

# Hub programme Groningen and Drenthe

State of hubs, governance,  
 and future outlook

SMILES research report #2

2021

# Hub programme Groningen and Drenthe

## State of hubs, governance and future outlook

Research report #2 within the SMiLES research programme work package A.3

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Research period: Part-time from May 2020 - June 2021

This research was carried out as part of the NWO (Dutch research council) research programme SMiLES that investigates sharing economies in logistics and mobility networks in the north of The Netherlands. The research was designed in collaboration with the OV Bureau Groningen and Drenthe, but was carried out independently by the university research team who takes responsibility for the results. The project commissioner together with the hub programme core team, including province of Groningen, province of Drenthe and municipality of Groningen, provided feedback and support through the research period.

Cover photo and all other photos in the report of the hubs in Groningen and Drenthe are taken by the author of this report, unless stated otherwise.



# Summary

Since 2018, the Dutch provinces of Groningen and Drenthe have an extensive network of hubs across their urban and rural landscape. Hubs aim to enable comfortable multimodal travel for everyone to their desired destination and with their preferred travel mode. They can be train stations, P+Rs, bus stations or smaller neighbourhood hubs.

The hub programme of Groningen and Drenthe, led by the two provinces and the municipality of Groningen, is known for its pragmatic approach. The focus is on experimentation and learning rather than taking an evidence-based approach. To continue the developments at individual hubs and across the hub network, the hub programme sought for reflection and policy considerations to ensure long-term sustainable and inclusive accessibility.

## Research methods

This research on governance of hubs in Groningen and Drenthe is the core part of work package A3 within the NWO research programme SMiLES (Shared connectivity in Mobility and Logistics Enable Sustainability). Through establishing a living lab, SMiLES seeks opportunities for open shared networks in mobility and logistics through working with a broad number of stakeholders to learn from and improve practice, and contribute to theory development.

Work package A.3 was carried out independently by the research team at the University of Groningen but was designed in collaboration with the lead partner OV Bureau Groningen and Drenthe and the hub programme team.

The study on the governance of hubs included a literature and policy review and interviews with key stakeholders within the hub programme. Additionally, international case studies on hub developments in Bremen, Flanders and Southeast Scotland were performed through interviews. Internal discussions within the research team served as an important step for reflection and in the build-up of the overall conclusion and policy implications.

## Greater public transport efficiency while maintaining accessibility led to the development of hubs

The hub network in Groningen and Drenthe was not set up as a result of predetermined policy goals but is rather a follow-up to consecutive developments in the interregional transport system. After the establishment of the high-quality public transport network, stretching of the lines and collective management of target group transport, hubs were seen as the logical place for comfortable multimodal transfers.

After identifying most important public transport stops in the region and marking them with the 'hub' sign, an ad-hoc, organic, bottom-up approach was chosen to develop these hubs into a comfortable place to transfer between mobility modes. Hub developments were primarily carried out with proactive municipalities where (financial) resources have become available through various subsidy programmes.

## Fragmented land ownership challenges, collaboration and future hub developments

Meanwhile, fragmented land ownership has proven to be an essential yet challenging factor in hub developments. The land where a hub is located belongs to either a municipality, province or an asset manager (ProRail, NS or Rijkswaterstaat). A mismatch between the policy goals of these different organisations can lead to a halt in hub developments. Therefore, the study suggests that a collaboration between these parties, the National Government, and local organisations and businesses is necessary to secure support and allocate further financing for hub developments.

## SHARE-North – the accelerator of hub developments in Northern Europe

In Northern Europe, the SHARE-North European project has been an important facilitator and a network platform in shared mobility and mobility hubs. The cases from Bremen, Flanders and Southeast Scotland all demonstrate how learning from each other can accelerate hub developments.

The three cases present hub programmes with different spatial scope and variations in their aims. Nevertheless, governance challenges such as gaining support from the local government and financing are recognizable across the map. To tackle such hurdles, a regional funding scheme for hub developments has been set up in Flanders while in Southeast Scotland evidence-based developments are the key to secure funding from the Scottish government and for convincing the local councils.

### **Policy considerations for realizing an inclusive and well-accessible hub network**

Being able to showcase a complete network of hubs in Groningen and Drenthe is considered a success of the hub programme among many. However, the evidence gathered in this study shows that a more comprehensive approach could be needed to set the next step in realizing an inclusive and well-accessible hub network.

First, developing guidelines and a subsidy programme for the developments at different types of hubs could be considered. Second, presenting the benefits of hub developments and pilot projects could help to get more parties (financially) aboard with hub developments. Finally, a long-term strategic vision might ensure continuous developments across the hub network.



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# Introduction

Photo: hub Dieverbrug (2020)



# 1 Introduction

Cities and regions are increasingly investing in mobility hubs to enable more sustainable, inclusive and healthy mobility in both urban and rural areas. Mobility hubs contribute to shared mobility and multimodal trips, which are considered to contribute to lower carbon emissions, reduced congestion and air pollution, better accessibility and increased quality of life (European Commission, 2019; Conticelli et al., 2021; Storme et al, 2021).

In Northern Europe, hubs and shared mobility have received increased attention since 2014 with the roll-out of the European funded SHARE-North project which has enabled the (further) development of shared mobility and mobility hubs across partner regions (European Commission, 2019). In the Netherlands, national policy context has recognized mobility hubs as component of a robust and comprehensive mobility system for passenger and freight transport alike (Ministry of the Environment, 2011). Most recently, mobility hubs have become an important policy goal within the Dutch public transport vision. Public transport in combination with hubs that facilitate both shared and personal mobility give people the choice and possibility to travel seamlessly from door to door and without the use of a personal car (Witte et al., 2021; Ministerie van Infrastructuur en Waterstaat, 2021).

## **SMiLES – research into sharing in logistics and mobility**

In the North of The Netherlands, increasing interest in sharing economies in logistics and mobility networks lead to the NWO (Dutch research council) research programme SMiLES. By establishing a Living Lab, the programme seeks opportunities for open shared networks through working with a broad number of stakeholders to learn from and improve practice and contribute to theory development.

This research about mobility hubs in Groningen and Drenthe is part of the research carried out under work package A.3: Integrated mobility services through sharing of public transport hubs. The project was carried out on a part-time basis in the period May 2020 - September 2021. The research was designed in collaboration

with the OV Bureau Groningen and Drenthe (lead partner). It was carried out independently by the university research team, but in collaboration with the lead partner and the hub programme core team, including province of Groningen, province of Drenthe and municipality of Groningen.

## **The case of Groningen and Drenthe**

In the provinces of Groningen and Drenthe, a network of multimodal hubs was opened in 2018, including train stations, Park+Ride locations, bus stations and smaller hubs in the rural areas of the two provinces. These hubs are considered as the most important transfer points in the region that connect people with the high-quality rail and bus network of Groningen and Drenthe. The hubs aim to enable traveling for everyone to their desired destination and with their preferred mode (Provinces of Groningen and Drenthe, 2017).

The Groningen-Drenthe hub programme is known for its learning-by-doing approach based on minimal long-term vision and prior research. The hub programme is now looking for reflection and recommendations on how to continue with the governance and further developments of the hubs, to ensure the long-term success of the hub programme and its contribution to the livelihoods of both the urban and rural inhabitants of Groningen and Drenthe.

## **Research aims and research questions**

This research on the hub programme of Groningen and Drenthe – SMiLES work package A3 – is divided into three phases and results in three products. This research report focuses on the second research phase – governance of hubs.

In the first part, the state of hubs in 2020/2021 is evaluated to understand what the hub programme has achieved in its first three years.

Second, the governance of hubs is studied, specifically focused on how the hub programme was initiated and how it is operated. Additionally, case studies of governance of hub programmes internationally (Bremen, Flanders and Southeast Scotland) are carried out. These cities/regions all participated in the EU-funded



SHARE-North project about shared mobility and mobility hubs in the North Sea Region (European Commission, 2019). The lessons learned from the Groningen – Drenthe practice and the international cases will provide policy considerations for further developments of the hub programme in Groningen and Drenthe. The result of the second phase is the core of this research report.

Third, an evaluation framework is developed that helps the hub programme and the involved stakeholders to evaluate their hubs in order to consider the effects of the hub developments so far and also consider directions for further developments at hubs.

**SMiLES work package A.3 answers the following research questions:**

1. What is the current situation of the hubs in the hub network of Groningen and Drenthe?
- 2. How are hubs governed in the hub programme Groningen and Drenthe?**
- 3. How are mobility hubs developed and governed elsewhere in Northern Europe?**
- 4. What can Groningen and Drenthe learn from the international developments and from their own practice to continue the expansion and further realize an inclusive and well-accessible hub network in Groningen and Drenthe?**
5. How can hubs in Groningen and Drenthe be evaluated?

The research report in hand answers research questions 2-4. Results of questions 1 and 5 are discussed in two separate reports: the hub assessment booklet and hub evaluation framework.

## Research approach

Figure 1 (see next page) presents an overview of research methods per research question in SMiLES research package A.3. The small arrows indicate the consecutive process of the research methods and how the arrows above the research questions show which questions contribute to each other. This report covers the research steps indicated in blue and the relevant methods used for questions 2-4 are described next.

First, a literature review of Dutch policy documents was carried that focused on mobility and transport related policies with an indication for mobility hubs. The research included national documents, and regional and local policies in the provinces of Groningen and Drenthe (see appendix 1 for a list of documents studied).

Throughout the research process (May 2020–June 2021) the researcher participated in hub programme team meetings where she received constant updates on the process and latest developments within the programme. Throughout the time, in addition to the interviews, she had informative meetings with various stakeholders and participated in hub-related conferences and webinars (see appendix 2 for overview of the meetings). In parallel, the researcher also visited all the 57 hubs in the hub network to gain a good understanding of the facilities and services that are available at each hub. The results of the site visit and the node-place analysis are further described in Report 1 / hub assessment booklet and shortly concluded in the conclusion chapter of this report. The hub visits and analysis were also relevant for the context of the governance research.

The primary data source for the second research question were the interviews carried out with key stakeholders within the hub programme. In total, eight interviews were completed for the Groningen and Drenthe case (see overview in appendix 3). The questions addressed in the interviews focused on the start of the hub programme, the different roles of the stakeholders and discovered examples of different past and on-going hub projects.

The three international case studies in Bremen, Flanders and Southeast Scotland were performed by reviewing 1-2 local policy documents (appendix 1.2) and for each case study, one interview was carried out with the primary initiator of the hub programme (appendix 1.3).

The end of each chapter in this report provides the reader with a reflection-paragraph. These reflections were based on internal discussions of the research team of the University of Groningen on the chapter's findings about hub governance and their application to the Hub programme Groningen - Drenthe. They serve as

intermediate steps that build up to the overall conclusion in Chapter 6.

## Structure of the report

The report starts with an exploration of mobility hubs, multimodality and shared mobility in scientific literature (Chapter 2), followed by a policy review of hubs in the Dutch national, regional and local context (Chapter 3).

Chapter 4 dives into the hub programme of Groningen and Drenthe, exploring the initiation of the hub programme, stakeholders within the hub programme, the process of hub developments, pilot projects at hubs, financing and the vision for the upcoming five years. At the end of each sub-chapter, a reflection on each topic is given.

Chapter 5 presents the findings of the international case studies – Bremen, (Germany), Flanders (Belgium) and Southeast Scotland (UK). For each case study, the hub concept is defined, followed by the initiation and process of hub developments in each region.

In the end the main conclusions are drawn, followed by recommendations for furthering hub developments in Groningen and Drenthe.

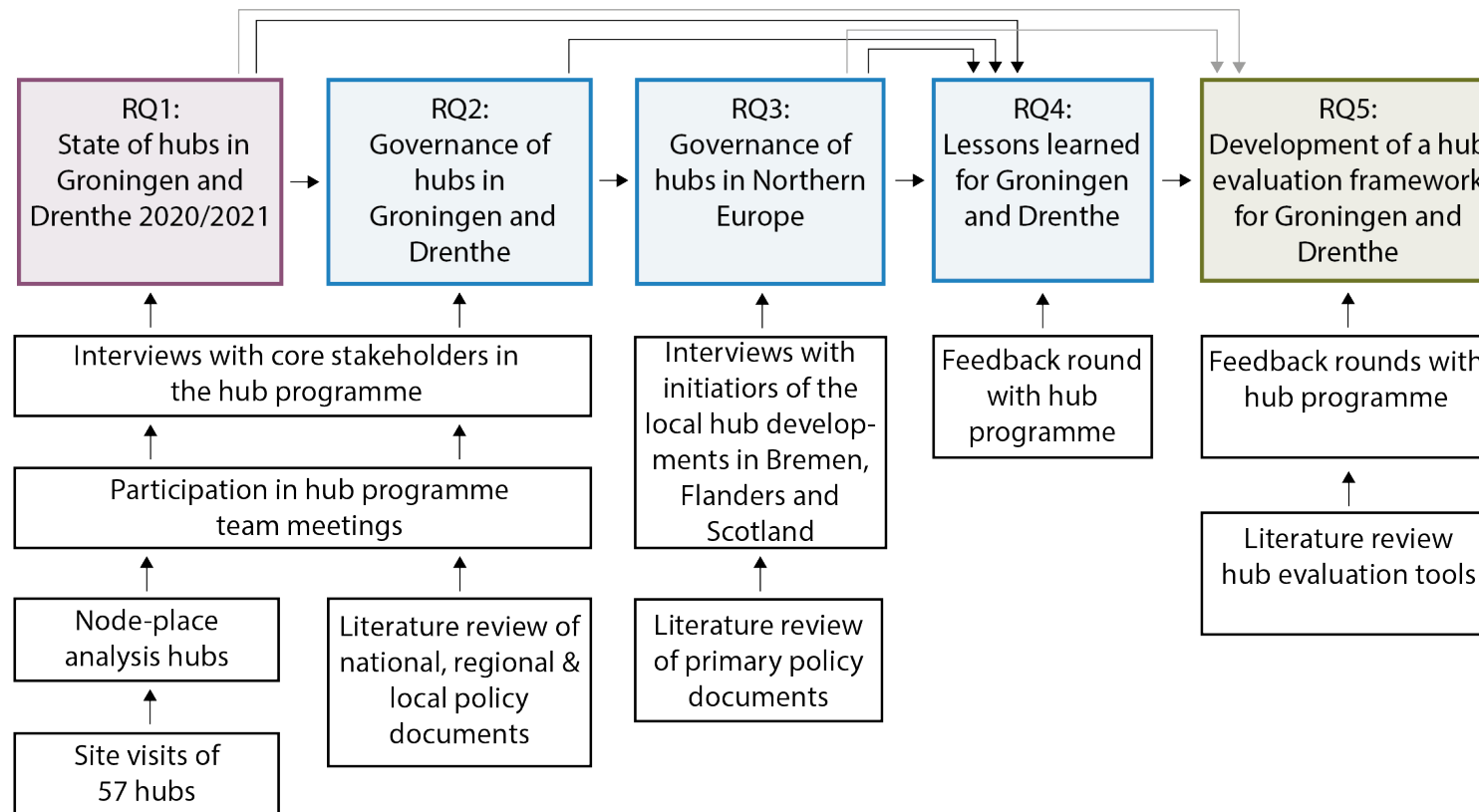


Figure 1: Research process SMiLES work package A.3



# 2

## Theoretical perspectives on hubs

Photo: hub Bedum (2020)





## 2 Theoretical perspectives on hubs

Hubs are primarily a practice-driven concept (Kwantes et al, 2019). However, as multimodality and shared mobility gained more importance on the transport policy agenda, increasingly more scientific research is carried out on mobility hubs.

### Multi- and intermodality

Multimodal trips involve a single passenger journey using two or more transport modes during which the traveller makes a transfer. Such trips have gained increased attention in transport policy across the world as means to reduce the negative effects of private car use. Lowering car use can contribute to the decrease in congestion, traffic accidents, air and noise pollution, and demand for parking space. Through active travel and use of public transport, multimodality also leads to a healthier society (Scheiner et al., 2016; Tønnesen et al., 2020).

Researchers often differentiate between multimodal and intermodal trips. Multimodality is more regularly used in the context of a longer time period while intermodal integration refers to the use of different transportation modes in one journey (Nathanail et al., 2018; Nobis, 2007; Scheiner et al. 2016).

Multimodal hubs are seen as the physical place in the environment that enables multi – and intermodality. As transport is a derived demand, access to intermodal transport options can be considered to be essential for ensuring inclusiveness in modern transport systems to provide access to spatially distributed activities (Gössling, 2016; Bell, 2019).

### Different definitions of mobility hubs

Hubs are defined in various ways and with different emphasize on mobility hub characteristics. Some definitions include:

- A comfortable location where people can choose between different transport modes, including traditional modes such as a car and public transport, but also smart and new mobility concepts. The form and function of a hub depends on

- the spatial environment of a hub (Hamersma & Haas, 2020);
- A seamless confluence of multiple transport modes or services in a single location that adds value for travellers who benefit from the multimodal connectivity and resulting travel time or cost savings (Anderson et al, 2017);
- A connection between public transport and shared mobility services (Miramontes et al, 2017).
- A place to transfer between different modes with attention to user facilities, social security and comfort, best located between different mobility environments (Kwantes et al, 2019).
- A physical link between transport modes that – in addition to its mobility function – can also serve as focal point for spatial development (Witte et al., 2021).

While this report focuses primarily on mobility hubs, it is also important to remember that hubs can also refer to, for example, aviation hubs, logistics hubs or energy hubs.

### Benefits of mobility hubs

The use of new mobility services such as shared mobility, often made available at a hub, can help to decrease car ownership, lower greenhouse gas emissions, and reduce energy consumption (Storme et al., 2021). Promoting an effective modal interchange enables the shift towards more sustainable transport through providing transport that can be optimally combined and through that, ensuring a seamless journey (Conticelli, 2021).

Furthermore, hubs present an opportunity to consider how different modalities can be integrated and how they could reinforce each other to satisfy the travel needs of travellers (Witte et al, 2021). An important component of such integration is MaaS that enables travellers to find the most proper integration of travel modes for their journey through a digital platform (Witte et al., 2021). Through the coordination of the digital (MaaS app) and spatial (hub) mobility services, travellers are offered easier access to more mobility options (Storme et al., 2021).

Hubs could also help to facilitate solutions for other societal issues through

mobility services. Examples of that are accessibility to facilities in rural areas and enabling urban densification (Witte et al, 2021).

Several authors also underline the potential integration of hubs with last-mile logistics, such as mobile food units and delivery collection points (Arvidsson et al., 2016; Bruzzone et al, 2021; Storme et al., 2021; Trentini & Mahl  n  , 2010).

## Types of mobility hubs

Beyond a definition of hubs, authors have also proposed different typologies for hubs from different perspectives. Bell (2019) categorizes hubs depending on their location and specific user needs, while Kwantes and others (2019) divide hubs based on the interest of the dominant stakeholder.

Bell (2019) presents four types of hubs that are generally found in practice and literature:

- Hub at an urban centre – serves as a hotspot for transfer for local, regional and interregional trips, but is also a centre for local social, cultural, leisure or other activities. This hub is used by commuters and tourists and local inhabitants alike.
- Suburban hub – provides access to the city centre and meets mobility needs for supra-regional transport. Best accessed by bike or on foot but increasing importance for P+R facilities.
- Regional hubs – interface between motorized and public transport and urban and rural areas – and the main access point to regional destinations. Primarily P+R facilities, used by commuters and little by tourists.
- Basic hubs – provide the main getaway to public transport and specifically essential in rural villages, but also exists in urban areas. Primary access point for people without a personal car and mainly accessed by walking or cycling.

Bell (2019) further explains how based on the hub categories, services and facilities can be decided for individual hubs. Each hub should meet the basic demand based on its function and users (e.g. infrastructure features and services that ensure safe, barrier-free and comfortable use of facilities). Additional demand would cater beyond basic needs and offer, for instance, services for tourists.

## Multimodality in rural areas

Multimodality is less common in rural areas given the dispersed transport demand, inevitably leading to wider catchment areas and thus longer travel time and distances in the last mile. Poorer public transport connectivity compared to urban areas often means that people are dependent on a car even if they would prefer different travel modes. This also means that people who either cannot afford a car or do not have a driver's license are at a disadvantage (Sipuř & Abramovic, 2017; Pucher & Renne, 2005; Gross-Fengels & Fromhold-Eisebith, 2018).

Improved public transport availability in rural areas can contribute to the decrease in emigration trends to urban areas (Sipuř & Abramovic, 2017). Furthermore, shared modes have the potential to complement public transport by providing key first-and last-mile connections in areas where public transport is unfeasible (Anderson et al, 2017). Zuo and associates (2020) suggest that improving the first and last mile connections are more effective than improving the long-hail public transport connection.

## Governance implications for implementing hubs

The development of a mobility hub asks for planning and coordination among different public stakeholders and alignment with other policy instruments that influence the functioning of a hub. Witte and associates (2021) share some light on this based on six Dutch and international cases studies on hubs:

Since the hub is often on public ground, different levels of government take an active role in hub developments, either as a regulator, financier or as (co-)developer. The national or regional government can support developments on regional or local scale to accelerate hub developments. They could assist for example with the coordination between different stakeholders, or with knowledge sharing about innovative mobility concepts and efficient use of space and resources (Witte et al, 2021).

A financing role for the national or regional government is especially relevant when developing a nationally or regionally consistent hub network with common branding and communication.

The national government could furthermore take an important role in setting up pre-conditions that could effectively be set-up on a national level, such as data standards for sharing and using user data with MaaS or allowances for the use of shared mobility (Witte et al, 2021).

Storme and associates (2021) propose a selection on policy implications, based on a broad literature review, to aid the implementation of new mobility services, including mobility hubs. Some of their recommendations include:

- Private actors have an important role to play in implementing new mobility services and both public and private transport is needed to make new mobility systems a viable alternative to private cars.

- Funding is crucial in implementing new mobility services and can be supported by both private and public stakeholders.
- Public actors can support the roll-out of new mobility services through showing how new mobility systems contribute to social goals, such as improved connectivity, reduced congestion and reduced emissions.
- Through pilot projects and studies on business models, uncertainties regarding costs and user acceptance could be reduced.

### **Reflection:**

*What theoretical perspectives can we see back in Groningen and Drenthe?*

*As the next chapters of the report will demonstrate, the hub programme in Groningen and Drenthe lays more emphasis on intermodal trips where people use more than one mode within one journey and use the hubs to transfer between personal and/or shared modes and public transport. Multimodality, in comparison to intermodality, focuses on using different modes over a longer period and not necessarily within one journey.*

*In comparison to the definitions found in literature, until now, Groningen and Drenthe have focused less on new shared mobility services. However, as the hub programme evolves, both in Groningen and Drenthe, but also in other countries as will be shown in chapter 5, the definition of a hub also becomes more comprehensive.*

*The four types of mobility hubs commonly found in literature can also be found in Groningen and Drenthe as the hub network consists of hubs with different functions and locations across the urban and rural environments. Next, literature supports the approach Groningen and Drenthe have taken to enable increased accessibility and mobility in rural areas. Specifically, stretching of the public transport lines and focusing on improved first-and-last mile transport through offering on-demand transport and increasingly more new shared mobility have shown to be more beneficial than operating long and unfeasible bus lines.*

*Finally, the complex governance approach on hub developments explained by Witte et al (2021) reflects the case of Groningen and Drenthe well. As further discussed in chapter 4, the different levels of government already play an important role in hub developments and further coordination from both regional and national level can aid the further development of the hub network in Groningen and Drenthe.*



# 3

## Dutch policy context on hubs

Photo: hub Coevorden (2020)



## 3 Dutch policy context on hubs

In the last decade, mobility hubs have gained increasing attention in the Dutch transport policy agenda. This chapter provides an overview of relevant national level policies and looks further into how hubs are integrated in the regional and local policies in the provinces of Groningen and Drenthe.

### 3.1 Dutch national policy context

In the Netherlands, intermodality is seen as a crucial component in realizing sustainability and good accessibility, facilitated through multimodal hubs. In national policy context, hubs (knooppunten) have received attention for years as a component of a robust and comprehensive mobility system with potentials not only for passenger transport, but also for freight (Ministry of the Environment, 2011).

#### Intermodal journeys in the Netherlands

Intermodality in the Dutch setting is considered a trip from A to B that includes a minimum of two different travel modes, including walking if the walking distance is a minimum of 1km. In the Netherlands, 4% of all trips are intermodal, wherein the train together with the bike is the most common combination of modes. Only 10% of intermodal trips involve a car and these trips take place mainly between urban and rural areas (Hamersma & Haas, 2020).

#### More intermodal trips through multimodal hubs

Intermodal trips can be facilitated through attractive multimodal hubs that provide high quality transport (punctual, fast and comfortable) and different sharing systems. Spatial functions, such as multifunctionality, densification and good infrastructure for active travel modes can help to reduce the use of personal cars. Collaboration between different levels of government and transport providers and other stakeholders is considered essential in order to realize efficient hub networks and mode combinations (Hamersma & Haas, 2020).

#### Definition of hubs in national policy

‘Schets mobiliteit naar 2040’ (Ministerie van Infrastructuur en Waterstaat, 2019) aims to offer direction for mobility policy in its broadest terms, from logistics to air travel and daily commute. On one hand, hubs are seen as places at edges of cities and regions that help to meet the need for mobility demand. On the other hand, hubs are also places that help to keep cities liveable through contributing towards zero emission city logistics.

Programma Toekomstbeeld OV (2019) envisions “efficient and attractive multimodal interchange hubs” both in urban and rural areas, including important bus stops or neighbourhood level transport interchanges. Not only should hubs provide various services, but also be integrated within its surroundings. Public transport accessibility and inclusiveness for the disabled is a crucial underlying element of the hubs, including transport for people with special needs.

#### Tangible policy directions for hubs

The importance of hubs and how to develop them has been specified in the follow-up document for the Programma Toekomstbeeld OV (2019) – Ontwikkelagenda Toekomstbeeld OV (Ministerie van Infrastructuur en Waterstaat, 2021). The documents are the result of collaboration between the Ministry of Infrastructure and Water Management, provinces and transport regions, public transport operators and the railway network provider ProRail.

According to the document, the strength of hubs lays in supporting the public transport network with other modalities, both personal and shared. By offering facilities for personal car and bike, and shared modes, hubs enable sustainable door-to-door travel both in urban and rural areas and give people the choice and possibility to travel without a personal car.

The development agenda focuses on three categories of actions that will help to develop and improve hubs future-proof hubs for 2040. For each action, budgets are determined for the upcoming 20 years (Ministerie van Infrastructuur en Waterstaat, 2021).



### **1. Improvement of functional quality to enable efficient and barrier free transfers for everyone.**

- Pedestrian as the top of traffic hierarchy at hubs
- Space for bikes
- Mobility offer that fits with the location together with logical transfers
- Efficient layout of the hub, including short routes between transfers
- Accessibility for everyone, including physically impaired
- Safety of train platforms and bus stops
- Sustainability efforts to meet climate ambitions
- Climate adaptation for extreme weather conditions, such as heavy rain and drought.

Functional quality is to be improved at around 200 train stations and 150 BTM hubs with an average investment of € 3-10 million per hub.

### **2. Improvement of spatial quality to increase cohesion between hubs and their surroundings.**

- Facilities for travellers to make a hub a nice and enjoyable place to be
- Pleasant appearance
- Connection with surrounding villages or neighbourhoods
- Social safety.

Spatial quality is to be improved at around 150 train stations and 125 BTM hubs with an average investment of € 5 – 15 million per hub.

### **3. Scaling up to develop a multimodal hub-network and increasing capacity of existing hubs.**

- Scaling up of existing hubs due to developments such as passenger growth, developments in the network or urbanisation.
- Developing new hubs in new neighbourhoods

Upscaling and new hub developments are relevant for about 25-50 train stations and BTM hubs with an average investment of € 25 to 250 million per hub.

## **3.2 Regional policy context**

Hub developments are not only taking place in Groningen and Drenthe, but also elsewhere in the Netherlands. More often, developments on hubs are approached from a city level, such as in Utrecht and in Amsterdam (Witte, et al., 2021). However, in Noord-Holland, hub developments are approached collectively by three municipalities and similarly to Groningen and Drenthe, many hubs have already been implemented. On the next page, the case of Noord-Holland is further explained, before going into further detail about Groningen and Drenthe.

### 3.2.1 Mobipunten in the Kop of Noord-Holland

In the Kop of Noord-Holland, north of the cities of Alkmaar and Hoorn, the municipalities of Den Helder, Schagen and Hollands Kroon and the consultancy Advier are implementing Mobipunten. A Mobipunt is a mobility hub that offers the opportunity to use shared bicycles and/or shared cars and almost always connects to public transport. The Mobipunt-concept is part of the European SHARE-North project (European Commission, 2019).

The major reason for initiating this intermunicipal hub project in the Kop is the reduction of bus lines over the last decade to improve their financial viability. The Mobipunten are locations where small-scale demand-based transport is offered, filling the accessibility gap that the regular bus network has left. The three municipalities work together on this project in a regional collaborative programme: 'De Kop Werkt!'. Advier is responsible for the development of Mobipunten, by carrying out stakeholder engagement, physical development and client relations with shared mobility facilitators and -users, such as companies who have a subscription for shared mobility.

The development phase of Mobipunten started in 2020 with 9-10 locations realized by mid 2021. The municipalities plan to realise a total of 40 Mobipunten over the next few years. Hub-locations were determined by the municipalities and Advier. The development of the Mobipunten is done from a pragmatic perspective: learning by doing and 'pioneering'. The initial development phase

of the project is top-down but implementation is expected to become bottom-up in the future with local communities setting up their own Mobipunten. Local initiatives, such as small libraries or stands for selling local produce could be set up as part of the Mobipunt in the future.

The project is financed via the collective fund of De Kop Werkt! Programme. Half of this fund was provided by the municipalities. The remaining 50% was financed by the province of Noord-Holland. The funding is used for the Mobipunt branding and for initial investments into shared mobility services. Besides indirect investments, the province is not involved with the Mobipunten project. However, since the province is the manager for the bus concession in the region, they have some direct influence on the bus network (together with Connexxion) and therewith indirect influence on the Mobipunten.

In the future the Mobipunten are expected to become a privatised organisation, separating the Mobipunten from De Kop Werkt! and Advier. The B.V. (Ltd.) is projected to have the municipalities as shareholders and some of their aldermen in the supervisory board. The managing board must have some distance from its shareholders and is to manage and exploit the concept in the region with the income generated by the shared mobility usage.

*This chapter was written in collaboration with Tobias Deelstra who carried out interviews for the Noord-Holland case study for his MSc thesis. For further information, please refer to his thesis report (Deelstra, 2021).*



Figures 2-4: Impressions mobilpunten in Noord-Holland (mobipunt.net; advier.nl)



### 3.2.2 Hubs in Groningen and Drenthe

In Groningen and Drenthe, hubs have been integrated in provincial policies since 2016. However, transport developments that partly lead to the establishment of hubs, were already on the policy agenda earlier. According to Witte and associates (2021) the hub network in Groningen and Drenthe has two primary goals: (1) improving cost efficiency and accessibility of public transport and (2) improving travel experience and social cohesion.

#### Transport of people in Groningen and Drenthe

In 2016, the provinces of Groningen and Drenthe established the basic public transport network as part of their provincial urban development plans. The network consists of high-quality public transport lines (HOV), including trains, QLiners and Q-Linkes that provide frequent, quick, direct and reliable connections between important destinations. Additional bus lines connect rural areas to the HOV network (Provincie Drenthe, 2018; Provincie Groningen, 2016).

QLiner buses provide long-distance direct connections between Groningen and other large cities in the region. Q-Link buses connect important transfer points and destinations within and around (up to 15km) the city of Groningen. The HOV operates primarily between 6:00 in the morning and 24:00 in the evening with minimum of two departures per hour. Until 2029, minimum changes should occur in the set-up of the public transport network in the region wherein HOV is guaranteed until 2039 (de Jong, 2016; Provincie Drenthe, 2018; Provincie Groningen, 2016).

In addition to public transport, on-demand transport (publiek vervoer) provides flexible mobility for specific target groups in Groningen and Drenthe, such as the elderly, people with reduced mobility, and pupils. Moreover, hub taxi is a service available for anyone who is looking for a door-to-door transport between their point of departure and a hub that is no further than 20km away (Provincie Drenthe, 2018; Publiek Vervoer, 2020).

### Definition of hubs in Groningen and Drenthe

Since 2018, hubs are considered the most important transfer points within the public transport network in Groningen and Drenthe (provincie Groningen, 2020). Hubs are nodes within the region where at least one high quality public transport line connects with on-demand transport (publiek / doelgroep vervoer). These are places such as existing train stations, bus stations, P+R locations and other, smaller transfer points in rural areas. Calling these transport nodes 'hubs' transforms them into future-orientated developments. On one hand, this means that various shared mobility concepts will be available at these spots, such as shared e-bikes and car-sharing. On the other hand, hub also means more than just transport, with the overall goal to become a spatial node for activities, both for inhabitants and travellers alike (de Jong, 2017; provincies Groningen and Drenthe, 2017).

The minimum requirement for a hub includes accessible platforms and walking routes, safety in terms of both traffic and social safety, covered bus stops, street lighting, trash bins, digital travel information and WiFi. A hub has facilities for cars (parking and kiss-and-ride), bike (covered stalls and good cycling routes) and pedestrians (good walking routes). Preferably, hubs also have facilities for e-bikes, such as lockers and charging facilities (de Jong, 2017; provincies Groningen and Drenthe, 2017).

The hub programme is a joint initiative between the provinces of Groningen and Drenthe, the OV Bureau and the municipalities. The goal is to provide a network of hubs in which every hub is a high-quality, safe and accessible multi-modal transfer point with an attractive and recognizable character. However, each hub is developed individually considering its surroundings and the needs of its users. Development of hubs focuses on the improved experience of a hub – this includes recognizability, travel information, integration between different modes, time saving, positive image and integration with the environment (de Jong, 2017; provincies Groningen and Drenthe, 2017).

## Hubs in regional policies

Since 2016, hubs have been integrated into the spatial development plans of Groningen and Drenthe as part of their goals on mobility and in close relation to the HOV system and accessibility. Additionally, hubs are considered in other strategies, such as the Groningen's bus stop policy and cycling plan. In the future, hubs will potentially receive increasingly more attention not only in mobility related subjects, but also in spatial developments where the hub provides a location for a collection of services, including education, health care and retail (Provincie Groningen, 2016; Provincie Drenthe, 2018).

The provincial cycling strategy 2016-2025 for Groningen (2016) identified a chain trip including a (e-) bike a trend that is beneficial for both urban and rural areas. In urban areas bikes are preferred instead of a car for congestion decrease while in rural areas bikes provide an alternative where public transport supply is decreasing, and services are further away. P+R locations were considered as the spots that can facilitate chain mobility in urban areas, but also places where increased services can be provided for bikes, such as shared bikes and bike lockers for individuals and businesses. In the follow-up execution programme (uitvoeringsprogramma) of the 2016's strategy (provincie Groningen, 2017), good cycling facilities at each transfer point and bicycle lockers with chips for hubs Zuidhorn and Ten Boer, and at 14 other hub locations were set as objectives.

An attention point for development of hubs – e.g. regarding bicycle parking, lockers – is asset and landownership, at which NS and ProRail are important parties next to their role regarding rail transport and stations. Coordination with asset/ground owners proves to be complicated (see also Deelstra, 2021).

The growth of attention for hubs and further integration in policy becomes clear in the latest cycling execution programme (provincie Groningen, 2020) where hubs are mentioned as the location for several developments. Firstly, a €300.000 provincial subsidy is available for upgrading bicycle facilities specifically at hubs. Separately, the province is also contributing €1.200.000 to the expansion of cycling facilities at train stations. For recreational cycling, the province is contributing €50.000 into a pilot project for cycling tours that start from hubs.

Next, the province contributes to sharing initiatives at hubs by partly funding a shared e-bike rental at P+R Hoogkerk. Together with Arriva (part of the train concession 2021-2025), a pilot will be carried out for shared e-bikes that can be taken on the train at Groningen Central Station for last-mile travel at destination. Finally, in combination with bike delivery, hubs offer a place in the logistics process where the transfer of packages from a van to cargo bike can take place. The ULaaDS and SMiLES projects with the province as a partner, are mentioned in this context (provincie Groningen, 2020).

The fact that hubs receive increasing attention in policy is also seen in the upcoming mobility strategy for the Groningen-Drenthe Region. In the preliminary strategy, public transport and bike receive most attention while the car is still considered an important mode in rural areas as part of a multi-modal chain (through P+R locations). Investments into car accessibility should be kept minimal (Procap, 2020).

Furthermore, the 2020 mobility strategy aims for a greener, more connected and smarter mobility system. Expansion of hubs is specifically mentioned under the goal 'connecting' where hubs help to bridge the first and last mile and fulfil a linking function within the regional chain. Hubs are also seen as a spot where different functions come together. Thus, further developing and adding additional facilities at hubs is crucial. The document specifies that as Groningen and Drenthe are in the development of their own mobility strategies, further guidelines for improving hubs are specified within these policies (Procap, 2020).



### 3.3 Hubs in municipal policies – example Groningen

Municipality of Groningen has integrated hubs into their 2021 mobility vision (Gemeente Groningen, 2021). The vision explains that hubs contribute to intermodal travel and stimulate decrease in car use in urban areas through enabling transfers between the personal car and other transport modes on the edges of the city of Groningen. Intermodal travel (ketenmobiliteit) is considered to contribute to space-efficient, clean and healthy transport system.

Municipality of Groningen differentiates between three types of hubs: train stations (1), P+R (2) and neighbourhood and village hubs (3). The goal of the municipality is to further develop their existing hubs and create a road map for the implementation of neighbourhood and village hubs.

The goal at train stations is to densify spatial and economic activities around the stations to expand the function of station areas from mobility to broader urban

activities. Additionally, the focus will be on increasing capacity for bicycle parking and providing more shared mobility.

P+R locations are set to grow on their original function – to absorb car traffic in the direction of the city of Groningen and enable transfer between the car and public transport. Additionally, as the demand of bicycle trips from P+R locations grows, more cycling facilities will be provided. The municipality's cycle plan set out to invest €200.000 in cycling facilities at P+R locations between 2020 and 2022 (Gemeente Groningen, 2019).

Neighbourhood and village hubs will be a new development for the municipality with the aim to enable transfers between public transport, demand responsive transport and other modalities within neighbourhoods and villages, with minimum focus on car parking. A roadmap will be drawn for this development in 2022 with the goal to design a comprehensive network of hubs together with the P+Rs and train stations within the municipality (Gemeente Groningen, 2021).

#### **Reflection:**

*While mobility hubs have been mentioned in national policy documents for a decade, more specific implementation and development directions are only offered in the latest development agenda for public transport, published in 2021. As a follow up, more guidelines and specific funding requirements can be expected in the upcoming years. The potential financing for hubs from the national government could also benefit Groningen and Drenthe, however, the specifics of the funding scheme are not clear yet.*

*The lack of national level policy on hubs has led to hub developments across the country in different forms and shapes. In Groningen and Drenthe, the two provinces are in the lead, in Noord-Holland, Mobipunten are a collaboration between municipalities, and in other places, hubs are more urban, city and neighbourhood level developments. Similarly, the definition of a hub differs. In Groningen and Drenthe, the focus is first on public and on-demand transport, while in the Noord-Holland case, shared mobility stands central to hubs (see also Witte, et al., 2021).*

*In Groningen and Drenthe, hubs are well-integrated into the provincial plans, yet the effect on local spatial plans is not visible. The exception is the municipality of Groningen that has plans to expand the hub network with neighbourhood and village hubs and sees the potential for hubs for cycling related developments. However, in meetings with the municipality it has also become apparent that they are still looking for advice and inspiration for how to further develop and expand the hub network.*

*In other municipalities, there is little evidence that hubs are incorporated into municipal mobility plans. The plans are often also outdated or written before the establishment of the hub programme. That can also be a reason why many municipalities are not busy with hub developments (see more in chapter 4.4).*

*Apart from coordination with municipalities also coordination with NS and ProRail is important, not only for rail transport and stations but also regarding their role as asset owners.*



4

# Hubs in Groningen and Drenthe

Photo: hub P+R Hoogkerk (2020)





## 4 Hubs in Groningen and Drenthe

Groningen and Drenthe have a collective network of 57 hubs that was officially opened in 2018. 34 of the hubs lay in the province of Groningen and 23 in the province of Drenthe (interviews #2, #3).

The 57 hubs (see examples figures 5-7) are nodes in the public transport network where at least one high quality bus or train connection connects with on-demand transport (publiek / doelgroep vervoer). These are places such as existing train stations, bus stations, P+R locations and other, smaller transfer points in rural areas. Every inhabitant in Groningen and Drenthe has a hub at a maximum of 15 km distance from their home (de Jong, 2017; provincies Groningen and Drenthe, 2017).

This chapter offers insights into the governance, set-up and development of the hub programme in Groningen and Drenthe with information primarily based on interviews with representatives or partners of the hub programme (see appendix 1 for the overview of interviews).

As hubs have a strong connection with the inter-regional public transport network, first, the governance of public transport in Groningen and Drenthe is explained (4.1), followed by the initiation and implementation of the hub programme (4.2). Next, key stakeholders in the hub programme and their relation and role in the main elements of hubs is described (4.3). How the hub programme and individual hub developments are financed, is explained in chapter 4.4. Then, examples of on-going and upcoming pilot projects are given (4.5) and in the end, the vision for the hub programme is described (4.6).



Figures 5-7: impressions hubs in Groningen and Drenthe  
(1) Hub Siddeburen; (2) Hub Station Meppel (3) Hub P+R Haren.

## 4.1 The backdrop – governance of public transport in Groningen and Drenthe

Before explaining the current governance of hubs and how the network of hubs in Groningen and Drenthe was established, it is important to understand the backdrop for these developments – public transport in Groningen and Drenthe.

### Privatisation of public transport since 2000

In the Netherlands, the responsibility for the public transport concessions lays with the provinces who select the best suited transport provider through a tendering process. This system came into effect with the 2000 Wet Personenvervoer (Law for transport of people) which means that all previous provincial and city transport companies were privatised with the aim to reduce costs and improve efficiency of public transport (Stoker, 2017; interview #5).

### Provinces responsible for revenue, marketing and development

In Groningen, the first bus concession started in 2000, which by 2004 delivered unsatisfactory results due to lack of effort in marketing, growth and operational services by the transport provider (Stoker, 2017). However, it was also clear that the transport provider had little means to influence growth because bus fares and transport policy are a governmental responsibility. Following this, the provinces decided to take a stronger position in their management of bus transport by taking responsibility for development, marketing and passenger revenue of their buses (Stoker, 2017; interview #5).

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*“The point on the horizon can also be further than the term of a concession. That is one of the reasons where [...] government needs to have the development role and not the carrier, because the carrier only looks at the concession term [...]. And if they have to invest into things in a longer term, they say they will not do it because the pay offs will only come after the end of their concession period.”*

– interviewee #5

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### OV Bureau established as responsible agency for buses in Groningen and Drenthe

Consequently, the OV Bureau Groningen Drenthe was established in 2005 as a responsible agency for bus transport in the two provinces. The organisation is a collaboration between the province of Groningen, the province of Drenthe and the city of Groningen. The three parties share a coherent transport system with transport flows concentrated towards the city of Groningen (Stoker, 2017; interviews #3, #5). Rail transport does not fall under the OV Bureau. Instead, provinces of Groningen, Friesland and Niedersachsen (Germany) shared a common tender for the concession period 2021 – 2035. The choice is motivated by ‘strong transport connection’ between the regions that are used by passengers whose journeys do not end at the provincial borders (Provincie Fryslân, et al, 2017).

### OV Bureau in charge of innovation and investments

Generally, the development of public transport during a concession is a task for the transport operator. However, in Groningen and Drenthe, the OV Bureau ensures good quality execution of the contract and realizes improvements and innovation in service provision (interviews #2, #3, #5). This is important because the transport company itself would rarely make further investments into the concession because they do not see the return on the investment within the remaining time of their contract (interviews #2, #3). Instead, the OV Bureau can invest over a longer time period that continues into the next concession, regardless of the transport provider. Examples of innovation in public transport in Groningen and Drenthe include the Qliner and Q-Link lines, electric buses and the hub programme (interviews #2, #3, #5).



**Reflection:***The OV Bureau as a success factor in the hub programme*

*Members of the hub core team (interviews #2, #3, #5) strongly emphasize that the hub programme is not from the OV Bureau, but a collaboration between the two provinces. Nevertheless, the initial idea did come from the OV Bureau, and the agency has had an important role in the set-up and financing of the programme.*

*Until now, the hub project leader and hub advisor are both hired through the OV Bureau. Many of the investments into the programme are also done through the OV Bureau, especially in relation to public transport, such as implementation of DRIS. A bus operator would be much less likely to make such long-term investments. Since the OV Bureau was already a collaboration between the two provinces and since the hub programme is also from the two provinces, choosing for the OV Bureau as a 'base' was a convenient choice (interview #5).*

*With the OV Bureau and collaboration on bus transport, Groningen and Drenthe do not only have a strong branding for their buses, but also, consecutively, for the hubs. This might also be the reasons the Groningen Drenthe hub programme is widely known in the Netherlands since their approach covers a consistent hub network across a larger land area.*

*In casual talks, employees of the OV Bureau have mentioned that decision-making in the OV Bureau is much faster than perhaps it would be within the provinces. This is probably because the OV Bureau is an organization that has been authorized to make decision within a certain framework.*

*All things considered it could be said that approaching hub developments on an interregional level and apart from the public transport providers could lead to a more successful implementation of a network of hubs. However, now the challenge for the OV Bureau and the provinces remains – how to move away from the concept of 'mobility hubs' to a more comprehensive idea of hubs (see more in chapter 4.7) when the concept is fully rooted in mobility?*

## 4.2 Establishment of the hub programme

Today, hubs aim to provide a comfortable transfer point between different transportation modes. However, originally, stretching of public transport lines and the need to connect public transport with target group transport is what led to the establishment of the hub network.

### **Publiek Vervoer established as responsible agency for target group transportation**

From spring 2018, Publiek Vervoer, a collaboration between all municipalities in Groningen and Drenthe, carries out the task of managing target group transportation (for the elderly, disabled or chronically ill, but also pupils) – a service commonly steered by individual municipalities. In 2018, approximately 41.000 people (WMO-pashouders) in Groningen and Drenthe received transportation benefits under the Social Support Act (Publiek Vervoer, 2018). Additionally, the hub taxi, a service available for everyone, is also managed by Publiek Vervoer. Publiek Vervoer is a cooperation between all municipalities in Groningen and Drenthe.

Prior to 2018, each municipality arranged their own contracts with taxi companies to provide this on-demand transportation. However, due to the raising costs of the service, the municipalities asked the provinces to run this service on a central level and brought the OV Bureau as an example for a similar collaboration on interregional level. As a result, Publiek Vervoer divided the region of Groningen and Drenthe into seven areas where each area is individually tendered by taxi companies. Such a setup of target group transportation ensures lower costs for municipalities and more efficiency in taxi transportation (interviews #3, #4).

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*“ [...] why do we let someone drive a taxi all the way from Emmen to Groningen if there is also a bus running. That person can easily take the bus. Then we have to drive less kilometres and it is simply cheaper.” – interviewee #3*

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### **Connecting on-demand transport with public transport created the base for hubs**

One of the requirements for the cost-effectiveness of Publiek Vervoer is that users would make use of the regular public transport network when possible. That meant that good transfer possibilities between target group transport and public transport had to be established at places where public transport is frequent, such as in multimodal nodes (interviews #3, #4).

In addition, stretching of the bus lines to offer better public transport played a role in determining hub locations. Stretching of the lines means that buses no longer drive through all neighbourhoods and villages, but instead make a stop at a central location or along a bigger road. This way, bus journeys are quicker and more efficient (interviews #5, #7). In the city of Groningen, the development meant that people had to walk 400-500 metres to a bus stop instead of 200m. Within a few years, the municipality saw 150% growth in bus usage which could be attributed to the higher frequency and shorter travel time in the bus service (interview #7).

With the stretching of bus lines and the establishment of Publiek Vervoer, it was important to not only create places where it is easy to transfer between target group transportation and regular public transport, but also to ensure that people can wait for their transfer in a pleasant way. As these nodes would also provide potential for new mobility trends and increased intermodal travel, the hub programme of Groningen and Drenthe was launched (interviews #3, #4, #7).



## Reflection:

*The hub network – an unplanned development led by efficiency*

*The hub programme is a consecutive development from stretching of public transport lines and the need to connect on-demand transport with public transport.*

*First, this means that the hub programme was not the result of the provinces' mobility vision but rather the result of other developments. This might be one of the reasons why municipalities may be less eager to develop their hubs. Hubs connect public transport and on-demand transport – and that already exists – why is there the need to do more? (see more in chapter 4.4 and 4.5). While hubs are now integrated in regional policies and vision documents, this initial 'learning-by-doing' approach seems to be leading in hub developments until today (see more in chapter 4.4).*

*Second, both Publiek Vervoer and the stretching of public transport lines are motivated by increased efficiency and reduced costs. As mentioned, the hub programme is rather a follow-up to those developments rather than a development led by a vision for increased intermodal travel and quality of transfer between travel modes. However, this means that the hubs have an important, twofold role to play in the mobility of Groningen and Drenthe. On one hand, they facilitate the continuity of public transport and access to transport with the two provinces which otherwise would be unfeasible. On the other hand, they also dedicate space where new mobility, such as shared mobility, can be provided and through that, further contribute to the accessibility of people in Groningen and Drenthe.*

## *The success potential of Publiek Vervoer*

*One of the main success requirements for Publiek Vervoer is that people who use of on-demand transport need to make use of the regular public transport. So far, such behaviour is uncommon (interview #4).*

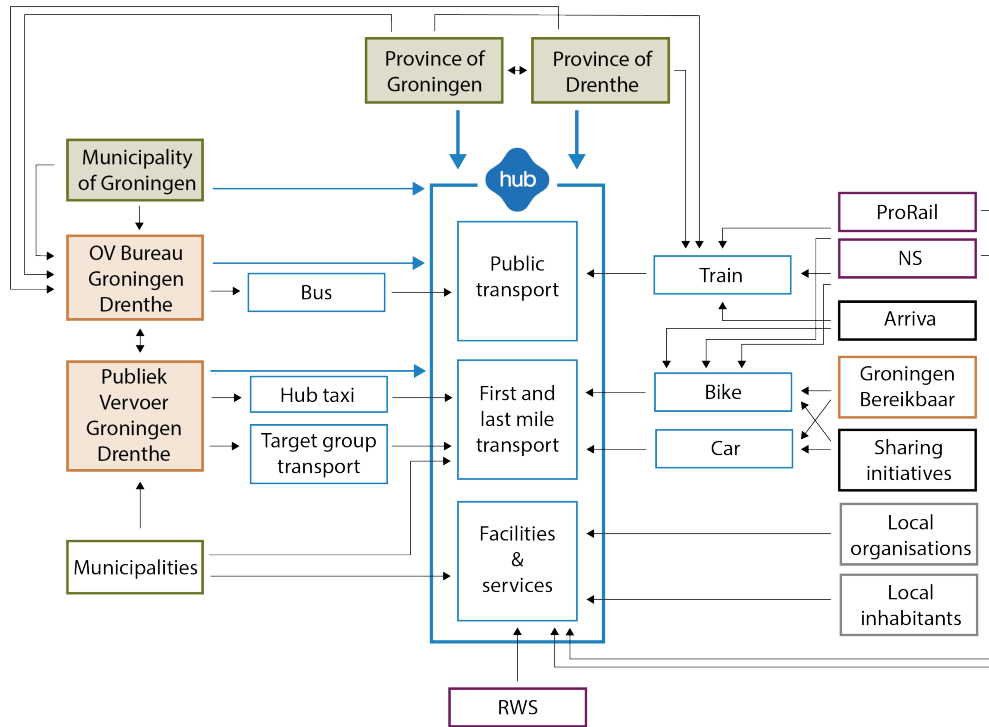
*While Publiek Vervoer is still a young organization (operating since 2018) and the COVID-19 pandemic has had an unprecedented impact of the use of public transport, it could also be argued that the general likelihood for Publiek Vervoer users to use regular public transport, is low. Research performed by the Kennisinstituut voor mobiliteitsbeleid (Research institute for mobility policy) (Zijlstra et al., 2019) discovered that many people who use target group transport have limitations to use public transport.*

*According to the research, two out of three people in the study indicated that they have difficulty walking more than 300 metres and 45% said they experience difficulties when using public transport, especially when using a walker or a wheelchair. Additionally, public transport is often insufficient for their desired journey and might be unreliable due to weather conditions, but also people's personal, health related circumstances that change from day to day (Zijlstra et al., 2019).*

*Based on the study, the potential for an intermodal trip involving target-group transport and public transport seems relatively modest. However, since the desire to enable such trips in Groningen and Drenthe is high, it is important to retrofit hubs in such a way where this transfer is made as simple as possible. This is most urgent at hubs where different bus stops are spread out over a large intersection, such as hubs Rolde and Marum. However, due to the complexity of infrastructure developments, such developments prove to take longer to carry out.*

### 4.3 Stakeholders and main elements in the hub programme

The hub programme consists of a web of stakeholders that interact with each other in different ways depending on the location and character of the hub. Figure 8 depicts the main parties and their role in the programme. This overview is not exclusive, and sometimes more stakeholders could be involved, such as Rijkswaterstaat when the hub lays close to a national road. Next, the responsibilities of the key stakeholders and their relations to the main elements of hubs in the programme are discussed with the help of the figure below (interviews #1 - #7). In short: the figure explained



### In short: the figure explained

Figure 8 depicts the hub and its main elements in the central blue box, indicated with the hub sign. Each hub in the network provides public transport, first and last mile transport (including target group transport) and facilities and services that make the hub a pleasant place to be.

Stakeholders that are directly involved in the hub programme through the hub core team are indicated with filled-in boxes and blue lines that lead to the 'hub': province of Drenthe, province of Groningen, municipality of Groningen, the OV Bureau and Publiek Vervoer. These parties coordinate the general developments of the programme and meet with each other on a monthly basis. The thicker blue lines run from the two provinces as they are the primary decision-makers within the programme.

The municipality of Groningen represents municipalities within the hub core team. Other municipalities are not involved in the overall coordination of the programme, yet each of them is the key decision-maker at the hub(s) located on their ground.

Stakeholders indicated in orange are collaborations of the regional and/or local stakeholders. While the OV Bureau and Publiek Vervoer have a role in all hubs, Groningen Bereikbaar is only involved in P+R locations around the city of Groningen.

Stakeholders indicated in purple – ProRail, NS and Rijkswaterstaat (RWS) are national level asset managers and landowners. Next to their roles of a train operator (NS) and rail provider (ProRail), these parties are owners of the train stations and have their own guidelines for developments at these stations – i.e. the larger hubs. Rijkswaterstaat (RWS) is involved with hubs where part of a hub is located along a national road.

Stakeholders in black are commercial parties that are directly involved only at specific hub projects. Grey represents the players on a local level.

Figure 8: Key stakeholders and their relations in the hub programme of Groningen Drenthe



## Role of provinces and municipalities at local level

The province of Groningen has a total of 34 for hubs, of which 10 are located within and under authority of the municipality of Groningen (interview #2). One of the hubs – Ten Boer, is located on the land of the province, adjacent to a provincial road. The province of Drenthe has 23 hubs, of which six are located on provincial land. Peize is an exception where the hub is partly owned by the local municipality, and partly by the province (interview #3). Figure 9 shows where the hubs are located and which of the hubs are (partly) owned by the province.

Land ownership determines the responsible stakeholder(s) for a specific hub. At hubs where the municipality owns the land, the municipality makes decisions on additional services and facilities at hubs. Municipalities' enthusiasm and resource availability determine if they are active or passive in the programme. Hubs that have little more to offer than a public transport connection and bicycle parking often show that the municipality has little interest in developing the hub further (interviews #1 #2, #3, #7).

At the eight hubs where one of the provinces owns the land, the province takes the lead for further developments. This makes implementation of first and last mile transport and facilities and services easier, as the province only has to agree with their own initiatives. Municipalities are still involved in the process; however, the province bears the costs and takes the risk in developments (interviews #1, #2, #3).

## Role of asset managers ProRail, NS and Rijkswaterstaat

Landownership is also an important consideration at train stations where ProRail is the network manager and either ProRail or NS own the station (station building and guarded bicycle parking). These parties have their own national agenda for the development of station areas and collaboration with them is necessary in developing hubs that are train stations.

Rijkswaterstaat (RWS) manages the national roads. They are involved with hub developments where part of a hub is located along a national road, such as N34. Their support is necessary for example when there is the wish to expand facilities



Figure 9: Key stakeholders and their relations in the hub programme of Groningen Drenthe

at a hub, but the expansions would take place on land that is owned by RWS, such as in Rolde (see Booklet of hubs for further insights) (interview #3, feedback meeting OV Bureau, June 2021).

More in general coordination with asset- and landowners proves to be complicated (see also Deelstra, 2021).

### **Provision of public transport**

- Each hub has a public transport connection – a bus, a train or both.
- Trains are the responsibility of the individual provinces, operated by Arriva and NS.
- Buses are also the responsibility of the provinces, but in Groningen and Drenthe, the OV Bureau carries out the task for both provinces through an integrated bus network.
- The buses are primarily operated by Qbuzz until 2029 with the exception of a couple of bus lines that reach across the provincial borders of Groningen or Drenthe, such as buses from Assen to Friesland operated by Arriva.

### **First-and last-mile transport**

- Car, bike and on-demand transport cover first-and last-mile transport.
- On-demand transport includes neighbourhood buses, transport of people who need assistance (WMO-Vervoer) and the hub taxi.
- Publiek Vervoer has the responsibility for organising on-demand transport in the region and carries out this task in collaboration with the local municipalities.
- For cars and bikes, hubs offer parking possibilities, including charging. These facilities are mainly realized through the province or the municipality.
- At train stations, ProRail realizes unguarded bicycle storage facilities, while NS is responsible for guarded bicycle storage facilities and P+R parking lots at NS stations.
- Increasingly, hubs provide access to shared mobility modes. Examples are shared electric bikes at P+R Hoogkerk, provided by Deelfiets Nederland, foldable shared e-bikes at the Groningen main train station, provided by Arriva, and the OV shared bicycle system provided by the NS.

- These facilities are usually co-financed by the provinces (via subsidies) and the individual municipalities. At train stations, parking facilities can also be financed by the national government.
- An important player for the P+R hubs around the city of Groningen is Groningen Bereikbaar. This is a cooperation for strategic planning and traffic management between the province of Groningen, municipality of Groningen, Rijkswaterstaat and ProRail, and employers in the city. One of their main tasks is to share information about accessibility to the city, especially in relation to the construction works of the Southern Ring Road (Ring Zuid) and Groningen Railway Zone (Groningen Spoor Zone). Additionally, Groningen Bereikbaar focuses on reduction of congestion on the roads leading to the city. This is done via the promotion of P+R locations and ensuring good cycling and car parking facilities at P+Rs, and smart combinations with parking and public transport. One of the initiatives of Groningen Bereikbaar are the larger bicycle lockers at hubs that businesses can rent for the use of their employees (interview #6; groningenbereikbaar.nl).

### **Facilities and services**

- Through implementation of different facilities at services at hubs, the hub programme aims to provide a comfortable and safe transfer between travel modes – such as a water tap, Wi-Fi, covered waiting area, café, toilet, or a multifunctional centre (interviews #2, #3).
- The responsible party for a hub – either a municipality or a province – takes the lead in decisions and financing of facilities.
- At train stations, ProRail and NS are the only parties who are allowed to facilitate many of the services offered, such as a water tap or a kiosk – they have a monopoly position.
- Sharing at hubs can also reach beyond shared mobility and be used for other facilities and services. Parcel lockers are an example of such shared services.
- Local inhabitants and businesses are often also involved in hub developments. Generally, this is more likely in smaller, rural hubs, than in large train station developments.



- For example, the province or municipality can provide a local café an incentive or subsidy to ensure they can keep running their business even at less economical locations or times. Services at hubs, such as the parcel lockers, can also provide benefits for local businesses.
- Inhabitants are more involved in developments that take place in their direct neighbourhood. Concerns about safety are most often discussed with the locals.

## **Reflection:**

### *Representation of different interests within the hub core team*

*The hub programme is led by a core team that consists of representatives of a small selection of stakeholders, the hub programme manager and hub advisor. Apart from the main players – the provinces, OV Bureau and Publiek Vervoer, the inclusion or exclusion of some stakeholders in the core team might raise some questions.*

*The municipality of Groningen represents municipalities within the hub core team. On one hand, the municipality operates 10 hubs, making it the municipality with the most hubs. On the other hand, these 10 hubs are primarily hubs in the urban area and the financial and staff capacities of such a large municipality might be very different from smaller, more rural municipalities. Thus, including a representative for the more rural municipalities might be interesting to consider. Municipality of Groningen has said that they would be happy if more municipalities were represented (interview #7). However, municipality of Assen sees little need in joining the team as long as they have good connections with the province and the OV Bureau (interview #8).*

*Another organisation that is not represented within the hub core team, is Groningen Bereikbaar. Given their important role in P+R locations around the city of Groningen, their involvement could be an interesting addition. It might also help to align the goals of the hub programme and Groningen Bereikbaar better, as in the past, there have been misunderstandings between the two*

*organisations (interview #3). However, as the provinces and the municipality of Groningen are already involved, their added value could also be argued.*

### *The effect of landownership in offering a high-quality hub network*

*Since the start of the hub programme, many of the hubs in the hub network have not seen any further developments other than the implementation of the hub sign, water tap and WiFi. The hubs that have been developed, are primarily hubs that lay on the grounds of the province or where the municipality has financial and staff capacity to roll out new or improve old facilities.*

*This means that land ownership plays an important role in the roll-out of hub developments. If municipalities or (other) asset and land owners (e.g. NS, ProRail, Rijkswaterstaat) lack resources or have other priorities, it may take a long time before a hub is developed into something more than a bus stop with bicycle parking. The question is, how this affects the overall quality of the hub network and if perhaps some important hubs in the network receive less attention than they might need.*

## 4.4 Hub developments in practice

The Groningen-Drenthe hub programme does not follow a fixed strategy or timeline to develop the hubs in the hub network. Instead, work is carried at provincial hubs or with pro-active municipalities. As more and more hubs are improved in comfort and quality, the expectation of the hub programme is that the less active municipalities will be inspired and will eventually also take steps in the development of their hubs (interviews #1, #2).

### Working with hubs with 'energy'

The first hub developments started at hubs where other developments were already planned. For instance, expansion of the railway platform, or necessary safety or comfort improvements in the hub surroundings. Hubs in Delfzijl, Zuidhorn, Gieten and Ten Boer were the very first with hub developments beyond the hub sign. With added funding from one of the provinces, these developments received hub elements, for example a water tap, Wi-Fi, a hub bench and bicycle lockers.

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*“What we have always said is that where there is energy and enthusiasm, and good plans, that is where we start. That is starting with hubs where there was already an on-going project, like making a station or a small transfer point more attractive, better, or safer. So we just joined with a little bit of hub money and we made one big project.” – interviewee #2*

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Beyond the initial developments, members of the hub team (interview #1, #2) like to say that they work on hubs with 'energy'. These are hubs where the municipality has the will and finances to work on their hub or local businesses or inhabitants have ideas for hub developments.

Convincing municipalities to combine hub improvements in their plans or start with hubs from scratch, is the role given to a so-called hub advisor (hired by the OV Bureau but working for the hub programme as a whole) (interviews #1-#3). This is done through explaining municipalities the goal and benefits of hubs, advising

on possible improvements and emphasizing that subsidies from the province are available for such developments.

### Learning by doing approach without guidelines

The hub programme in Groningen and Drenthe has not defined specific requirements for hubs based on passenger numbers, location or other hub characteristics. Guidelines such as a certain number of bicycle stalls per inhabitant or public transport user, or a minimum threshold for the implementation of a water tap or a kiosk have not been set.

Instead, the hub developments are based on trial and error, and the expected local needs. This means that prior research into the need of facilities – ex ante evaluation – is rare within the hub programme. The provinces (interview #2) have also experienced that even with a survey on future use, the prospective user numbers are difficult to predict. Students from the University of Groningen (Zhu et al, 2021) and the Hanze University of Applied Sciences (Wit, 2021) have also attempted to measure the needs of prospective users, but in the times of a global pandemic, such studies have proven to be challenging.

Alternatively, it is a common approach within the programme to work with pilots by implementing a certain service at one or a handful of hubs and monitoring its performance over a defined time (interview #1, #2, #3).



## **Reflection:**

### *Dilemmas in initiating hub projects*

*Based on the interviews, it is clear that starting hub projects is often challenging unless some developments in the hub vicinity are already ongoing or planned. Consequently, the hub programme has adopted what might be called a 'learning by-doing' approach.*

*Circumstances that may hinder hub developments are:*

- Lack of financing from the municipality – The road authority of the hub always needs to bring their own financing to develop a hub. Even before the province can indicate their contribution, the municipality has to make a project plan which is already costly and time-consuming. This may hinder developments from the start (interview #2).*
- Political situation – Some municipalities may have other priorities than developing hubs. Even when individuals within the municipality have the will to push developments, the organization might have different priorities at the given time (interviews #1, #3).*
- Resistance from stakeholders – Sometimes the goals of different parties do not align, and parties may be resistant to designate land area for the hub, for example, to enlarge a parking lot. In such situations, it may be better to leave the ideas for the moment and continue at a later time (interview #3).*
- Unclear expectations for hub developments – In some cases, municipalities may experience pressure to develop their hub further. However, many hubs, especially in urban areas are already offering travellers possibilities for intermodal trips and a comfortable stay. In these situations, it is sometimes unclear what extra services or facilities municipalities should offer (interviews #7, #8).*

### *Need for guidelines and additional resources to advance hub developments*

*Members of the hub programme team consider the 'learning-by-doing' approach a strong point of the policy (#interview #1, #2, #3). While they may look up to other hub programmes that have developed strategies and guidelines, they are proud of what they have achieved because they already have a fully functional hub network in place.*

*The approach to "simply make it better" has worked well and has brought several hubs to a high level of comfort. However, to continue developments at hubs throughout the network and to get new municipalities on board with the developments, clearer guidelines may be useful. Especially as more resources (money, space, capacity) might be needed to achieve the 'next level'. What is the minimum quality and level of service that is expected from a hub? And what is the desired ambition for a hub? How can existing facilities at hubs be improved? How to prevent non-commitment and use institutional arrangements to achieve this?*

*In this, guidelines should not be viewed as strict requirements, but rather as inspiration for developments and for setting ambitions. Moreover, next to guidelines, information and resources seem to be needed to further the development of the hub programme as the 'low hanging fruit' opportunities have been seized.*

## 4.5 Financing of hubs

### Overall financing by founding parties

At the start of the hub programme, the key stakeholders – Province of Groningen, Province of Drenthe and the OV Bureau – each contributed €1.5 million for the development of hubs, adding up to a total of €4.5 million (interviews #2, #3, #5). The budget was originally intended for the upcoming three years (meeting hub core team, May 2021).

Part of that financing was used to cover the overarching costs of the hub programme – for hiring a programme manager and hub advisor, for the hub house style, colours, branding, hub signs and communication. Some pilots, such as the bicycle lockers, could also be covered by the central budget if they benefit both provinces (interviews #2, #3, #5).

Apart from the overarching costs, the contribution of the OV Bureau is primarily used for the implementation of DRIS panels (dynamic travel information system) at all hubs that have a bus connection.

Individual hub projects are financed through various subsidy schemes and funding programmes. The provinces use the specifically earmarked budget for developments at hubs in their provinces. However, the local municipalities have to make a financial contribution as well but usually have no specific budget available. Funding is also secured through EU-projects, such as Surflog and ULaaDs (meeting hub core team, May 2021).

In the newest vision document for the hub programme, the financing of the hub programme has been made more concrete, with ca. €600.000 designated for the hub programme from 2022 – 2025 (Hub programma Groningen Drenthe, 2021). Most of that budget is designated for programme management, communication, and the new working space for the hub programme, while around €30.000 per year is set for investments.

The hub programme team expects the primary financing for hubs through connecting to subsidy programmes and other projects, and through municipal

investments. Additionally, the national agenda for hub developments (explained in chapter 3.1) may also lead to additional financing possibilities (meeting hub core team, May 2021).

### Financing of hubs in Groningen

Initially, the province of Groningen added another million to the €1.5 million, resulting in ca. €2.5 million available for hub developments in the province of Groningen since 2017. After paying for the overarching developments and the set-up of the programme, the province emphasized on realizing basic facilities, such as Wi-Fi and water taps which implementation will be prioritized for all hubs (interviews #1, #2). Through Wi-Fi, travel information will be available for everyone at a low threshold (interview #3).

The remaining financing is allocated to support local hub projects. However, it is not determined beforehand how and where the financing would be used. The money generally goes to hubs with ‘energy’, enthusiasm and good ideas.

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*“We did not make rules ahead. Which we do a lot [...], we make subsidies. So up front you have to describe exactly how you are going to divide the money, for which municipalities and which criteria they have to score. With the hubs that is not doable, and we do not know yet what will come our way and if the municipalities do not want to cooperate then we do not have anything” – interviewee #2*

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Much additional financing for hubs comes from various subsidies and funding programmes, such as:

- Nationaal Programma Groningen – a partnership between the national government, province of Groningen and the municipalities. With 1.15 billion euros as a starting capital from the national government, the programme contributes to economy, working and studying, liveability, nature and climate to increase the overall well-being of the region. Hub developments at Siddeburen, Ten Boer and Delfzijl have been partly financed by this fund.

- Subsidies for earthquake areas – the multifunctional centre in Siddeburen was partly financed by the earthquake fund because the church at the hub needed enforcement.
- Cycling strategies and programmes from the province and the municipality – contribute to realizing and expanding cycling facilities at hubs (interview #2).

## Financing of hubs in Drenthe

In Drenthe, municipalities appear to be less eager and less financially capable of carrying out hub developments (interview #3). In comparison to the province of Groningen, Drenthe has less inhabitants yet a larger land area. This means that municipalities in Drenthe have less money available, but they also have to maintain more roads for example. Due to a larger share of older population, more costs are also given out in the social domain (meeting hub core team, May 2021).

That is why most hub developments can be seen at the hubs that are owned by the province who also provides the financing. These hubs are Gieten, Westlaren, Borger, and Rolde.

Various developments at Drenthe's train stations have been financed through the compensation funds from the Zuiderzeelijn – a train connection between Amsterdam and Groningen that was not realized. Instead, funding was made available for other developments to improve connectivity with the North of the Netherlands. Stations Coevorden and Assen were primarily financed by this compensation. The on-going developments at the Groningen Main Station are also largely financed by the same funding (interview #3, #7).

Additionally, municipalities can apply for subsidies from the 'Brede DoelUitkering' – a funding provided by the national government as part of the InfraFonds (interview #3). The province can decide how the money is used and distributed and has made it available for developments at hubs. In 2020, municipality of Coevorden was the only one applying for the funding for developments at hub Zweeloo (interview #3). In the future, the province plans to set up a different funding programme for municipalities where hubs would receive a higher priority (meeting hub core team, May 2021).

In the coming years, the province of Drenthe plans to invest around €35 million into larger developments that are related to hubs, such as developments around hub Borger (interview #3, meeting hub core team, May 2021).

### Reflection:

#### *Lack of clarity on available financing for hubs*

*Generally, provinces set up subsidy programmes with clear criteria and goals to support different developments within their regions. According to the interviews (#2, #3), such a set-up from the start was not desired because it was unclear if municipalities would want to collaborate. Instead, financing went to active municipalities to ensure that available financing was used.*

*The vision for the hub programme 2021-2025 indicates €30.000 for investments into hub developments. This is not a particularly large investment considering the number of hubs within the hub programme. However, the hub programme plans to connect to different subsidy programmes to secure financing and through that use as little of their own financing as possible.*

*Moving further, the interviewees (#1, #7) indicated that it could be useful to have specific financing available for hubs based on a certain criterion, such as hub usage or number of surrounding inhabitants. Seeing that municipalities are not willing to participate because they are unaware of the contribution they could receive from the province and other subsidies more specific financing programmes could be beneficial.*

*With hubs receiving an important role in the national public transport policy (see chapter 3.1), it would also be interesting if and how Groningen and Drenthe can utilize any of the national subsidies for hub developments in the two regions.*



## 4.6 Pilots and other developments at hubs

### Wi-Fi and water at all hubs – important but challenging

One of the goals of the hub programme is implementing Wi-Fi and water taps (figure 10) at all hubs in Groningen and Drenthe. While the realization is well on its way, at some hubs these developments are challenging or undesired. Water taps require a connection with the groundwater, which is available in many cases, but at some hubs would be very costly to realize. At these hubs, it might be more cost effective to give out free water bottles (interview #3). The hub programme is also looking into possibilities to realizing the water connection not only for the water tap, but also for a toilet or a restaurant, which would make the high investment more cost-effective (meeting hub core team, May 2021).

Public WiFi is sometimes undesirable by the locals because it may attract groups of (young) people to hang out at hubs (interview #2). However, Wi-Fi access at hubs is considered important because it offers a low threshold access to travel information for those who cannot afford mobile internet. Additionally, connections with the hub Wi-Fi will give people access to online library services. To manage the wishes of the locals, yet still provide WiFi for travelers, in hub Ten Boer an agreement (interview #2) was made to activate the Wi-Fi connection only between the hours that travellers make use of the hub (06:00 – 20:00).

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*“Accessibility is not only the height of the platform or what you can step in the bus [...]. It's that you dare to make use of the system, that you feel safe at a spot, [...] and also that you are able to pay for the information that you want to have. (Currently) you still have to have a smart phone, so it's still not easily accessible for everyone.” – interviewee #3*

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### Bicycle lockers at bus hubs – a two-year pilot

Many train stations and bigger hubs already have bicycle lockers operated by ProRail. However, people using smaller hubs and buses may also want to be able to go to a hub with their electric bike. That is why the provinces have placed a unit



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Figures 8 - 12 :

- (10) Water tap at hub Groningen Noord;
- (11) ; Bicycle lockers at hub Westlaren;
- (12) Shared electric bikes at P+R Hoogkerk;
- (13) Parcel lockers at hub Gieten;
- (14) ANWB praatpaal on the foreground at hub Leek A7

with four bicycle lockers (figure 11) at various hubs across the region – Westlaren, Gieten, Borger, Leek, Stadskanaal, Zuidhorn and Vlagtwedde. These lockers will stay put for two years to be able to give the opportunity for people to use them over a longer time period. The use of the lockers is evaluated and if it will be determined a success, the lockers will also be implemented elsewhere (interviews #2, #3).

## Shared electric bikes

Since the end of 2020, Deelfiets Nederland offers shared electric bikes at the P+R Hoogkerk (figure 12). Implementing this pilot did not come without its challenges, as space is often scarce, and an electrical supply had to be established.

The use will be monitored by the hub programme over one year, however, determining the success factor proves to be a challenge (interview #1). Is it a success if a certain number of bikes are rented or is it also a success if people who make constant use of the service are satisfied? w

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*“We are forerunners in the North of the Netherlands with such developments, with the P+R locations that people use to enter Groningen, we are ahead from the rest of the Netherlands. For a company like Deelfiets Nederland it is very interesting to pilot at such location.” - Interviewee #1*

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The pilot offers also insights for Deelfiets Nederland who slowly expand their coverage across the country and can learn from the experience. Additionally, the municipality of Groningen will use the results as an input for their upcoming mobility vision. As the need for shared services increases, the hub programme is also considering expanding the service with bikes for different uses, such as bikes for children, cargo bikes and others (interviews #1, #2, #3).

## Sustainable waiting areas

Waiting areas at bus stops are often experienced as dull and come with their own challenges (interview #2). They are required to protect travellers from wind

and rain, but in the summer cover from the sun is also needed which a glass roof cannot offer.

Better shelter from different weather conditions and sustainability ambitions asks for a redesign of the bus shelters. Instead of ordering brand new shelters, the province of Groningen will work with existing shelters and add a green roof, solar panels or rainwater collection. The specifics of each shelter will be determined by what is realizable at each location (interview #2).

In Drenthe, such a development is currently considered less important because the bus stops are generally located in green surroundings and political parties have different opinions about it, such as hindering social safety through to allowing less light into the bus stop. The bus stops are also currently maintained by an external agency (meeting hub core team, May 2021).

## Parcel lockers providing a 24h pick-up service at hubs

Parcel lockers have the potential to reduce travel time for delivery companies and receivers alike (Morganti et al., 2014). Delivery to a pick-up point limits the driving range of deliveries and parcel lockers eliminate failed deliveries. With the use of parcel lockers, hubs can provide a 24h pick-up service where travellers can pick up their orders whenever they travel a hub. Similarly, parcel lockers may attract new travellers who now have a reason to visit a hub and may then also use the hub for their mobility needs.

In the beginning of 2021, parcel lockers (figure 13) were placed at three hubs in the province of Drenthe – Gieten, Rolde and Dieverbrug. The white label lockers are intended for use not only for delivery companies, but also for local businesses. In 2021, parcel lockers will also be implemented at hubs Zuidhorn and Hoogeveen. The pilot is part of the European Surflogh project on sustainable logistics, with the province of Drenthe as one of the partners. Evaluation of the pilot is carried out in collaboration with the University of Groningen (Hub programma Groningen Drenthe, 2021).

Additionally, the EU project UlaaDs that focuses on system innovation in urban logistics, is also studying the use of P+R locations as logistics hubs where cargo

from trucks could be transferred to delivery bikes that deliver the parcel to the inner city (ulaads.eu).

### Other pilot initiatives at hubs

In addition to pilots that have already been implemented, in the coming years more pilots are planned (Hub programma Groningen Drenthe, 2021).

- Shared cars – a pilot for testing the use of car-sharing in rural areas will be carried out in collaboration with Regio Groningen – Assen. Next to other rural villages, the cars will be available at hubs Gieten, Borger, Annen and Westlaren.
- Charging for electric cars – in the effort to implement 1000 charging units in Groningen and Drenthe, also at hubs charging units in 2021-2022 are planned.

#### Reflection:

##### *Location choice for hub developments*

*It is not without reason that the pilots at hubs are often carried out at the same hubs, especially in Drenthe. The province of Drenthe is the road authority for six hubs – Gieten, Westlaren, Borger, Rolde, Dieverbrug, Smilde and Peize. Four of these hubs have bicycle lockers, three have parcel lockers and another three will have car-sharing.*

*For instance, Gieten is a large node in the bus network that is used by many travelers. For that reason, pilots at Gieten may also have a high success factor. Rolde and Dieverbrug, however, were chosen for the pilot location because planning within the province alone is easier than approaching and convincing municipalities. It is however questionable if parcel lockers will be successful in Rolde and Dieverbrug. The first results of the parcel lockers pilot, however, show that in Rolde, the parcel lockers are used four times as much as at the other hubs. This is explained by the better visibility of the parcel locker in*

### Not every pilot is a success story

Earlier, ANWB 'Emergency call boxes' (praatpaal – see figure 14) were seen at a handful of hubs. On top of these, tablets were placed with some questions about the hub. However, the initiative failed as it seemed they were not optimally placed, and the quality of the tablets was poor (interview #1).

In 2020, the blue-coloured stands were removed from the hubs. Some of these might be found at municipalities where they act as a promotional tool for the hubs.

*Rolde (Feedback meeting, June 2021). Therefore, there seem to be different factors that contribute to the success of pilots and not only the size of the hub itself.*

*Nevertheless, choosing for provincial hubs on one hand, and large hubs on the other, also seems like the easy way out. As the programme progresses and the 'low hanging fruit' is seized, collaborating more with municipalities (and other asset owners) and at smaller hubs is needed, and this may also offer additional insights for pilots that would perhaps not come forward in 'practice-as-usual'.*

*The roll-out of WiFi at hubs is also a development that can raise some questions. Access to WiFi might be increasingly less relevant as mobile internet is widely used and increasingly cheaper. To ensure low threshold access to travel information, interactive digital screens might be a more practical long-term investment with information accessible even without the use of a mobile phone.*



## 4.7 Vision on hubs

The goal for the hubs in Groningen and Drenthe is to become more than just mobility hubs (interviews #2, #3, #5). In 2021, hubs are viewed as a place where people can take various mobility modes to reach their destinations. In the future, hubs would also be the destination, the central point in their environment where various everyday functions meet. The mission as phrased in the vision (Hub programma Groningen Drenthe, 2021) is: An inclusive hub network that contributes to the wider prosperity of Groningen and Drenthe.

By bringing services back to people the idea is that the overall mobility needs will decrease as people will have access to what they need closer to their homes, especially in rural areas. This will also improve people's accessibility to services, especially for the ones who are not able to or cannot afford traveling further (Hub programma Groningen Drenthe, 2021).

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*"[...] we never say that a hub is finished, because we are continuously, after something has been achieved, saying that we lift the bar higher and go a step further. Now it is mainly about mobility, but (a hub) is also more about social and economic facilities, how you combine those so that they become accessible for everyone. That's the ultimate goal that is above everything else" – interviewee #3*

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It is envisioned that focus on mobility at hubs will become less and more emphasis will be put on realizing services. With such a change, the role of mobility and traffic experts in the hub programme may decrease, while focus on tourism, well-being, health care and social needs increases (Hub programma Groningen Drenthe, 2021). The hub programme itself will become a separate organisation to step further away from the association with mobility alone (meeting hub core team, May 2021).

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*"It is important to stop with approaching the municipalities only from the traffic and transport group. But it was necessary to start. Because from the traffic, transport and public transport side, it was easy to make it valuable. But the expansion, that needs to not be managed by the traffic and transport side anymore" – interviewee #5*

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Additionally, there are plans to expand the network of hubs with inner city neighbourhood and village hubs, specifically in the municipalities of Groningen and Assen (Gemeente Groningen, 2021, interview #8). While some of these new hubs will still have a public transport connection, many of village and neighbourhood hubs may be dedicated for shared mobility modes only (Hub programma Groningen Drenthe, 2021). However, the connection with target-group transport will remain an important element (meeting hub core team, May 2021).

**Reflection:***From mobility hubs to community centres – but how?*

*The hub programme has high ambitions to develop hubs from mobility hubs towards community centres. In this way, hubs would remain relevant also in the long term, even when public transport is replaced with MaaS through self-driving cars and drones (interview #3).*

*In many locations, the hub is already located in the town centre, close to an array of facilities. At some municipalities, hubs have been strategically placed at spots where developments are already taking place, such as in Siddeburen. In others, however, hubs seem to be isolated, and it is difficult to see a future community centre at the chosen location (e.g. hubs De Punt, Pekela or Zweeloo). The location of such hubs has also been determined together with municipalities. The question that remains is how to get municipalities involved in focusing future developments around hubs as they are the ones in charge.*

*The hub team has now started the discussion – how to move away from the primary association with public transport and become more than that? Accordingly, the OV Bureau would take a smaller role in the hub programme,*

*while departments dealing with tourism, economics and social issues would become more involved (interview #5).*

*However, the way this is going to be achieved remains unclear. How is collaboration between different departments going to be achieved for hubs when that is far from common practice? Who is going to ensure that new developments will take place at hubs? And if hubs can be replaced to where facilities will be, to what extent will current locations be developed to more comfortable hubs for the time being?*

*Are hubs without public transport still inclusive?*

*The vision document for hubs emphasizes an inclusive hub network. At the same time, when talking about the new hubs, it is mentioned that a hub does not need to have public transport and can also be a place for a single car-sharing station, yet still have the same branding as the rest of the hubs. Such an approach could step away from the goal of ‘inclusive hubs’ as car-sharing is often not as widely accessible for all groups compared to public transport. Nevertheless if various shared mobility services (shared cars, shared bicycles) are connected to and integrated with public transport across the region, this could benefit travellers because it further facilitates smoother door-to-door transport also in more rural and other less connected regions.*



The image is a composite of two photographs. The left photograph shows a blue Q=liner bus with the number 300 and the destination 'Emmen' on its destination sign. The bus is parked at a bus stop with a stone wall in the foreground. The right photograph shows a tall, dark grey lamp post with a circular light fixture at the top. A blue, diamond-shaped sign with the word 'hub' in white lowercase letters is attached to the post. In the background, there is a bicycle shelter with several bicycles parked underneath, and a dense line of green trees under a blue sky with white clouds.

5

# Hubs beyond the Netherlands

Photo: hub Gieten (2020)



## 5 Hubs beyond the Netherlands

Shared mobility and mobility hubs are not only a common topic in transport policy in the Netherlands, but increasingly more across Europe. In the European Union, shared mobility is recognized to have benefits for reduced congestion, air pollution, and increased accessibility, coupled with lower carbon emissions and better quality of life. The creation of (a network of) shared mobility hubs enable the use of shared mobility and helps to integrate shared mobility with other modes of transportation (European Commission, 2019).

The EU-funded SHARE-North project (2014-2020) has brought attention to shared mobility and mobility hubs in the North Sea Region (European Commission, 2019). The project has established an international network where partners exchange experiences and learn from each other to start with mobility hubs or expand on their shared mobility concepts. The project partners are active in hub developments and thus present interesting case studies for hub governance and potential take-aways for Groningen and Drenthe.

### **Bremen, Flanders and Scotland as case studies**

To broaden the knowledge on the governance of hubs beyond Groningen and Drenthe, case studies were carried out for hub programmes in Bremen (Germany), in Flanders (Belgium), and in Scotland (the UK). The City of Bremen is the lead beneficiary in SHARE-North while autodelen.net and Taxisop (Mpac since May 2021) from Flanders and SEStran from Scotland are participating parties within the project.

Flanders and Scotland have a regional approach to hub developments, similarly to Groningen and Drenthe. In Bremen, focus is on urban hubs, which can offer additional insights for hub developments in the cities of Assen and Groningen.

For each case study, one interview was carried out with the stakeholder who initiated hub developments in their region. The interviews explored the definition of hubs, the situation before and after implementation of hubs, governance of the hub programmes, and the process of hub developments.

- Mobil.punkten in Bremen – hubs in the public realm in the urban area intended primarily as car-sharing stations, combined with bicycle parking and access to public transport. The goal of hubs in Bremen is to minimize car ownership in the city (interview #7).
- Mobipunten in Flanders – hubs in rural and urban areas that facilitate a minimum of three mobility modes, including shared mobility (interview #8).
- Journey hubs in Scotland – first mobility hub that connects the public transport with shared mobility will be implemented in 2021 in South-East of Scotland (interview #9).

### **The benefits of SHARE-North**

Partners in SHARE-North describe the project as an inspiring ping-pong where partners learn from each other and take each other's ideas to the next level (Interview #7). For instance, the use of common branding and digital boards at hubs in Flanders was inspired by Bremen. However, Flanders also decided to take a more multimodal approach on hubs than car sharing alone (Interview #8). Another example of collaboration is the development of a hub accreditation framework by CoMoUK (another partner from the UK) which is the result of multiple workshops with SHARE-North project partners (interviews #7, #8, #9). Finally, cities have also learned from each other's governance approach. For example, the insights from Bergen's public participation process are useful in Bremen where lack of resources leave little space for such approach (interview #7).

## 5.1 Hubs in Bremen, Germany

Bremen was one of the first cities in Europe that started developing shared mobility hubs. Recognizable and commonly branded car sharing stations in the public realm began popping up in the city in 2003. As in many old cities, Bremen has too many privately owned cars in comparison to the space available, resulting in illegal parking on the pavement and intersections. This does not only create dangerous traffic situations for pedestrians, cyclists and handicapped, but also makes it difficult for the fire brigade and trash collection vehicles to navigate the narrow streets of Bremen (Interview #9).

### Definition of hubs in Bremen:

Mobil.punkt is a car-sharing station in the public realm with clear branding and bicycle parking. Smaller hubs feature 2-3 parking bays for shared cars while larger hubs connect to public transport and can have up to 12 shared cars.

### Hubs in Bremen aim to:

- Reduce car ownership and address safety issues.
- Make car-sharing more visible and accessible in the public street space
- Close gaps between car sharing stations and reduce distance between car sharing stations
- Offer a benefit for everyone – bicycle parking, safer streets space and more availability for car for people who need to own a car by reducing the overall need for car ownership and increasing car sharing (interview #9).



Figures 15 - 20: Impression of hubs in Bremen (mobilpunkt-bremen.de)

## Types of hubs in Bremen

Bremen differentiates between two types of hubs (interview #9):

### Mobil.punkten

- Large centrally located car sharing stations with parking bays for 4-12 vehicles and with close connection to public transport (bus or tram stops), sometimes featuring taxi parking and recycling bins.
- Feature speciality vehicles, such as a nine-seater van and a transporter van. Such vehicles are not intended for daily use and require people to travel longer to get them. Hence proximity to public transport stops is important.
- See figures 16, 18-20.

### Mobil.pünktchen

- Smaller car sharing stations on side street with 2-3 parking bays with vehicles for daily use, a smaller signage and bicycle parking.
- With the development of these hubs, the street space is often redesigned to tackle safety issues such as illegal parking, pedestrian crossings and accessibility for large vehicles.
- The way the hubs are configured in the street clearly frames the legal parking conditions of the street, meaning that the way the hub is designed shows how cars are allowed to park on the street and how not.
- See figures 15 and 17.

## Governance of hubs in Bremen

Mobil.punkten in Bremen is an initiative from the city/state authority that implemented the first two pilot mobil.punkten in 2003. As of 2020, the city has 45 mobil.punkten or mobil.punktchen that fill in the gaps in spatial distribution of car-sharing stations located on private ground (by car-sharing providers Cambio and Move about). Mobil.punkten form about 1/3 of all car-sharing stations in Bremen (interview #9).

As a city-state, the functions of a local and regional government in Bremen are combined into one institution, in this case the Ministry of Climate Protection, the Environment, Mobility, Urban and Housing development. This shortens the decision-making process in comparison to typical government structures (interview #9).

### Bottom-up and learning-by-doing approach

Bremen's 2019 car sharing law defines the responsibilities of different stakeholders in the hub development process. The city/state authority is responsible for the strategic coordination of mobil.punkten and proactively engages with the city's district parliaments at an early stage to promote and initiate new developments (interview #9).

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*"It gives us this idea of bottom-up planning. [...] Because it is possible that there are conflicts [...], somebody in the neighborhood is always going to be angry at the change, at the taking away the parking spaces, and by engaging with local parliaments and having their agreement from early on that means we can avoid conflicts later down the road [...]" – interviewee #9*

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Together with a district, the location is chosen, based on market research and the neighbourhood's needs. Priority is given to areas where action is needed for traffic safety or reduced parking on the street or where space is available and other developments are already ongoing.

Next to the city state and district governments, environmental service, fire brigade and trash collection services are important players in hub developments. These parties need to navigate the narrow streets of Bremen with big trucks, which is often a challenge. During site selection, they are asked to identify areas where they have most trouble. The street is then redesigned in a way that makes navigation easier for large vehicles. This could include measures to ensure that cars cannot park close to curbs and intersections.

A tender competition is carried out to select the car-provider for each mobil.punkt. The selected provider receives the right to operate the service at the location for eight years. While the competition is on a national level, there has only been one applicant so far – the local, well-established car-share provider Cambio. A broad network of one provider is also attractive for the users.

The hub developments are not a routine process in Bremen as markets and user needs are constantly changing. Each hub also requires a custom design based on neighbourhood needs. With the new addition of e-scooters and bike shares into Bremen's mobility landscape, mobil.punkten can also make space for such services at hubs to ensure their better integration in public realm.

### **Ensuring access to car sharing**

The city aims to make car sharing accessible in all neighbourhoods, including areas that might initially not be attractive as a business case for car-share providers. To enable car-share providers to operate in areas that may be less commercially attractive, the city offers providers (temporary) incentives to create more favourable conditions, such as lower parking fees (interview #9).

Similarly, car-share providers may also be unsuccessful in finding private ground in more dense neighbourhoods. In that case, the city can also make public space available for the purpose. Such neighbourhoods usually also have a high potential

and demand for car sharing.

In Bremen, car sharing stations are not always adjacent to public transport stops. However, car-sharing is supported by the local transport provider through integration of car-sharing stations in the overall public transport map. Car-sharing is not seen as a competition for public transport, but rather as a service that complements the local public transport network (interview #9).

### **Impact of car-sharing in Bremen**

In 2018, the impact of car sharing was measured in Bremen (Schreie et al, 2018). For the study, questionnaires were carried out among car-share users and also non-users. The study did not specifically focus on mobil.punkten but car-sharing as a whole. Some findings of the study are indicated below.

- Car-sharing users own fewer private cars, use the car less and cycle, walk and take public transport more than the average inhabitant in Bremen;
- Each car-sharing vehicle in Bremen replaces 16 privately owned cars and approximately 5.000 less cars are parked on the streets and parking lots of Bremen.
- Car-sharing users find a simple booking process, availability of vehicles and proximity to nearest station most important in the service provision. The latter two are supported by and increased with the implementation of mobil.punkten.
- The fact that non-users are also aware of car-sharing in Bremen can also be related to mobil.punkten which brought car sharing into the public realm.

Additionally, car-sharing is considered to have a positive impact on the environment. Car-share users have a lower car-milage compared to car owners and the cars offered have an above-average emission standard (Schreie et al, 2018).

## The future of hubs in Bremen

- Implementation of 8-10 hubs each year.
- Reduce distance between car sharing stations with a maximum of 300 metres between each hub, close gaps in the car sharing network and ensure accessibility to car sharing in all neighbourhoods.
- Integration of car sharing in the shared mobility action plan.
- Expansion of hubs to include additional shared mobility services such as bike sharing, cargo bike sharing and parking for step scooters.
- Long-term vision – a city where no private cars are parked on public street and where public space is intended for people and green.

### Reflection:

#### *Car-sharing, inclusive mobility and sustainability in Bremen*

*Hubs in Bremen have a strong focus on car-sharing as the city aims to reduce car-ownership and increase safety on its narrow streets. However, the current approach on hubs raises questions in terms of inclusiveness and multimodality as many of Bremen's small hubs are not connected to public transport. While the hubs do improve safety of the streets and improve navigation for service vehicles, they seem to contribute little towards increased accessibility for the elderly or the disabled, or for people without a drivers' license. In order to create hubs that are more inclusive, Bremen could consider this in their further development of hubs where car-sharing could be more integrated with public transport and (e-)bike and e-scooter/step schemes.*

*Next, is the goal to have a car-sharing station in 300m radius from everyone, a sustainable goal? In a city like Bremen, some of these hubs could be instead dedicated to other shared mobility modes, such as shared e-bikes and shared cargo bikes in close proximity to public transport.*

#### *Car-sharing at hubs in Groningen and Drenthe*

*In Groningen and Drenthe, inclusiveness and providing for the travel needs of various target groups is one of the main goals of the hub programme. However, adding car-sharing to hubs could be considered more, both in rural and urban areas. In some of the hubs outside of cities, car-sharing will be piloted. Yet car-sharing could also be beneficial for city dwellers in Groningen who own cars but use them to a limited extent, for example for trips to the Ikea or for larger grocery hauls. To provide for such trips, car-sharing could be considered for new, smaller hubs that will be implemented in the cities of Groningen and Assen.*

## 5.2 Hubs in Flanders, Belgium

Car sharing and bike sharing at public transport spots in Flanders is not something new. However, since 2017, through inspiration from Bremen, NGOs in Flanders started promoting mobipunten which added a common branding and multimodal marketing into the mix with shared mobility. Today, mobipunt is a commonly used word in the Flemish vocabulary, the development of hubs has gained political support and hubs have been integrated in the most recent Flemish transport plan, which grants €100 million for the development of 1000 mobility hubs up to 2025 (interview #10).

### Definition of hubs in Flanders:

Mobipunt is a recognizable place that offers an alternative to car ownership with offering at least three different modes of transport at one spot and additional services that make changing modes more convenient.

### Hubs in Flanders aim to:

- Reduce car ownership by providing reliable alternative modes of transport at close proximity in both urban and rural areas.
- Influence travel behaviour over a longer time period wherein people use different transport modes depending on their needs on a specific day.
- Hubs that provide a good interconnection between various modes, respect the ecosystem, is low-emission and has minimal impact on the health and the environment (Departement Mobiliteit en Openbare Werken, 2019).



Figures 21-23: impressions hubs in Flanders.  
Sources: mobipunt.be; banneuxwijk.info



## Types of hubs in Flanders

Similarly, to Bremen, Flanders differentiates between two types of hubs for the user (interview #10).

### Proximity hubs

- A hub close to home, work or shops where people can get to easily by only using one mode of travel. Proximity to a hub is important because an average user of car sharing lives 400m from their closest station.

### Network hubs

- A train station or a bigger bus stop where people change between two different transport modes in one journey.

## Differentiation between 32 types of hubs

In the planning phase of hubs, a matrix is used to differentiate between 32 types of hubs based on their spatial context and transport level (figure 24). The matrix helps to specify guidelines for each type of hub. Guidelines are drawn for location choice and configurations of the hub, such as mobility offer, services, orientation, spatial integration and developments.

In Flanders, setting a quality standard for hubs is necessary to be able to ensure that hub developers will deliver a certain quality of facilities and services that is in line with the overall hub policy. Nevertheless, the guidelines are to be seen as general principles rather than strict requirements. In this way, the guidelines remain flexible and will also be able to go along with innovative developments (Departement Mobiliteit en Openbare Werken, 2019).

		VERVOERNIVEAU				
		INTERREGIONAAL	REGIONAAL	LOKAAL	BUURT	
RUIMTELIJKE CONTEXT	STAD	STADSKERN				
	AGGLOMERATIE					
	DORP	GROTE KERN				
	KLEINE KERN					
	POOL	BEDRIJVENPOOL				
	BEZOEKERSPOOL					
	OPEN RUIMTE	PERIFEER GEBIED				
	RURAAL GEBIED					

Figure 24: Mobipunten matrix. (Departement Mobiliteit en Openbare Werken, 2019)

## Governance of hubs in Flanders

The implementation of mobility hubs in Flanders was an initiative from NGOs Taxistop and the Flemish car sharing organisation. The NGOs started the promotion of hubs and thanks to widespread support, were able to bring hub developments into the attention of the Flemish government. The work of the NGOs also resulted in the official integration of the word 'mobipunt' in the dictionary (interview #10).

The first hubs in Flanders were implemented shortly prior to elections to gain political support. These hubs became hubs by the simple addition of a hub sign without further considerations for added shared mobility or added services. After the elections, work began on the framework for hub developments (Vlaamse Beleidsvisie Mobipunten, 2019) to determine what hubs need in specific contexts (interview #10).

## Role of NGOs in hub developments

Since 2020, the NGOs reached their goal for the government to commit to creating 1000 mobility hubs in Flanders. The NGOs are still doing promotion

of the hubs; however, their role has changed over the years as local authorities and consultancies have taken over the central role in hub developments. The NGOs are now filling the role of knowledge exchange, a network platform and promoting a creative approach on hub developments. With the new policy, the NGOs are also in discussion with the government for what their official role in hub developments will be moving forward (interview #10).

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*“We as the mobipunt czw and the other NGOs behind, we are very important stakeholders. The whole buzz that we have created, it was our idea to have 1000 mobility hubs. Without the buzz coming from the NGOs, the Flemish government would have not done this [created the framework and the subsidy programme for hubs] [...]”*  
 – interviewee #10

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They have created the framework, also a subsidy program. There will be a budget of plus 100.000.000 euros to create 1000 mobility hubs the next years. Okay, so the Flemish government, cooperation with the transport regions they are very important stakeholders. We as the mobimupt czv or the other NGOs behind we are very important stakeholders. The whole buzz that we have created ,that was our idea to have 1000 mobility hubs. Without the buzz coming from the NGOs, the Flemish government would have not done that so this was good work between NGO between governments.

## Role of governmental players in hub developments

### The Flemish government

- Created the framework and subsidy programme for hub developments (interview #10).
- Provides a toolbox for public and private stakeholders who want to initiate hub developments.
- Maintains a databank of hubs.
- Sets up criteria for evaluation and monitoring, and
- Facilitates financing, promotion and knowledge sharing (Departement Mobiliteit en Openbare Werken, 2019).

### Transport regions

- On an interregional and regional level – take a directing role in hub developments.
- Integrate hubs and develop hubs as indicated in the regional mobility plan.
- Set up priorities and budgeting for (inter)regional hubs.
- Support the local government in hub developments on a local level (Departement Mobiliteit en Openbare Werken, 2019).

### Municipalities

- On a local and neighbourhood level – take a directing role in hub developments.
- Determine function and needs for different modalities.
- Ensure hub developments contribute to local policy goals.
- Set up priorities and budgeting for local and neighbourhood hubs (Vlaamse Beleidsvisie Mobipunten, 2019).

## The process of developing hubs

To utilize the implementation of 1000 hubs in Flanders, a clear process has been set up (see figure 25) (Vlaamse Beleidsvisie Mobipunten, 2019).

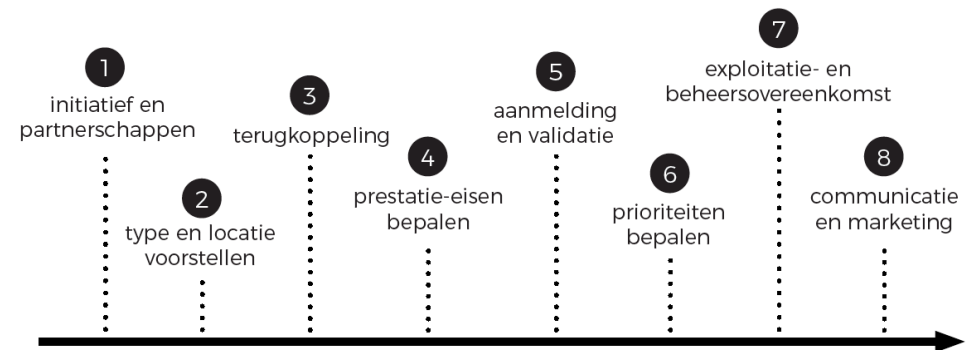


Figure 25: The process of hub developments (Vlaamse Beleidsvisie Mobipunten, 2019).

With the goal of realizing 1000 hubs across Flanders by 2025, the task for initiating such a development top-down would be a challenge. Instead, Flanders has chosen for a bottom-up approach that can involve a variety of stakeholders who are more aware of the local needs and circumstances. While the regional government leaves it to municipalities, consultancies, operators, local inhabitants or other parties to initiate hub developments, the collaboration with (other) governmental organisations and relevant stakeholders is important to realize hubs that fit with the overall vision for hubs and the local characteristics (Vlaamse Beleidsvisie Mobipunten, 2019).

In the first step for new hub developments – project initiation and partnerships – a large variety of parties can take the initiating role. In this role, the party has to form a project group with relevant stakeholders for the upcoming development.

Secondly, the type of mobipunt and its location has to be determined, based on the guidelines in the hub policy. The location choice is then evaluated with the local or regional government, depending on the location and service level of the hub.

Then, the project group takes a look at the guidelines based on the hub typology. Following, the hub is registered in the hub system and validated. This step also looks at which requirements the chosen location already fulfils.

Next, priorities are set as it is likely not feasible to reach all quality requirements at once. Here developments that are expected to deliver the highest returns and quality improvements against the smallest investments, should be considered.

Once a plan has been set up, the roles of different stakeholders are determined, both in the realization process but also in the hub operations and maintenance.

Finally, it is important to set up a good marketing and communications strategy to ensure that people will also make use of the hub and its services. Once the hub has been developed, the further hub developments will be based on an iterative process to keep the hub future proof. This means that the hub would have to keep up with new developments and also growing user numbers (Vlaamse Beleidsvisie Mobipunten, 2019).

## **Funding streams for hub developments**

Until the official regional funding became available for mobility hubs, stakeholders had to be creative in identifying funding sources for hub developments. Initial hubs were often funded by municipalities' own budgets. The municipalities have generally been creative and created budget through European projects and through national funding programmes such as Smart Cities, City of Things and climate funding. (interview #8). Since end of 2020, €100 million has been dedicated specifically for the creation of 1000 hubs in Flanders up to 2025. Access to the funding does require the use of the Hoppin branding and following the hub development framework (interview #8). The amount available for individual hubs, depends on the hub type. For interregional and regional hubs, up to 50% of the costs can be covered up to the amount of €500.00 for interregional and €250.000 for regional hubs. For local and neighbourhood hubs, 100% of the costs can be subsidized with a maximum amount of €50.000 for local hubs and €25.000 for neighbourhood hubs (Departement mobiliteit en openbare werken, 2020).

## **Future of hubs in Flanders**

- Implementation of 1000 good hubs in Flanders that have an impact on mobility behaviour.
- Creating a learning network for stakeholders with activities and possibilities to learn from each other, with memberships for municipalities and other interested parties.
- Focus on inclusion and accessibility at hubs and attracting new types of users.
- Creating a dashboard with car sharing data that will be publicly available and that can help to collect quantitative evidence. Based on this, the right tools can be provided for governments to develop hubs.
- Experiment with e-commerce solutions at hubs. Create an accreditation of hubs that can showcase the best and most innovative hubs.



**Reflection:**

*To what extent can bottom-up developments and subsidies aid developments in rural, resource poor municipalities?*

*The introduction of the hub concept in Flanders through NGOs is a unique approach among the different hub developments. Much of the work of NGOs is made possible through specific funding for the promotion of shared mobility and the resources received via the SHARE-north project (interview #10).*

*The promotional work of the NGOs has paid off and resulted in a €100 million subsidy scheme for the implementation of 1000 hubs (Departement mobiliteit en openbare werken, 2020). This 'seed money' will be able to aid the development of many hubs, especially in areas where shared mobility is already implemented, and hub-like facilities are already in place. However, creation of hubs in more rural areas with little existing facilities may be challenging as €25.000 can only have a limited impact in an area that is less attractive for shared mobility providers and where municipalities themselves have little resources to spare.*

*For the same reasons, local municipalities may be less likely to initiate hub developments. With the bottom-up approach, the question remains if perhaps areas most in need will receive the necessary attention if they do not take the initiative themselves. Top-down initiation by the region may work, yet in many cases, the municipalities do seem to be the gate keepers for hub developments. In addition, if hub developments are initiated by commercial parties, will they also invest into the hubs? And if that is the case, what does that mean for a hub that is essentially meant for public use?*

## 5.3 Hubs in South-East Scotland, the UK

In South-East Scotland, the first mobility hub is due to be opened in 2021. The concept of mobility hubs has been introduced in the region through the SHARE-north European project with SEStran – the regional transport partnership of Southeast Scotland – as one of the delivery partners of the project. Inspired by Bremen, Flanders and Bergen, SEStran saw the potential for mobility hubs for their region for enhanced connectivity and encouraging and facilitating more sustainable travel in the region (SEStran, 2020; interview #11).

With the Mobility Hub Strategic Study, SEStran identified locations for pilot hub projects in each of their eight local authorities. East Lothian Council has been chosen as the first mobility hub to be realized, partly financed by the SHARE-north project through SEStran. The idea is that, as a pilot, the hub will provide evidence and show benefits of a mobility hub which is expected to lead towards a wider support for mobility hubs, inclusion in the Scottish transport strategy such as the SEStran Regional Transport Strategy, and the roll-out of more hubs across South-East Scotland (interview #11).

### **Mobility hubs in South-East Scotland aim to:**

- Integrate shared mobility to complement the existing transport network.
- Encourage mode shift towards more walking, cycling and use of public transport as an alternative to the use of a private car to reduce carbon emissions.
- Tackle transport poverty through improving accessibility for people with limited transport choices and no access to cars
- Reallocate public space that is currently used for private parking.

### **Definition of mobility hubs in South-East Scotland**

“A Mobility Hub is a recognisable and easily accessible place which integrates different transport modes and supplements them with enhanced facilities, services and information aimed at encouraging more sustainable travel, creating sense of place and improving journeys and travel choices.” (SEStran, 2020)

## **Governance of hubs in South-East Scotland**

### **SEStran as the key player in introducing hubs in the region**

SEStran is the strategic transport partnership for South-East Scotland, one of the seven transport partnerships of each region in Scotland. South-East of Scotland covers the area of eight counties, including city of Edinburgh, and includes urban, peri-urban and rural areas. SEStran is a statutory organisation, established by the Transport (Scotland) Act 2005. The primary task of a Regional Transport Partnership (RTP) in Scotland is to produce a transport strategy for the region. Additionally, SEStran works on a variety of innovative transport projects that are funded by European projects, but also the UK and Scottish governments. SEStran also coordinates real time public transport travel information for the region in collaboration with the local authorities and transport providers.

SEStran played a key role in introducing hubs in South-East of Scotland through inspiration gained in the SHARE-north project. The first step in the process was carrying out the Mobility Hub Strategic Study – a research that looked into best practices of mobility hubs in Europe and its application in the region. On one hand, the study identified the potential demand for mobility hubs in terms of population density, key destinations and existing (shared) mobility offer. On the other hand, the study also looked at where mobility hubs can help tackle transport poverty and forced car ownership due to lack of public transport in rural areas.

As part of the development of the Mobility Hub Strategic Study, SEStran organised two workshops to introduce and adapt the concept of mobility hubs in the region.

In the first workshop, a range of stakeholders were involved in a brainstorm session about the key elements of a hub, type of hubs, functions of a hub and how hubs relate to the policy goals on national, regional and local level. The second workshop was held with the eight local authority partners where eight potential hub locations, one at each council, were identified. As a follow-up, SEStran offered a grant, through the SHARE-north funding, for a pilot hub at one of these locations.

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*“But we need to demonstrate that it [hubs concept] works because we need to get the buy-in of transport operators, local stakeholders, local authorities, local politicians to really show that when you want to create a more sustainable transport system, mobility hubs and shared mobility in particular are key building blocks in achieving that.”*  
– interviewee #11

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### **First ‘journey hub’ in South-East Scotland**

The mobility hub financing was granted for the town of Musselburgh in East Lothian. Located at the edge of the city of Edinburgh, the town has a lot of commuter traffic and is dealing with a high level of air pollution on its high street. Proximity to the train station and some existing shared mobility offer made it an attractive location. More importantly, the East Lothian council already had the drive and specific plans for the mobility hub. The hub concept also fits well with the council’s long-term plans for increasing active travel.

The SHARE-north grant will be used for real time travel information display, electric vehicle charging for car-sharing operator and signage. Through a previous funding agreement, SEStran also funds e-bike sharing at the hub. With the implementation of the first hub, the council hopes to kick-start the development of a network of hubs within their council.

### **The importance of local buy-in**

As a strategic partnership, SEStran has no land ownership in the region. This means that the roll-out of hubs depends largely on the motivation and resources

of the local authorities who own the land. They are the ones implementing hubs and take responsibility for maintenance of the hub, a so-called ‘hub operator’ as mentioned in the strategic study. SEStran supports them in this task through knowledge sharing, providing ideas and identifying funding streams.

Branding is another topic where the local buy-in matters. SEStran decided not to focus on specific branding or signage for the hubs in their strategic study. Instead, they left it open to encourage codesign with the local authority partners. East Lothian council, for example, has designed their own branding for hubs with the ‘journey hubs’ and have their own communication campaign. The concept will be used through the council, but other councils in the region are free to come up with something different, as long as the underlying concept remains the same.

### **Funding expected through the new Transport Strategy**

Currently, SEStran itself does not have the funds to aid more local authorities with funding their first hubs. Now, there are no clear funding schemes available for hubs as funding schemes are often provided in silos, separately for active travel (including walking and cycling), buses, trains, etc. However, it is expected that funding will become available with the implementation of the upcoming Scottish National Transport Strategy and the Scottish Government’s transport investment programme for 2022 – 2042. The outcomes of the first mobility hub in Musselburgh are important here as SEStran can produce evidence of the benefits of hubs and share these with the local authorities, but also the national government (interview #11).

Nevertheless, other funding streams are also possible for hubs, but it is important to identify these and make a good case for mobility hubs in grant applications. SEStran does not leave this task for the councils alone as these local authorities may lack the resources and knowledge for good applications. Instead, project bids may be written together wherein SEStran provides insights on benefits of hubs and local governments add their local knowledge about potential areas in need.

Additionally, SEStran has recognized the potential of investments into hubs from mobility providers, but also developers, for instance in new housing developments.



Through a measure of 'Section 75', sometimes known as planning obligation, councils can ask developers to make financial contributions to, for example, creating a public transport stop or provision of shared mobility. Such actions would also benefit the developers as they could potentially use their land more efficiently if they can make the case for a lower parking requirement (SEStran, 2020, interview #11).

**Reflection:**

*Initiation of hub developments in South-East Scotland through SEStran (a strategic regional transport partnership) is the result of knowledge, inspiration and financing gained through the SHARE-North project. In contrast to Groningen and Drenthe and Flanders, in Scotland, stakeholders first need to make a case for mobility hubs before they can start their implementation. This is a general requirement across the UK where the benefits of transport developments have to be proven in advance (UK Department of Transport, 2018).*

*Through SHARE-North funding, SEStran can take this ex-ante evaluation a step further and use the first hub to demonstrate the benefits. The results could not only be beneficial for the councils and the Scottish government, but also for private investors, such as mobility operators and developers who could be convinced to make investments into hubs.*

*As a strategic partnership, SEStran has limited means to implement hub projects themselves and are strongly dependent on the collaboration with local governments and funding possibilities. To increase collaboration with local governments, SEStran has decided not to push certain branding on the councils from the get-go. Instead, they encourage co-creation and hope in this way, to earn local support and help the councils design a branding that feels their own. Through SHARE-North, SEStran is aware that common branding is a strong point of hub programmes in Bremen and Flanders. However, as long as the concept of hubs remains the same across the region, SEStran does not see downsides to using a branding that is customized for the local communities.*

## Hub developments elsewhere in the UK

Southeast Scotland will be the first in the UK to implement a mobility hub. However, there are also other developments around the concept of hubs across the UK that deserve attention.

Much of the work and promotion of hubs is done by CoMoUK that has developed guidelines and an accreditation framework for mobility hubs. CoMoUK is a charity that supports the development of shared mobility across the country through advocacy, research and development. Similarly to SEStran, CoMoUK is also a partner in the SHARE-North project (CoMoUK, 2021; interviews #9, #11, #12, #13).

In the rural UK, hubs are seen more than just for mobility (interviews #12, #13). A hub can be a catalyst for bringing services back to rural areas and offering resources such as newer broadband technologies that otherwise would not reach rural areas, but also high voltage charging for electric buses could be available at a hub.

Hubs can contribute to higher service level for rural communities in three ways (interview #13):

- (1) Provide transport modes that can take people to services and places.
- (2) Provide a place where services and goods can be offered to people in rural communities.
- (3) Provide a place where travel can be replaced with communication, such as digital infrastructure, workplaces or digital consultations with health care providers.

## Hub developments in the Midlands

Midlands Connect is a transport partnership in the Midlands, a central region in England. While SEStran is a statutory body, Midlands Connect is not, which means they do not have legal obligations in transport developments. They do, however, research and recommend transport projects and support and advise the local and national governments (interview #13).

Following the transport appraisal guidance, Midlands Connect carried out a study for the Future of Rural Mobility study that explored solutions for improved rural economies and transport. Instead of waiting for new mobility innovations to reach rural areas after implementation in urban areas, the study aimed to show that immediate action is also crucial in rural areas where transport costs and travel times are considerably higher compared to urban areas.

One of the key recommendations of the study was to investigate the potential for hubs in rural areas to allow improved connectivity. Following, a detailed hub guidance was developed in 2020 for local authorities.

At the end of 2020, Midlands Connect announced a grant application that can help four local authorities to follow the hub guidance and develop hubs in their area. The aim of the grant is not only to help local authorities to get started with hub developments, but also to advise the national government based on the project outcomes on the national future rural mobility strategy.

## 5.4 Conclusions and take-aways for Groningen and Drenthe

The SHARE-North European project has been an important catalyst for hub developments in Northern Europe. Through the international learning community and available budget, Bremen has been able to expand their hub network, Flanders has initiated hub developments and is set to open 1000 mobility hubs by 2025, and Southeast of Scotland will open its first mobility hub in 2021.

### **Reduction of car ownership as an important goal of hubs in Bremen, Flanders and Southeast Scotland**

Considering the definition and goal of hubs, there is an important similarity between the three regions – focus on reducing car ownership. In Bremen, car-sharing is the heart of a mobil.punkt with the aim to free public space from private cars. Flanders aims to offer a comprehensive mobility choice wherein car-sharing, bike-sharing and public transport are equally important. In Southeast Scotland, hubs are defined fairly similar to Flanders, with the addition of addressing transport poverty.

In Groningen and Drenthe, the basis of a hub is public transport and on-demand transport while shared mobility is a more recent addition. The programme does not emphasize on the reduction of car ownership yet does aim to ensure that the car is not used for the whole trip, but only as part of an intermodal journey.

As these different hub programmes mature, it would however be interesting to consider what additional policy goals the hubs could facilitate. In Bremen, hubs could become more inclusive if connection to public transport or on-demand transport was prioritized more or if other shared modes, besides car-sharing would also be incorporated at hubs. In Groningen and Drenthe, reduction of car-ownership could be reached through providing car-sharing at hubs in both rural and urban areas. Specifically in cities, car-sharing could also help to reduce car-ownership which would open up more public space which is currently occupied by private car parking.

### **Role of local and regional governments in initiating hubs**

Each case study presented a different stakeholder as the initiator of hub developments. In Bremen, the initiative came from the city / state after realizing the success of car-sharing in the city and the potential for improved traffic safety and street accessibility if car-sharing is brought into the public realm. In Flanders, it was the two NGOs who introduced the concept in the region and brought the benefits of hubs to the attention of the regional government. In Southeast Scotland, hubs were introduced through a transport partnership.

Being a city state, Bremen can realize mobility hubs quicker thanks to short lines between the local and regional level. However, In Flanders and Southeast Scotland, the initiating parties needed first the support from the local and/or regional governments to start the actual implementation of hubs. While local governments determine the land-use in their jurisdiction, regional governments can support hub developments through various funding schemes.

### **Learning by doing versus evidence-based approach**

Both Bremen and Flanders operate a learning by doing approach for the development of hubs, while in Southeast Scotland an evidence-based approach is common in transport-related developments. Evidence acts as an incentive for different levels of governments to invest into such projects but can also lead to more collaboration between the hub developer and market parties, such as transport providers or real-estate developers.

In Groningen and Drenthe, the network of hubs and developments at hubs have also been realized through learning by doing. However, moving further, a more combined approach, involving more evidence-based developments could help to further developments across the network of hubs. On one hand, evidence could help to secure funding for developments from the national government. On the other hand, evidence could also act as a tool to convince smaller municipalities to prioritize hub developments in their budgets.



## **Challenges with working with local governments – a top-down versus bottom-up approach**

Hub developments seem to demand a combined governance approach, including both bottom-up and top-down management. In Flanders, the regional government has committed to realizing and financing hubs, but the roll-out of hub developments is considered a bottom-up approach where the initiative can come from a variety of local stakeholders. In Southeast Scotland, collaboration with the local councils is key because they own the land and can introduce hub developments through local laws for new developments. And, while Bremen is the local government, collaboration with the district governments is also considered essential.

In Groningen and Drenthe, the approach on hub developments could be considered top-down as the programme is led by the provinces. The common branding has also been decided beforehand for all hubs. Bottom-up developments can be seen more by municipalities that have the resources for their hub, while municipalities who do not prioritize hub developments lag behind.

Therefore, for a successful development of hubs throughout a hub network, a combined governance approach could be the best fit. Top-down, the provinces could support further integration of hubs in regional and local policies which would mean that municipalities would have to prioritize hub developments in their budgets to reach a certain level of quality at their hubs. Depending on a municipality and the importance of a hub within the network, provinces could support the municipalities that are in more need with financing and implementation.

On the flip side, making a hub their own could also be important for municipalities and could be achieved through co-design. For example, through carrying out a campaign for the hubs that fits better with the identity of a municipality. There could also be additional flexibility in the blue-branded hub elements, such as the hub bench. Perhaps the overarching hub branding could be implemented in more ways than using the limited selection of elements available.





# 6

## Conclusions and policy considerations

Photo: hub Zweeloo (2020)



## 6 Conclusions & policy considerations

Through facilitating intermodal trips, shared mobility and increased access to transport systems, hubs enable a shift towards more sustainable transport. Intermodal trips – a trip that includes the use at least two different transportation modes, contributes to the reduction of car ownership and private car trips, congestion, and CO2 emissions. Specifically in rural areas, hubs provide possibilities to travel with other transportation modes and reduce car dependency.

In the Netherlands, about 4% of all trips are intermodal. It is believed that hubs with high quality public transport connection and shared mobility can help to increase the share of intermodal trips.

### **SMiLES research on hubs in Groningen and Drenthe**

Since 2017, a network of 57 hubs is in place in the provinces of Groningen and Drenthe, with the goal to enable seamless intermodal journeys throughout the urban and rural areas of the two regions. Within the work package A.3 as part of the SMiLES research programme, an in-depth study of the hub programme of Groningen and Drenthe was carried out. The research aimed to gain insights into the state of the hub network in 2020/21, and governance of the hub programme in Groningen and Drenthe. Additionally, international case studies were carried out on hub programmes in Bremen, Flanders and Southeast Scotland which together with the insights from Groningen and Drenthe provide policy considerations for the further development of hubs in Groningen and Drenthe.

The core of this research report was to answer the three governance-related research questions. However, to provide a more complete overview, the conclusion also shares insights from the state of the hub network (Research report #1 – Hub assessment booklet) and offers a teaser for the hub evaluation framework (Research report #3).

### **What is the current situation of the hubs in the hub network of Groningen and Drenthe?**

In Groningen and Drenthe, hubs are the outcome of stretching of public transport lines and the collective management of on-demand and target group transport. These developments asked for the identification of more important public transport stops that would be no further than 15km from the homes of the inhabitants. The hubs aim to enable a smooth transfer between personal, target group or shared transport and the regular public transport.

The hub programme was officially launched when the already existing train stations, bus stations P+Rs and important smaller bus stops received the hub sign. Since 2017, many developments have taken place across the hub network to elevate the quality of these mobility hubs.

By using an analysis based on the node-place model and a base-line analysis of the hubs carried out in 2017, the hubs were re-evaluated to see what developments have occurred (see more in Research report #2 – Hub assessment booklet).

The analysis identified that improvements on node value (accessibility by car, bike and public transport) have been made in 10 hubs. These include improvements in bicycle parking or car parking. No changes have occurred in public transport provision.

Place value (comfort, safety and facilities) has been improved in the majority of hubs with only 7 hubs left untouched by mid 2021. Improvements have mostly occurred regarding comfort and can be regarded to the addition of a water tap at 33 hubs and WiFi at 40 hubs. More significant improvements for comfort and safety have taken place at hubs where larger refurbishing projects have been carried out, such as Delfzijl, Assen Station, Haren Station and P+R Leek.

*For a more detailed overview of the current situation of hubs, we refer to the Research report #1 – Hub assessment booklet.*



## **How are hubs governed in the hub programme Groningen and Drenthe?**

The hub programme is a joint venture of the provinces of Groningen and Drenthe. However, already before the hub programme, the two provinces had joined forces to manage their integrated bus network through the OV Bureau and since 2018 target group transport is collectively managed by Publiek Vervoer for all municipalities within the two provinces.

This set-up of transport management in Groningen and Drenthe did not only make it logical to establish the hub network across the two provinces, but also made it easier as the collaboration through the OV Bureau was already in place.

Learning by doing has been the dominant approach in the hub programme since its establishment. The hub programme was not a programme that was started based on predetermined policy goals, but rather a result of consecutive developments in the interregional transport system. First stretching of the lines, then collaborative management of target group transportation and eventually the realization that hubs can also provide for new and shared mobility.

The learning by doing approach has since followed through in all other hub developments. This is demonstrated in two ways.

First, little research is done before hub developments or pilot projects are implemented. Instead, developments are based on assumptions without the evidence to support their potential success. Pilot projects are a form of producing such evidence, yet it is often also unclear what the expected outcomes of pilot projects are or when they could be considered a success.

Second, there is no clear policy document outlining / providing a strategy on how and when quality of hubs would be improved. Instead, the hub programme has so far worked predominantly either with proactive municipalities or on provincial hubs. Proactive municipalities have had the resources to develop their hub(s) or financial means have become available through transport or other large-scale developments. With this approach, the hub programme hopes to gradually improve

the quality of more and more hubs and consequently inspire other municipalities who would eventually also find the means and prioritize hub developments. Additionally, collaboration with the asset owners ProRail, NS and Rijkswaterstaat has proven to be challenging but indispensable. Sharing experiences with these parties and National Government is important.

## **How are mobility hubs developed and governed elsewhere in Northern Europe?**

In Northern Europe, the SHARE-North European project has been an important facilitator and network platform for the developments in shared mobility and mobility hubs. In Bremen, where hubs have been popping up since 2003, the primary focus of hubs is to close the gaps in the private car-sharing network. In Flanders, hubs aim to contribute to multimodality and offer at least three different modalities. In Southeast Scotland, the first pilot mobility hub, offering various modalities and a connection with public transport, will be launched in 2021.

While the different goals and initiation processes of the hub programmes vary, the governance challenges are often similar and comparable to Groningen and Drenthe. Support from the local government and financing seem to be the biggest hurdles in hub developments.

The different cases deal with these hurdles in various ways. In Flanders, a grant scheme has been established to support hub developments. Municipalities and other potential hub developers can receive funding based on the type of hub. However, receiving the grant also means that the guidelines for hub developments must be adhered.

In Southeast Scotland, providing evidence before realizing transport developments is an important part of the process. Evidence can not only help to secure funding for hub developments from the Scottish Government but can also help to convince local councils to prioritize hub developments and invest into hubs.

**What can Groningen and Drenthe learn from the international developments and from their own practice to continue the expansion and further realize an inclusive and well-accessible hub network in Groningen and Drenthe?**

The governance of the hub programme in Groningen and Drenthe can be described in a few key words: ad-hoc, organic, bottom-up developments with a learning by doing approach. The developments so far could be considered successful since there is a wide network of hubs wherein many of the hubs have received some attention since 2017. However, it could be argued that many of the low-hanging-fruit opportunities have been seized or are on the radar, and a more comprehensive approach could be needed to continue and to realize an inclusive and well-accessible hub network.

The hub programme itself has currently little influence to carry out improvements at hubs where the municipality must take the lead. The OV Bureau can only invest into the bus lines and provinces can implement water taps, WiFi and a hub bench, and help with investments into pilot projects. To do more, the support and financing from the municipalities, asset owners ProRail, NS, Rijkswaterstaat, local organisations (library, health care, other providers of services) and businesses is necessary.

First, developing guidelines and a subsidy programme for the developments of different types of hubs could be considered. In this way, municipalities can have a clearer idea of what is expected from them in relation to hub developments and they can know beforehand how much financing they can expect. The clear guidelines and financial support are illustrated well in the hub programme in Flanders. With the newest roadmap for public transport development, hubs in the Netherlands may receive financing for further developments, however, how this can be utilized by Groningen and Drenthe is currently less clear.

Second, it could be beneficial to start showcasing the benefits of the developments and pilot projects that have already been implemented. In Scotland, it is important to provide evidence of the socio-economic benefits of transport developments before their implementation. With the funding through SHARE-North, the first

hub will be implemented, yet its important purpose is also to demonstrate the effectiveness of hubs. While the Groningen and Drenthe hub programme has a successful image in the Netherlands, it has little evidence on how the hub network specifically benefits urban and rural mobility. Providing such evidence could not only demonstrate the benefits of hubs to the municipalities in Groningen and Drenthe, and across the country, but could also attract more investments into hubs from commercial parties.

In their newest vision document (2021), Groningen and Drenthe set out to build towards an inclusive hub network that focuses increasingly more on spatial developments at hubs and its surroundings rather than mobility alone. In order to do that, a more top-down development plan could be needed to ensure that new developments are convened around hubs. A combination of a top-down and bottom-up approach within the hub programme could help to realize hub developments throughout the hub network and support the continued the success of the hub programme of Groningen and Drenthe.

**Epilogue: How can hubs in Groningen and Drenthe be evaluated?**

The policy implications discussed above point the hub programme of Groningen and Drenthe towards a more comprehensive approach on hub developments, including guidelines and evidence that could assist municipalities and other stakeholders in furthering hub developments.

As the last outcome of the work package A.3. within SMiLES, a hub evaluation framework will be developed that enables stakeholders within the hub programme to actually evaluate the different hubs on Groningen and Drenthe. The framework will be further discussed in Research Report #3. The evaluation framework will be closely related to the findings of the node-place analysis and has gained inspiration from the international work on hubs.

# References

## Journal articles

Anderson, K., Blanchard, S. D., Cheah, D., & Levitt, D. (2017). Incorporating Equity and Resiliency in Municipal Transportation Planning: Case Study of Mobility Hubs in Oakland, California. *Transportation Research Record*, 2653(1), 65-74.

Arvidsson, N., Givoni, M., & Woxenius, J. (2016). Exploring Last Mile Synergies in Passenger and Freight Transport. *Built Environment*, 42(4), 523–538.

Bell, D. (2019). Intermodal Mobility Hubs and User Needs. *Social Sciences*, 8(2), 65.

Bruzzone, F., Cavallaro, F., & Nocera, S. (2021). The integration of passenger and freight transport for first-last mile operations. *Transport Policy*, 100, 31–48.

Caset, F., Blainey, S., Derudder, B., Boussauw, K., & Witlox, F. (2020). Integrating node-place and trip end models to explore drivers of rail ridership in Flanders, Belgium. *Journal of Transport Geography*, 87, 102796.

Conticelli, E., Gobbi, G., Saavedra Rosas, P. I., & Tondelli, S. (2021). Assessing the Performance of Modal Interchange for Ensuring Seamless and Sustainable Mobility in European Cities. *Sustainability*, 13(2), 1001.

Gross-Fengels, S., & Fromhold-Eisebith, M. (2018). Adapting transport related innovations to rural needs: Smart Mobility and the example of the Heinsberg region, Germany. In *Advances in Transport Policy and Planning* (Vol. 2, pp. 125-162). Academic Press.

Gössling, S. (2016). Urban transport justice. *Journal of transport Geography*, 54, 1-9.

Kwantes, C., Juffermans, N., & Scheltes, A. (2019). HUB's: Van hippe hype-fase naar duurzame mobiliteitstransitie. *Bijdrage aan het Colloquium Vervoersplanologisch Speurwerk*, 13.

Morganti, E., Seidel, S., Blanquart, C., Dablanc, L., & Lenz, B. (2014). The impact of e-commerce on final deliveries: alternative parcel delivery services in France and Germany. *Transportation Research Procedia*, 4, 178-190.

Nathanail, E., Adamos, G., Tsami, M., & Jackiva, I. Y. (2018). Green urban interchanges: stakeholder and user perspectives. *Transport and Telecommunication*, 19(3), 183-193.

Nobis, C. (2007). Multimodality: facets and causes of sustainable mobility behavior. *Transportation Research Record*, 2010(1), 35-44.

Pucher, J., & Renne, J. L. (2005). Rural mobility and mode choice: Evidence from the 2001 National Household Travel Survey. *Transportation*, 32(2), 165-186.

Scheiner, J., Chatterjee, K., & Heinen, E. (2016). Key events and multimodality: A life course approach. *Transportation Research Part A: Policy and Practice*, 91, 148-165.

Storme, T., Casier, C., Azadi, H., & Witlox, F. (2021). Impact Assessments of New Mobility Services: A Critical Review. *Sustainability*, 13(6), 3074.

Šipuš, D., & Abramović, B. (2017). The possibility of using public transport in rural area. *Procedia engineering*, 192, 788-793.

Tønnesen, A., Knapskog, M., Uteng, T. P., & Øksenholt, K. V. (2020). The integration of active travel and public transport in Norwegian policy packages: A study on 'access, egress and transfer' and their positioning in two multilevel contractual agreements. *Research in Transportation Business & Management*, 100546.



Trentini, A., & Mahl  n  , N. (2010). Toward a shared urban transport system ensuring passengers & goods cohabitation. *TeMA-Journal of Land Use, Mobility and Environment*, 3(2).

Zijlstra, T., Duran, A., Bakker, P. (2019). De reizigers in het sociaal-recreatieve doelgroepenvervoer in Nederland. Kennisinstituut voor Mobiliteitsbeleid. Den Haag, 2019.

Zuo, T., Wei, H., & Chen, N. (2020). Promote transit via hardening first-and-last-mile accessibility: Learned from modelling commuters' transit use. *Transportation Research Part D: Transport and Environment*, 86, 102446.

## Policy documents

Departement Mobiliteit en Openbare Werken (2019). Vlaamse Beleidsvisie Mobipunten 2019. <https://routeplan2030.be/wp-content/uploads/2019/03/VBM-RAPP-20190208-rapport-Vlaamse-Beleidsvisie-Mobipunten.pdf>

Departement Mobiliteit en Openbare Werken (2020). Stappenplan aanleg hoppinpunt. Vlaanderen, 2020. [https://assets.vlaanderen.be/image/upload/v1610493238/COMMUNICATIE\\_Stappenplan\\_aanleg\\_mobipunt\\_in\\_Hoppinstijl\\_versie18122020\\_qtg0kt.pdf](https://assets.vlaanderen.be/image/upload/v1610493238/COMMUNICATIE_Stappenplan_aanleg_mobipunt_in_Hoppinstijl_versie18122020_qtg0kt.pdf)

Gemeente Groningen. (2019). Uitvoeringsprogramma fiets 2019-2022. September, 2019.

Gemeente Groningen. (2021). Groningen goed op weg. Naar een leefbare, schone en gezonde gemeente. Concept Mobiliteitsvisie. Groningen, April 2021. <https://gemeente.groningen.nl/sites/default/files/2.-Concept-Mobiliteitsvisie.pdf>

Hub programma Groningen Drenthe (2021). Hub programma 2021 – 2025. Draft version, April 2021.

Hamersma, M. & de Haas, M. (2020). Kenmerken van 'veelbelovende' ketens: Inzichten voor het stimuleren van ketenmobiliteit in Nederland. Kennisinstituut voor Mobiliteitsbeleid. Den Haag, June 2020.

Ministerie van Infrastructuur en Waterstaat. (2019). Schets Mobiliteit naar 2040: veilig, robuust, duurzaam. Den Haag, June 2019.

Ministerie van Infrastructuur en Waterstaat. (2021). Ontwikkelagenda Toekomstbeeld OV. Nu instappen naar 2040. Den Haag, January 2021.

Ministry of Infrastructure and the Environment (2011). Summary National Policy Strategy for Infrastructure and Spatial Planning: Making the Netherlands competitive, accessible, liveable and safe. The Hague, 2011.

Nationaal Programma Groningen (2020). Jaarverslag 2019. <https://www.nationaalprogrammagoningen.nl/app/uploads/2020/04/jaarverslag-2019-nationaal-programma-groningen.pdf>

Procap (2020). Mobiliteitstrategie Regio Groningen-Assen. Vergroenen, verknopen en verslimmen: Het versterken en beter benutten van de duurzame mobiliteitsketens.

Provincie Frysl  n, provincie Groningen, Niedersachsen. (2017). Programma van Eisen. Concessies regionaal spoorvervoer 2020-2035 in de provincies Groningen en Frysl  n en in Niedersachsen. [https://www.provinciegroningen.nl/fileadmin/user\\_upload/Documenten/Beleid\\_en\\_documenten/Documentenzoeker/Verkeer\\_en\\_vervoer/Openbaar\\_vervoer/Programma-van-Eisen-Concessies-regionaal-spoorvervoer-2020-2035.pdf](https://www.provinciegroningen.nl/fileadmin/user_upload/Documenten/Beleid_en_documenten/Documentenzoeker/Verkeer_en_vervoer/Openbaar_vervoer/Programma-van-Eisen-Concessies-regionaal-spoorvervoer-2020-2035.pdf)

Provincie Groningen. (2017). Bushaltes in de provincie Groningen 2017-2020. Beleid en richtlijnen. Groningen, May 2017.

Provincies Groningen en Drenthe. (2017). Hub Groningen en Drenthe. Programmaplan. April 2017.

- Provincie Groningen. (2016). Verbinden met de fiets; fietsstrategie 2016-2025. [https://www.provinciegroningen.nl/fileadmin/user\\_upload/Documenten/Beleid\\_en\\_documenten/Documentenzoeker/Verkeer\\_en\\_vervoer/Fiets/Fietsstrategie-2016-2025-Verbinden-met-de-fiets.pdf](https://www.provinciegroningen.nl/fileadmin/user_upload/Documenten/Beleid_en_documenten/Documentenzoeker/Verkeer_en_vervoer/Fiets/Fietsstrategie-2016-2025-Verbinden-met-de-fiets.pdf)
- Provincie Groningen. (2020). Verbinden met de fiets. Uitvoeringsprogramma Fiets 2020-2023. Groningen, October 2020.
- Provincie Drenthe. (2018). Omgevingsvisie Drenthe. <https://www.provincie.drenthe.nl/onderwerpen/bouwen-wonen/omgevingsvisie/>
- Schreier, H., Grimm, C., Kurz, U., et al (2018). Analysis of the impacts of car-sharing in Bremen, Germany. Team red, 2018. [https://share-north.eu/wp-content/uploads/2018/08/Analysis-of-the-Impact-of-Car-Sharing-in-Bremen-2018\\_Team-Red\\_Final-Report\\_English\\_compressed.pdf](https://share-north.eu/wp-content/uploads/2018/08/Analysis-of-the-Impact-of-Car-Sharing-in-Bremen-2018_Team-Red_Final-Report_English_compressed.pdf)
- SEStran (2020). Mobility hubs. A Strategic Study for the South East of Scotland/SEStran region. <https://sestran.gov.uk/wp-content/uploads/2020/05/SEStran-Mobility-Hubs-Strategic-Study-Final-Report.pdf>
- UK Department of Transport (2018). Transport Analysis Guidance. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/938783/tag-guidance-for-technical-project-manager.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938783/tag-guidance-for-technical-project-manager.pdf)

## Other resources

- Deelstra, T. (2021). Between Modes and Levels – A research on the governance for the implementation of intermodality in declining peri-urban areas. MSc-Thesis faculty of Spatial Sciences, University of Groningen, Groningen.
- European Commission. (2019). SHARE-North: Fostering shared mobility solutions for a low-carbon North Sea Region. [https://ec.europa.eu/regional\\_policy/en/projects/Germany/share-north-fostering-shared-mobility-solutions-for-a-low-carbon-north-sea-region](https://ec.europa.eu/regional_policy/en/projects/Germany/share-north-fostering-shared-mobility-solutions-for-a-low-carbon-north-sea-region)
- Publiek Vervoer (2020). Hubtaxi. Retrieved on Nov 9, 2020 via <https://www.publiekvervoer.nl/voor-iedereen/hubtaxi>
- Publiek vervoer (2018). Regio in cijfers. Retrieved on Nov 9, 2020 via <https://www.publiekvervoer.nl/over-ons/regio-in-beeld>
- Stoker, E. (2017). Public Transportation “Made by OV-bureau” How do we do it? [Conference presentation]. Bus Franchising Masterclass, London, UK.
- Wit, G-J. (2021). Passende voorzieningen op hubs. Bachelor internship assignment. Hanze University of Applied Sciences, Groningen.
- Witte, J., Alonso González, M., Rongen, T. (2021). Verkenning van het concept mobiliteitshub. Kennisinstituut voor het Mobiliteitsbeleid, Den Haag, May 2021.
- Zhu, Y., Zhang, G., Tiemersma, J. (2021). Increasing transport hub-usage in Roden: A data-analysis and a questionnaire design. Assignment for multidisciplinary Research Project. University of Groningen, Groningen.

# Appendices

## Appendix 1: List of policy documents in the literature study

Policy level	Organisation	Year	Name of the document
NL – national	Ministerie van Infrastructuur en Waterstaat	2021	Ontwikkelagenda Toekomstbeeld OV. Nu instappen naar 2040
NL – national	Kennisinstituut voor Mobiliteitsbeleid (Hamersma & de Haas)	2020	Kenmerken van ‘veelbelovende’ ketens: Inzichten voor het stimuleren van ketenmobiliteit in Nederland.
NL – national	Ministerie van Infrastructuur en Waterstaat	2019	Schets Mobiliteit naar 2040: veilig, robuust, duurzaam.
NL – national	Ministry of Infrastructure and the Environment	2011	Summary National Policy Strategy for Infrastructure and Spatial Planning: Making the Netherlands competitive, accessible, liveable and safe.
NL – regional	Hub programma Groningen Drenthe	2021	Hub programma 2021 – 2025. (version April 2021)
NL – regional	Regio Groningen – Assen	2020	Mobiliteitstrategie Regio Groningen-Assen. Vergroenen, verknopen en verslimmen: Het versterken en beter benutten van de duurzame mobiliteitsketens.
NL – regional	Provincies Groningen en Drenthe	2017	Hub Groningen en Drenthe. Programmaplan
NL – regional	Provincie Groningen	2020	Verbinden met de fiets. Uitvoeringsprogramma Fiets 2020-2023
NL – regional	Provincie Groningen	2017	Bushaltes in de provincie Groningen 2017-2020. Beleid en richtlijnen.
NL – regional	Provincie Groningen	2016	<a href="#">Verbinden met de fiets; fietsstrategie 2016-2025.</a>
NL – regional	Provincie Drenthe	2018	<a href="#">Omgevingsvisie Drenthe</a>
NL – local	Gemeente Groningen	2021	<a href="#">Groningen goed op weg. Naar een leefbare, schone en gezonde gemeente. Concept Mobiliteitsvisie.</a>
NL – local	Gemeente Groningen	2019	Uitvoeringsprogramma fiets 2019-2022
DE – local / regional	City of Bremen (Team Red, Schreier, H., Grimm, C., Kurz, U., et al)	2018	<a href="#">Analysis of the impacts of car-sharing in Bremen, Germany.</a>
BE – regional	Departement Mobiliteit en Openbare Werken	2019	<a href="#">Vlaamse Beleidsvisie Mobipunten 2019.</a>
BE – regional	Departement Mobiliteit en Openbare Werken	2020	<a href="#">Stappenplan aanleg hoppinpunt.</a>
UK – regional	SEStran	2020	<a href="#">Mobility hubs. A Strategic Study for the South East of Scotland/SEStran region</a>



## Appendix 2: Overview meetings and conferences

Informative meetings		
Date meeting	Organisation	Role
May 2020	Reis via hub	Programme manager
May 2020	Province of Drenthe	Project manager traffic and transport
May 2020	Hub programme Groningen Drenthe	Meeting core team hub programme
May 2020	OV Bureau Groningen Drenthe	Planner & transport developer
June 2020	Province of Groningen	Project manager mobility
June 2020	Hub programme Groningen Drenthe	Meeting core team hub programme
October 2020	Reis via hub	Programme manager
November 2020	Hub programme Groningen Drenthe	Meeting core team hub programme
November 2020	OV Bureau Groningen and Drenthe	Feedback meeting – governance of hubs
January 2021	Hub programme Groningen Drenthe	Meeting core team hub programme
February 2021	Groningen Bereikbaar	Manager mobility
March 2021	Hub programme Groningen Drenthe	Meeting core team hub programme
March 2021	Gemeente Groningen	Policy advisor city development
April 2021	OV Bureau Groningen Drenthe	Planner & transport developer
April 2021	Hub programme Groningen Drenthe	Meeting core team hub programme
May 2021	Hub programme Groningen Drenthe	Meeting core team hub programme
June 2021	OV Bureau and Province of Drenthe	Feedback meeting SMILES governance of hubs

## Appendix 2: Overview meetings and conferences

Attendance conferences and webinars	
Date event	Name event
June 2020	Webinar knooppunten en mobiliteitshubs
September 2020	Nationaal HUB congress
October 2020	Path to the Shared Mobility Summit: Mobility Hubs to Connect Communities
November 2020	Young SMiLES webinar hubs
January 2021	Hub Holland Hub
March 2021	Shared Mobility Rocks (SHARE-North)
March 2021	Dag van het OV

## Appendix 3: List of interviews

#	Organisation	Position
1	<b>Reis via hub</b>	<b>Hub advisor</b>
2	Province of Groningen	Project manager mobility
3	Province of Drenthe	Project manager traffic and transport
4	Publiek Vervoer Groningen Drenthe	Project and contract manager
5	OV Bureau Groningen Drenthe	Manager network development
6	Groningen Bereikbaar	Strategic advisor traffic management and smart mobility
7	Municipality of Groningen	Policy maker public transport
8	Municipality of Assen	Advisor traffic and mobility, and policy advisor mobility
9	City of Bremen / Ministry of Climate Protection, the Environment, Mobility, Urban and Housing Development	Sustainable mobility project manager
10	NGO Taxistop / NGO Mobihub	Taxistop – project director; Mobihub – founder and board member
11	SEStran (Southeast of Scotland Transport Partnership)	Project officer sustainable mobility
12	Midlands Connect	Principal transport planner
13	University of Aberdeen; Scottish Rural and Island Transport Community	PhD researcher in rural MaaS; founder