Communication between stakeholders is a challenge that needs to be overcome. Frequently other tasks or projects are prioritized and there is a lack of awareness of new mobility services. In addition to these challenges, events such as political elections or parallel projects can hinder the establishment of mobility hubs.

Another challenge is collaboration between neighboring municipalities and districts. There is a lack of suitable structures and regular dialogue for important intermunicipal collaboration on affairs of transport. Networking beyond municipal boundaries only exists in individual cases but cannot be considered default. Ortenau District has shown that the establishment of mobility hubs is beneficial, but also involves a great effort for respective stakeholders. Up to now, necessary work-related coordination with other stakeholders has primarily been problem- or project-related [12].

The RaMo project shows that responsibilities of existing entities are defined too narrowly. In general, there is a lack of a clear political mandate and a central coordination office. Personnel resources are also a decisive factor. It is difficult to allocate tasks relating to new mobility services to existing staff. The case study has shown that dedicated staff has been hired. The district of Bamberg, for example, now has staff to advise local authorities on planning and operating mobility hubs. In Rheinisch-Bergisch District, on the other hand, staff had been hired to coordinate mobility hubs for local authorities belonging to the district.

Local authorities have legal functions like organizing the transport system. However, they do not have a holistic mandate of organizing transport systems and ensure access to mobility. Currently, the Building Code regulates actions relating to urban planning and road traffic laws of the federal states regulate road construction and operation. Road construction authorities, as well as districts and transport associations, play an important role [12]. Since the introduction of the Regionalization Act (RegG) in 1993, there is already intermunicipal collaboration in public transport in terms of public transport authorities responsible for planning, organizing, and financing of local public transport (RegG § 3).

In numerous instances, districts and independent cities are responsible for transport. They have organized into transport associations to perform tasks of regional public transport. There are various constellations in individual federal states regarding the relationship between municipalities and public transport organizations. The municipalities play an essential role in terms of collaboration. As shown in Rheinisch-Bergisch District, the district is responsible for the central coordination. In Munich, however, it is the regional transport association.

It should be emphasized that local authorities have municipal planning sovereignty and thus extensive freedom of design in urban land-use planning within the framework of spatial planning. By determining location, type, and extent of building use, local authorities have a decisive influence on transport systems [12]. This means that the showcased mobility hubs are owned by the municipalities. The providers are generally responsible for maintaining the mobility hubs.

Municipalities are responsible for construction and creation of mobility infrastructure in public street space. For intermunicipal coordination, which is mandatory to establish mobility hubs, there is a lack of responsibility.

4 Solution approaches

Creating new structures, defining responsibilities and close cooperations between stakeholders are decisive for successful mobility hubs. Cooperation between local authorities that goes beyond the borders of individual municipalities is required.

Organizational structures must either be newly formed or areas of responsibility of existing entities must be redefined or expanded. It is clear that a supporting intermunicipal entity is required for the establishment of new mobility services, as it has already been proved successfully for local public transport. Individual transport associations and companies already anticipate mobility hubs as their task. Leaner structures may also be conceivable. Municipalities or their municipal utilities could establish mobility hubs. In such case, however, the intermunicipal network concept is pushed into the background and isolated solutions are created that do not go beyond municipal boundaries.

The case study highlighted that existing organizational structures are often not flexible enough to meet the requirements of new intermunicipal mobility services. The development of clear roles, areas of responsibility and processes within the framework of a suitable organizational model is essential for a successful implementation and long-term operation of mobility hubs. A central coordination office that coordinates the entire process from planning over construction to operation appears to be beneficial for mobility hubs.

Existing entities such as *Zukunftsnetz Mobilität NRW* (en. *Future Network Mobility NRW*) prove to be advantageous. It provides consulting and support in the planning and implementation of mobility hubs. It also defines specifications for the corporate design of mobility hubs. This is a great source of support in the planning and implementation stage and is advantageous of recognizability.

Furthermore, the spatial and administrative extent of districts appears to be a suitable level for coordination of mobility hubs. These are becoming increasingly important to facilitate communication with and between municipalities.

Municipalities can be supported by a central coordination office, but they need to provide resources, both financial and personnel. This case study has indicated that municipalities are often responsible for the implementation and designation of space and conclude contracts with service providers and operators. They have planning authority and are ultimately responsible for implementation locally. To support municipalities, suitable entities should be defined for intermunicipal networks of mobility hubs. In particular, this new task should be integrated into existing public transport organizations.

Overall, this analysis shows that mobility hubs should not only be considered transport hubs, but as integral components of a comprehensive mobility network. Successful mobility hubs require technical and infrastructural solutions and an adaptation of organizational structures. This is how changing mobility needs and demands of the population can be realized.

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