A TALE OF THREE CITIES
An attempt to improve multimodality in Rostock, Vilnius and Pskov through mobility points

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Statement of authenticity of material

This thesis contains no material which has been accepted for the award of any other degree or diploma in any institution and to the best of my knowledge and belief, the research contains no material previously published or written by another person, except where due reference has been made in the text of the thesis.

[Signature]

Renita Ravina Pais

Berlin, February 1st, 2019
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"A bikeway is a symbol that shows that a citizen on a $30 bicycle is equally important as a citizen on a $30,000 car."

Enrique Peñalosa
Abstract

The increased usage of private motorized vehicles in cities and its far reaching consequences on climate change and the environment, require cities to adapt a more “sustainable multimodal urban transport”, providing its citizens with better alternatives to the private car. This master’s thesis explores the concept of mobility points and the role it plays in increasing multimodality in cities. Upon studying the successful cases of Münchner Freiheit in Munich, Mobil.Punkts in Bremen and MO.Point in Vienna, various planning and implementation factors boosting the success of mobility points are identified. Additionally, indicators to assess the impact of mobility points are also determined.

As part of Cities.Multimodal, an EU project targeting sustainable urban mobility, its 10 partner cities are required to undertake measures to boost their multimodality. 3 of those cities, Rostock, Vilnius and Pskov are selected as target cities for the scope of this thesis. After conducting various expert interviews, the planned mobility point proposals to be implemented in Rostock and Vilnius are analyzed based on the planning and implementation success factors recognized earlier. Recommendations are then delivered for the improvement of the proposals. In the case of Pskov, the potentials needed to be tapped to prepare itself for future mobility point implementation are established. Based on the lessons learnt from Munich, Bremen, Vienna, Rostock, Vilnius and Pskov a checklist/ transfer criteria is composed functioning as a guideline depicting conditions that need to be achieved by any city before it can aim to implement mobility points.

Keywords
Multimodality, sustainable mobility, public transport, shared mobility, mode integration, Cities.Multimodal, Indicators, success factors, modal share, car ownership ratio, mobility points, user perception, transferability.
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WHAT IS THE MOST EFFICIENT WAY FOR FIFTY PEOPLE TO GET TO WORK?

A. 

B. 

SINGER

Source: Singer (n.y.):
https://i.pinimg.com/originals/14/93/79/1493796474b0120526abd8efe1e2e593.gif
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1. Introduction

According to the United Nations Food and Agricultural Organization, UNFAO, the transportation sector is the second highest contributor of global greenhouse gases (GHG), following the energy sector (Ritchie and Rosie 2018). Over the last few decades, cities have witnessed an increased dependency on automobiles indicating a ‘less sustainable’ transport culture. This has resulted in a rapid increase of transport related problems (Pojani and Stead 2015). “Continuously increasing traffic […], the finiteness of fossil fuels, challenges posed by climate change and the shift in society’s values require a rethinking of urban mobility strategies” (Luginger 2016). Mobility in the future needs to be sustainable, satisfying the needs of the coming generations, without the over exhaustion of resources. Hence, governments all over the world are targeting sustainability as their main goal for development plans (Miramontes 2018).

“The reduction of vehicle ownership and its share in the modal split are at the core of sustainable transport strategies since single occupied vehicles require by far more space and energy for every passenger kilometre travelled than any other mode of transport” (Miramontes 2018).

In order to achieve this, the trend of car domination needs to be revoked by strengthening public transport (PT) and providing more and better alternatives to private motorized vehicles (PMV). Technological advancements in information and communication industry along with innovative schemes in the vehicular and mobility field have resulted in the emergence of various new services of shared mobility such as car-sharing, bike-sharing and many others (Miramontes et al 2017). By investing in and encouraging these shared modes; having quality PT; and adequate pedestrian and biking infrastructure, cities can successfully provide attractive and efficient alternatives to PMV, promoting multimodality among citizens (Miramontes 2018). A step in this direction has been the implementation of mobility points which can be defined as neighbourhood transport nodes that link various forms of sustainable mobility options, “spatially concentrated and virtually integrated via information platforms and ticketing” (Luginger 2016). Mobility points are an effective approach to multimodality as they provide “efficient integration of multiple mobility services [that
have] the potential to compete against the flexibility and convenience of private cars” (Miramontes et al 2017). Bremen is the pioneer city when it comes to mobility points. However, being a rather new concept, not many studies are conducted on it.

Aided by expert interviews and comprehensive analysis of various mobility point cases, this thesis aims to answer questions to help us gain a clearer picture regarding the factors that should be considered while planning and implementing mobility points to elevate their chances of success and the indicators that can then be used to measure their impact post installation and use. In addition to that, another aspect within the scope of this thesis is the analysis of the mobility point strategies which are to be implemented in the cities of Rostock, Vilnius and Pskov in the near future. This initiative is a part of Cities.Multimodal (CMM), a project closely linked with this thesis, aiming to promote sustainable multimodality in cities via mobility points. Expert interviews regarding the same confirm the hypothesis of the thesis, that a city’s mobility point proposal and its process of implementation depends on its level of multimodality and will hence differ in the three cities targeted in this thesis. Recommendations are provided on the lacking elements of the proposal. A transfer criteria functioning as a checklist of conditions a city needs to achieve while aiming to implement mobility points in the future is also formulated.

The main questions this thesis aims to answer are:

➢ What are the factors that could influence/ directly contribute to the success of mobility points?
➢ Which indicators could be used to assess the impacts of mobility points post its installation and use?
➢ What are the conditions/criteria required in a city for the transfer of mobility points?

The work presented in this thesis is structured into six main chapters followed by the conclusion. The first main chapter, chapter 3, defines the concept of multimodality and sheds light on the developments of new systems in the field of shared mobility promoting multimodality. Cities.Multimodal (CMM), an EU funded project, is also introduced in this chapter. With the main focus of promoting environmentally friendly urban mobility through mobility management and the implementation of pilot mobility points, this project is linked closely with the thesis as
the practicality of the mobility point proposals generated by the partner cities is examined in this thesis. Lastly, aided by the data collected as part of the CMM preparatory works, indicators of multimodality are formulated, which are used to gauge the level of multimodality in the target cities dealt with in chapter 4.

Chapter 4 shows the CMM classification of the partner cities into 3 categories of multimodality on the basis of the indicators formulated in chapter 3.3. Pskov, Vilnius and Rostock, having low, intermediate and high level of multimodality are selected as target cities. Each city is then dealt with, in depth, applying the multimodality indicators, assessing their multimodality status. Additionally, the concept of mobility points as an approach to multimodality is introduced in this chapter, more of which is explained in chapter 5.

Within chapter 6, mobility points in Munich, Bremen and Vienna are selected as main examples of study. Field work was carried out in Bremen to gather more data in addition to data obtained via desk research. In addition to these points, a mobility point in India is documented to investigate the differences/similarities in the characteristics of mobility points based on geographical location. The main aim of this chapter is to evaluate the impacts of these mobility points in their cities, to analyze the planning and implementation factors contributing to their success (chapter 6.6) and to formulate indicators to gauge the impact of mobility points once it has been installed and used (chapter 6.7).

In chapter 7, the planned strategies/proposals for the future mobility points, as decided by the experts of the cities of Pskov, Vilnius and Rostock are presented. This chapter relies strongly on expert interviews, as the execution of these points is to be carried out after the duration of this thesis. Analysis of the expert mobility point strategies is carried on the basis of the planning and implementation success factors (PISF) formulated in chapter 6.6 followed by the formation of a transfer criteria for cities planning the future implementation of mobility points, in chapter 8.

To conclude this thesis, chapter 9 provides a condensed overview of the work presented in this thesis, its limitations and scope for further research.
NO EXIT © Andy Singer

AUTOMOBILES:

THE MYTH

THE REALITY

Source: Singer (n.y.)
https://www.pinterest.de/pin/49891508351073587/
2. Methodology

The following flowchart depicted in Figure 1 presents the basic workflow and scope of this thesis.

**Figure 1: Thesis scope**

Source: Own image

Chapters 3, 5 & 6, exploring multimodality and mobility points, depend heavily on desk research, literature reviews and secondary sources of information. A wide range of academic journals, research papers, newspapers and magazines contributed to the data collection, throwing light on the concepts of multimodality and mobility points. Out of the three selected mobility point case studies, Bremen was selected for field study owing to its superiority in the field of mobility points, being a pioneer city. PISF and indicators measuring the impact of the mobility points were formulated in Chapter 6.6 & 6.7 after the careful analysis of evaluation studies of the selected cases, present in various scientific research papers, newspaper articles and internet research. Interviews with mobility point experts, Michael Glotz Richter, Rebecca Karbaumer and Montserrat Miramontes aided in providing more clarity to the concept of mobility points and the factors that drive their success.

Owing to the inability of being able to visit the target cities of Pskov, Vilnius and Rostock for fieldwork within the time span of the thesis, the data used in chapter 4 relied to a great deal on surveys and interviews carried out as part of CMM, playing...
the role of the primary source of information much needed for the formulation of multimodality indicators (chapters 3.3) and pilot area data (chapter 7). As per the working of CMM, indicators of multimodality helped to classify its 10 partner cities into categories of multimodality. Pskov, Vilnius and Rostock based on their level of multimodality, explored in chapters 4.3, 4.4 and 4.5, are classified as Start-up, Scale-up and Lighthouse cities respectively. One limitation to this method of categorization is, however, due to its relative comparison within a small sample size of 10 cities. This does not necessarily mean that cities falling in the lighthouse category have achieved the pinnacle of multimodality, but simply signifies its multimodal superiority within the remaining CMM cities. If a sample of larger than 10 cities is taken, the categorization may be different.

Expert interviews carried out personally and on Skype formed the basis of chapter 7, as the mobility point proposals in Pskov, Vilnius and Rostock are to be materialized only after the duration of the thesis. These expert interviews will pave the way for their success analysis (based on PISF formulated in chapter 6.6) and function as the backbone in the formation of the transfer criteria (chapter 8).

2.1 Expert Interviews

Expert interviews were carried out in conjunction with data collection and literature reviews. One CMM expert from each of the selected target cities was interviewed. CMM, as explained in chapter 3.2, terminates in 2020 with the execution of a strategically developed mobility point in pilot areas of each of the partner cities. At present, this project is in the stage of developing its mobility point proposals. Hence these interviews serve the purpose of data collection regarding the planned mobility point proposals in Vilnius and Rostock. Experts in the field of mobility, Kristina Kobyz from Pskov, Kristina Gauce from Vilnius and Lisa Wiechmann form Rostock, were asked about their mobility point strategy; and the challenges, barriers and drivers that led them to the strategy. Pskov however will not be implementing a mobility point as part of the CMM project, and hence the interview conducted with the Pskov expert, sheds light on the potentials and conditions that Pskov needs to develop for the implementation of mobility points in the future. These strategies, after a success analysis, also aid in the formation of a transfer criteria for cities planning their future mobility points.

Interviews were conducted with the main aim of gaining answers to the following:
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- Concept of mobility point with respect to the city
- Factors and drivers contributing to the formation of the proposal
- Barriers to the implementation of the proposal
- Inspiration from mobility points in other cities
- Targeted user group
- Main issue addressed by the proposal
- Qualitative/quantitative objectives
- Transferability of the proposal to other areas
- Future plans of the city in terms of multimodality

For Pskov, in addition to most of the above questions, the interview also tried to dig into the following areas:
- Necessary conditions required for mobility point implementation
- Barriers in planning mobility points
- Existing drivers aiding future implementation

2.2 Success rating of the mobility point proposal

In order to determine the possible success of the mobility point proposals developed by Rostock and Vilnius, they will be assessed on the basis of the PISF derived in chapter 6.6 after carefully analyzing the evaluation studies of the selected mobility points in Munich, Bremen and Vienna. Table 1, can be used as an example to assess the success of the mobility point proposals.

Table 1: An example of the mobility point proposal analysis

<table>
<thead>
<tr>
<th>No</th>
<th>Planning &amp; Implementation success factor(PISF)</th>
<th>City 1</th>
<th>Y/N</th>
<th>City 2</th>
<th>Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PISF1 (Does City 1’s proposal fulfill PISF 1?)</td>
<td>Y</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PISF2 (Does City 1’s proposal fulfill PISF 2?)</td>
<td>Y</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PISF3 (Does City 1’s proposal fulfill PISF 3?)</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PISF4 (Does City 1’s proposal fulfill PISF 4?)</td>
<td>N</td>
<td></td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PISF5 (Does City 1’s proposal fulfill PISF 5?)</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
Inspired by the rating system from Luginger 2016, the green cells represent fulfillment of the PISF criteria by the city’s proposal, and the red cells represent a failure in that criteria. Hence we see in the example above, City 1 with 7 green cells fulfills 7 out of the 9 success categories, scoring 7, whereas city 2 only fulfills 4 of the 9 categories, scoring 4.

With the below mentioned formula, the % bracket it falls into is calculated:

\[
\% \text{ success} = \left( \frac{\text{Total No. of green cells}}{\text{Total no. of success factors}} \right) \times 100
\]

Table 2: Score bracket and success category

<table>
<thead>
<tr>
<th>Score</th>
<th>Bracket</th>
<th>Success category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0%</td>
<td>No chance of success</td>
</tr>
<tr>
<td>1, 2 &amp; 3</td>
<td>1%-34%</td>
<td>Low bracket of success</td>
</tr>
<tr>
<td>4, 5 &amp; 6</td>
<td>35%-67%</td>
<td>Median bracket of success</td>
</tr>
<tr>
<td>7, 8 &amp; 9</td>
<td>68%-100%</td>
<td>High bracket of success</td>
</tr>
</tbody>
</table>

Source: Own data

In the case of the example provided above, and drawing from Table 2 we see City 1 with a score of 7 falls into the fourth category, “high bracket of success”, whereas City 2, with a score of 4 is in the “median bracket of success”. Recommendations are then provided to City 1 and City 2 on their respective shortcomings. This method of analysis is however limited to the data obtained during the expert interviews and largely depended on the stage of development each city’s proposal had attained at that time.
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Source: Singer (n.y.)
3. Multimodality

“[Multimodality] refers to the transport of goods or passengers using different, effectively integrated transportation options.” (Goal Systems n.y.). As Klinger (2017) also states, it is the combination of different modes of transport to encourage sustainable urban mobility. For cities to provide a transportation system that can adapt to its changing “social and geographical conditions” a transit to multimodality, integrating various sustainable modes is necessary (Goal Systems n.y.).

“Multimodality not only means the existence of more and better alternate options [than the private car], but having to deal with all these alternatives at the same time” (Gallotti and Barthelemy 2014).

By linking modes of shared mobility (chapter 3.1), with existing PT options, experts in the field of transport and mobility aim to generate attractive substitutes to PMV. The mobility culture of a city greatly affects its citizens’ inclination towards or against multimodality. Depending on the city's car-dependence, PT efficiency and bike-friendliness, its citizens are either mono-modal (using only one mode of transport) or multimodal (Klinger 2017). PMV owners, in most cases tend to be mono-modal, considering PMV to answer all their mobility needs. To make the choice between PT and PMV is a complex one, depending on various factors. PMV are a preferred choice of many individuals because of the comfort, freedom, pleasure and “social status boost” it provides them. In many cultures, owning a house and a car is still a milestone that many strive to achieve (Chowdhury and Ceder 2016). However, resulting from the growing consciousness regarding green energy and sustainable modes of transport amongst individuals, multimodality is seen as a growing trend in many cities (Klinger 2017).

Klinger’s studies on multimodality demographics in the European context show a higher percentage of multimodality among women as compared to men, owing to their complex activity patterns. Men on the other hand appear to be more mono-modal with PMV being their first resort. Multimodality is also high among young adults and senior citizens, while car dependence among working class men is strikingly prominent. However, one key finding is that people have the tendency to shift from a mono-modal to a multimodal lifestyle upon relocating from auto oriented cities to PT/ bike friendly cities (Klinger 2017). This is highly telling of the fact that a city’s culture can alter its citizens’ choices and notions regarding mobility. More the
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city’s dependence on sustainable modes of transport, more sustainable is its citizens’ travel behaviour. CMM, discussed in the coming chapters is one such project working in the direction of altering cities’ transport culture to a more sustainable one.

The following chapter deals with different shared mobility systems providing better alternatives to PMV strengthening multimodality in cities.

3.1 Shared mobility options

Innovations in information technology and sharing economy (the concept revolving around the renting and sharing of services and goods instead of buying), have led to the development of a large number of new business and the tremendous expansion of the transportation industry. Individuals are no longer bounded by the schedules, routes and stops of PT but can now rent bikes and cars for durations of their convenience, or even have groceries delivered to their doorstep all using their smart phones and apps over the internet (Shaheen et al. 2015).

Shared mobility is defined as those “transportation services and resources that are shared among users, either concurrently or one after another” (Shared-use Mobility centre n.y.). Shaheen et al (2015) also define shared mobility as the “shared use of a vehicle, bicycle or other low-speed modes that [enable] users to have a short term access to transportation modes on an ‘as-needed’ basis”. In addition to providing more mobility options to users who cannot afford a personal vehicle and by combating first/last mile problems, shared mobility is also a step towards mitigating pollution caused by the excessive use of PMV by reducing traffic congestion (Shared-use Mobility centre n.y.). The most popular modes of shared mobility, and the ones within the scope of this thesis are car-sharing, bike-sharing, carpooling/ride sharing and taxis.

3.1.1 Car-sharing

The system of car-sharing is one in which an individual is granted access to an automobile on an as per need basis (Shared-use Mobility centre n.y.). It runs on the simple principle of individuals being able to enjoy the perks and convenience of a private car without the responsibilities of owning one. The cost of buying the car and its maintenance can be completely avoided. Given the statistic that a privately owned vehicle is parked 95% of the time, car-sharing is the right solution to achieve proper utilization of street space and automobile use (Shaheen et al 2015).
Users have to register with a car-sharing operator of their choice as it is membership based. This membership then grants them the privilege to use the vehicles provided by operators 24 hours, 7 days a week. Since the billing method is on a ‘pay-as-you-drive” system, users are charged on a time or kilometers-driven basis. Fuel and maintenance cost is included, however insurance is an optional feature that can be included upon extra payment. Users then receive a monthly bill, charging them for their exact usage. These car-sharing vehicles are dispersed all around the city, in close proximity to living areas and other busy zones (Luginger 2016). There are various forms of car-sharing.

Station based/ Round-trip car-sharing

This system is the most common form of car-sharing and as the name suggests, users are required to return the car to the exact same location or station the car was borrowed from (Shared-use Mobility centre n.y.). It is the oldest form of car-sharing and offers less flexibility in comparison to the next system, free floating/ one-way car-sharing.

Free floating/ one-way car-sharing

This system is a more recent form of car-sharing. Users are allowed to rent a car from one location and drop it off at another after use (Shared-use Mobility centre n.y.) Also known as flexible car-sharing, this system includes the distribution of vehicles in a predefined area and these cars can be parked anywhere within this area. What makes this system flexible is that one doesn’t have to travel all the way to the start location to return the car; and vehicle distribution is done automatically by the users. Slightly more expensive than the station based system of car-sharing, the free floating car-sharing (FFCS) system has gained a lot of popularity. Car manufacturers such as BMW, Citroen, Daimler etc., have also entered into this business, providing their vehicles for FFCS services. Some operators not only provide station based car-sharing or FFCS, but also a mix of both systems (Luginger 2016).

Private/ peer to peer car-sharing

Vehicle owners use this method of car-sharing to “monetize the excess capacity of their vehicles” (Shared-use Mobility centre n.y.). This type of car-sharing, also known as peer-to-peer car-sharing is one in which private vehicle owners rent their cars to car-sharing users by advertising their own personal vehicle as a car-
sharing one when not in use by themselves. Apps and websites act as brokering platforms for car owners and car-sharers to work together for a commission charge. These platforms also provide insurance for the cars during their rental period. Depending on the condition of the car to be rented, the pricing is determined. Contrary to the other systems of car-sharing, where stations and vehicles are left unattended, this method has some personal element to it as it requires the vehicle to be handed over to the car sharer in person (Luginger 2016).

3.1.2 Bike-sharing

Bike-sharing, very similar to car-sharing, provides users with the opportunity to rent bikes on an as per need basis from a public or private fleet at stations, well distributed in urban areas. Unlike traditional bike rental stations, bike-sharing stations are unattended and accessible to bike-sharers at any time of the day providing them with an option for 24/7 mobility (Shaheen et al 2015). Established in Amsterdam in 1965, bike-sharing has gained widespread popularity over the years (Shared-use Mobility centre n.y.).

Bike-sharing is a more sustainable and greener alternative to PMV than car-sharing as it is an emission-free mode of transport with greater health and environmental benefits. This system increases its attractiveness to its users by eliminating maintenance costs and theft concerns that comes with owning a bike. Bike-sharing systems usually charge per half hour/ hour (some operators also provide the first 30 minutes free) and are often located near PT stops. These systems help in promoting the use of PT and also make PT more attractive by “[extending] the catchment areas of PT stations beyond walking distances” (Luginger 2016). “The ultimate goal of public bike-sharing is to expand and integrate cycling into transportation systems, [making it a] daily transportation mode for commuting, personal trips, and recreation” (Shared-use Mobility centre n.y.).

Bike-sharing systems also have different options to choose from. They can be dock-based (station based), dock-less (free floating), closed campus and peer to peer (private). Dock-based, dock-less and peer to peer systems for bike-sharing run on the same principle as those for car-sharing mentioned earlier. Closed campus bike-sharing is a new system being popularly used in large university campuses, where the bike fleet can only be rented and used within the campus (Shaheen et al
2015). Bike-sharing operators in Europe are also incorporating Pedal Electric Cycles, known as pedelecs. These bikes, unlike e-bikes, compliment human effort with their electric power, adding to it instead of replacing it. The maximum speed that these bikes can achieve is 25km/hour; hence there are no license or number plate requirements (Luginger 2016).

Another fairly new and fast growing shared mobility system is the scooter-sharing system. Similar to bike-sharing, scooters are rented as per need, by the minute or hour. These are two wheeled electric scooters that are ridden while standing and follow the dock-less system of parking (Shared-use Mobility centre n.y.).

3.1.3 Carpooling / ridesharing
Carpooling or ride sharing is usually a non-commercial method of car-sharing, where travellers, familiar or unfamiliar, are grouped into a PMV for commuting, based on their common destination. Travel costs are borne by all passengers (Shared-use Mobility centre n.y.). The time, origin and destination of the trip are decided by the driver and the trip is carried out even if there aren't other passengers or the full capacity of the car is not reached. These trips can either be organized privately among friends or online via carpooling platforms. The environmental impact of carpooling systems is highly positive and direct, owing to the logic that when the maximum capacity of a car is reached; fewer cars are active on the street, lowering traffic congestion and emission levels (Luginger 2016).

3.1.4 Taxis
The taxi service is one which has been around for a long time. It works on the principle of payment per kilometre, transporting individuals or groups of related people, in a vehicle that comes with a professional driver. The time and destination of the trip is decided by the passenger, and unlike the carpooling/ride sharing system in which the time of travel and destination depends on the driver, taxi trips will not be carried out without a passenger. Shared taxi is another system, in which a passenger is taken on a “semi-fixed” route to his destination and other passengers are picked and dropped off along the route. Taxi service although slightly more expensive in comparison to the other mentioned shared mobility modes, helps to “enlarge PT offers in time and space, especially at night or in areas, where PT is not as efficient” (Luginger 2016)
The following chapter throws light on the project, CMM, which works towards the strengthening of multimodality in cities; changing their mobility pattern to a more sustainable one by encouraging the use of shared mobility modes and providing citizens with better alternatives to PMV.

3.2 Cities.Multimodal

A measure in the direction of augmenting multimodality in cities is the ongoing Cities.Multimodal. CMM is a project with a focus on multimodality and mobility management that began late 2017, funded by the INTERREG Baltic Sea Region Programme 2014-2020. The 10 partner Baltic cities (lead partner Rostock in Germany, Gdansk in Poland, Vilnius in Lithuania, Guldborgsund in Denmark, Kalmar in Sweden, Aarhus in Denmark, Karlskrona in Sweden, Pskov in Russia, Riga in Latvia and Tartu in Estonia) aim to provide its citizens with a sustainable mobility alternative to PMV by encouraging the use of PT, walking, cycling, shared modes of mobility (bike and car-sharing) and also by combining all the above mentioned modes (CMM n.y. a). It is interesting to note that all of the above mentioned cities are different in their mobility habits and have varying degrees of multimodality. CMM (n.y. a) defines multimodality as

“a combination of different sustainable mobility modes for one travel purpose or the availability of different modes to choose for the same purpose. [...] to provide different sustainable options to citizens and visitors in the city, that are as comfortable, easy and smooth to use (or even better!) than a private car.”

Keeping that definition in mind, the partner cities highlight the benefits of using sustainable and green mobility options through awareness campaigns and capacity building workshops (CMM n.y. a). Pilot areas are defined by the each of the cities, and different measures are implemented targeting multimodality and mobility management, with the hope of creating role model cities or best practice solutions for other cities (CMM n.y. b). The pilot areas in each city are selected from within the dense inner city areas of mixed land use (residential, commercial and recreational) thus offering a higher need and scope for sustainable mobility options (CMM n.y. b). The end result of the project will culminate into a mobility point in the pilot areas of each city which we discuss in depth in the following chapters.
3.3 Indicators of multimodality

When talking about increasing or encouraging multimodality in cities, the assessment of its current mobility situation is of utmost importance. Hence the question of gauging multimodality arises. Certain mobility characteristics or indicators help us access how multimodal the city is and how rigid/open it is to adapting multimodal strategies. In the initial phase of the CMM, the 10 partner cities were provided with questionnaires (see A1: Pskov CMM data, A2: Vilnius CMM data & A3: Rostock CMM data) regarding the general city data - area, population, climate etc.; its transport infrastructure - PT, biking infrastructure etc.; mobility management - presence of mobility management plans, programs, strategies etc.; and user perception of its transport system - quality of service, spatial accessibility, economic accessibility, safety etc. Data was collected by the partner cities via desktop research, expert interviews and qualitative surveys with the aim of assessing the status quo and framework conditions of multimodal transport and mobility management in selected city quarters. This exercise enabled a comparative study across cities, identifying strengths and weaknesses to tailor measures specific to each city’s requirement.

Out of the data gathered, the indicators depicted in Figure 2, were picked for the purpose of this thesis, to assess the degree of multimodality in cities.
A TALE OF THREE CITIES:
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

Figure 2: Indicators of multimodality

Source: Own graphics, based on CMM
(See A1: Pskov CMM data, A2: Vilnius CMM data & A3: Rostock CMM data)
One of the most important indicators assessing multimodality could be the **modal share** or modal split of any city. “Modal split represents the ratio of different transport modes in the total journey from the origin to the destination” (Matulin et al 2009). This ratio is highly representative of a city’s mobility pattern. It can help transport planners identify the car-dependence or bike-friendliness of a city and tailor measures towards sustainable transport. An ideal city would have a higher share of green and sustainable modes as compared to PMV, indicating sustainable multimodality, hence many cities are now setting future targets to increase the share of walking, cycling and PT calling for a modal shift from PMV. Finland, for example, launched a new Energy and Climate Strategy, under which it aims to achieve 30% share of biking and walking trips by 2030 (Baltatzi 2016). Vienna has also set a target for 2025 under the Urban Development Plan STEP 2025, aiming to achieve a combined 80% share of all trips by walking, biking and sustainable modes, leaving a mere 20% by PMV (PASTA 2017).

In order to achieve a sustainable modal shift, the city has to provide its citizens with adequate sustainable mobility options. As the term itself suggests, “multimodality”, depends greatly on the availability of options available for use. **Public transportation** is pivotal in this context. The number of PT modes, number of lines per mode (day and night) and the network density of PT play a major role in steering the public into choosing PT over PMV. It is understood that in order for public transportation to be able to complete with the comfort of PMV, it has to be cost-efficient, reliable and also ensure good travel experience and travel time (Klinger 2017). The concept of “captivity by choice or force” is an interesting theory shedding light on mode choice. With this approach, Papaioannou and Martinez (2015) explain that all citizens are either captives by force, where they are forced to use private car due to the unavailability of PT in close proximity (same is true for the opposite, where one is forced to use PT because they do not own a private vehicle), or are captives by choice, which are formed due to personal bias in mode choice even when provided with many mode options. Users who are captives to PMV by choice are a challenge when it comes to sustainable mobility as they are harder to ‘win over’ where as PT captives are seen beneficial in terms of sustainable transport planning. Other important aspects are accessibility and connectivity. They define accessibility as the ease in accessing the nearest PT mode, whereas connectivity, which is more specific to a particular trip, is described in terms of speed,
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performance, waiting time and number of changes. The option of intermodal transport stops, where users can conveniently shift not only from one PT mode to another but also from biking or car-sharing to PT is a proven success in increasing the number of PT users. Integration in terms of network, fare and ticketing, information, physical stations and transfers are key factors that ensure multimodality (Chowdhury and Ceder 2016). Another indicator to gauge the added sustainability of PT would be the electrification rate of its public buses.

The level of biking infrastructure in a city speaks volumes of its mobility culture. In order to ascertain cycling as a viable mode of transport and not just for leisure, one of the most effective measures is to undertake physical infrastructural interventions. The provision of bike lanes, clearly marked intersections, bicycle parking, racks/ docks, availability of repair shops and bicycle pumps are prerequisites for any city to improve its modal share of cycling (Adam et al 2018). With the advancement of technology, a strategy of popularizing biking in cities is bike-sharing. The growing number of “bike and ride” facilities, where riders are able to park their bikes in secure locations and continue the rest of their trip via other modes; bike-sharing companies and stations (free floating and stationary); and bike-sharing users are positive indicators of growing sustainable multimodality (Jäppinen et al 2013).

In relation to PMV, car ownership ratio, which is defined as the number of cars per 1000 inhabitants is also important indicator. A strategy of growing popularity these days with the aim to reduce this figure, while also reducing traffic congestion and pollution is car-sharing. According to Baptista et al (2014), by lowering the number of vehicles per capita, reducing the strain of parking space and by complementing PT, car-sharing is a positive step in the direction to achieve efficient mobility. Their study also proved that the impact of reducing car ownership by car-sharing is at a ratio of 1 to 6. In Bremen for example, studies by Cambio, a car-sharing company, showed that out of 50% car-sharers who were also PMV owners, 37% discarded their PMV in favour of car-sharing (Glotz-Richter 2015). Hence, as in the case of bike-sharing, the number of “park and ride” facilities, car-sharing companies and stations along with car electrification rate is a good indicator of multimodality.
**Government policies and strategies** can have a positive impact on its citizens. There are 2 types of policies that governments can implement to encourage multimodality and popularize the use of PT: ‘push’ and ‘pull’. Push policy is where governments employ strategies to reduce the attractiveness of PMV, whereas pull strategies are those in which the attractiveness of PT is increased and its use encouraged. These policies can be legal (parking fees, speed restrictions etc.), information and educational (advertising campaigns), economic (toll booths, car and fuel tax etc.) and physical (separate bus lanes, better land use planning etc.). By integrating multimodal information, ticketing and tariff, citizens are provided with better experiences. Websites and apps offer real time information (RTI) regarding timing and possible delays for the different PT modes. In order for fare and ticketing to be integrated, it needs to satisfy two criteria, first that there is no additional cost for transfers and secondly that all modes operate on a single ticketing system. 40% increase in PT ridership was observed in Madrid after the introduction of its integrated ticketing system (Chowdhury and Ceder 2016). Some cities also provide PT users discounted rates while subscribing to car or bike-sharing, hence increasing user ship. These policies and strategies are indicators on how multimodal a city is, or aims to be.

Lastly, we discuss **user perception and awareness** about multimodality as one of the indicators towards achieving multimodality. Users need to realize the need and benefits of a sustainable modal shift. By increasing awareness amongst citizens about the benefits of using PT, biking and walking, a sustainable modal shift can be achieved. Uneasiness, fear and insecurity of personal safety fuels negative perceptions in the minds of users regarding the selection of PT as their choice of mode. According to studies in UK, an additional of 10.5% rail trips could be generated if the safety concerns of its passengers are addressed. Thoughtful architectural planning providing clear line of sight, effective lighting, emergency phone booths, CCTV systems and security personnel at the stations can adversely alter the sense of insecurity. Presence of sheltered seating at transfer spots also helps to enrich the quality of experience of its users (Chowdhury and Ceder 2016).

The indicators of multimodality are listed below in a concise manner:

- PT and travel behaviour
  - Modal share
A TALE OF THREE CITIES:
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- Number of PT modes
- Characteristics of each mode (number of lines, length of lanes etc, electrification rate)
- Network density of public transportation
- Number of intermodal stations
- Car ownership ratio

➢ Biking conditions
- Characteristics of biking infrastructure (length of bike lanes, number of racks and docks)
- Number of bike-sharing providers
- Number of bike-sharing stations

➢ Car-sharing
- Number of car-sharing providers
- Number of car-sharing stations
- Electrification rate of fleet

➢ Administrative measures
- Number of multimodality related programmes and awareness campaigns
- Number of apps and websites providing multimodal information
- Provision of integrated ticketing system

➢ User awareness and perception
- Awareness of multimodality amongst citizens
- User willingness to switch to green modes
- User satisfaction with green modes
- User perception of safety, spatial accessibility and economic accessibility of green modes

In the coming chapter, we discuss the target cities of Pskov, Vilnius and Rostock, looking into their multimodality levels based on these indicators.
How do you do this every day?

Lady, I do this twice a day! Unlike you, I don't have any other option.

And I can't just dawdle about on a bicycle all day like you.

I have to work.

Um, I'm going to work too. But I don't have time to dawdle about in a traffic jam all day.

Source: Refined and Rugged (2017)
https://refinedrugged.com/2017/12/15/bike-commuting-7-facts-25-days/
4. Target cities

4.1 Category formulation and Selection criteria

In order to assess the level of multimodality in the CMM partner cities, careful analysis of these cities and their mobility status were carried out. On the basis of the indicators measuring multimodality in chapter 3.3, each of these cities was grouped into categories. The three multimodality categories the cities are divided into are:

- **Startup cities - cities of poor multimodality level:**
  Pskov and Guldborgsund

- **Scale up cities - cities of intermediate multimodality level:**
  Kalmar, Tartu, Vilnius, Aarhus and Riga

- **Lighthouse cities - cities of good multimodality level:**
  Rostock and Gdansk

For deeper understanding of the multimodality status in each of the categories, one city each is selected for the purpose of this thesis. The cities of Pskov, Vilnius and Rostock (show in Figure 3) are selected from the start-up, scale-up and lighthouse categories respectively. Selection of these cities, in context of this thesis largely depended on data availability and co-operation on the part of the city experts to be interviewed.

**Figure 3: Target cities, Rostock (red), Vilnius (orange) and Pskov (yellow)**

Source: Google maps 2018

The three selected cities are dealt with in depth in the following sub chapters, assessing and comparing their mobility status.
4.2 Indicator comparison amongst the categories

Table 3 displays the multimodality comparison amongst the three cities based on the indicators in chapter 3.3.

**Table 3: Indicator comparison among target cities**

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Pskov</th>
<th>Vilnius</th>
<th>Rostock</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modal Share</td>
<td>Car: 30.06%</td>
<td>Car: 48.3%</td>
<td>Car: 36.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taxi: 2.22%</td>
<td>Car-sharing: 0.3%</td>
<td>PT: 17.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PT (Bus): 37.08%</td>
<td>PT: 25.4%</td>
<td>Biking: 14.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biking: 4.68%</td>
<td>Biking: 1.5%</td>
<td>Walking: 24.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walking: 22.46%</td>
<td>Walking: 24.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other: 3.51%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No. of modes</td>
<td>1 Mode</td>
<td>2 Modes</td>
<td>5 Modes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus</td>
<td>Bus</td>
<td>Tram, City bus, Regional bus, Ferries, City train</td>
</tr>
<tr>
<td>3</td>
<td>Characteristics of public bus system</td>
<td>Lines: 9</td>
<td>Lines: 116 (6 fast lines)</td>
<td>Lines: 24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus lanes: 162.4kms</td>
<td>Bus lanes: 2128kms</td>
<td>Bus lanes: 320kms</td>
</tr>
<tr>
<td>4</td>
<td>Bus electrification rate</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>5</td>
<td>Characteristics of trolley bus system</td>
<td>No trolley bus system</td>
<td>Lines: 18</td>
<td>No trolley bus system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trolley bus Lanes: 408kms</td>
<td>Trolley bus Lanes: 408kms</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Characteristics of tram system</td>
<td>No tram system</td>
<td>No tram system</td>
<td>Lines: 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tram lanes: 76kms</td>
<td></td>
<td>Tram lanes: 76kms</td>
</tr>
<tr>
<td>7</td>
<td>Network density</td>
<td>N.A</td>
<td>0.82</td>
<td>N.A.</td>
</tr>
<tr>
<td>8</td>
<td>Bike lanes</td>
<td>6.6kms</td>
<td>63kms</td>
<td>192.6kms</td>
</tr>
<tr>
<td>9</td>
<td>Parking stands</td>
<td>No</td>
<td>Around 2000</td>
<td>3861 stands</td>
</tr>
</tbody>
</table>
## A TALE OF THREE CITIES:
*Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points*

### Bike-sharing operators
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>No</td>
<td>1 Provider</td>
<td>2 providers (1 public, 1 private).</td>
</tr>
</tbody>
</table>

### Electrification rate
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>0%</td>
<td>0%</td>
<td>75%</td>
</tr>
</tbody>
</table>

### Car

#### Car ownership rate
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>662/1000 inhabitant</td>
<td>443/1000 inhabitants</td>
<td>398/1000 inhabitants</td>
</tr>
</tbody>
</table>

#### Car-sharing operators
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>No</td>
<td>2 operators CityBee &amp; Spark</td>
<td>3 private providers Yourcars, Flinkster &amp; Greenwheels</td>
</tr>
</tbody>
</table>

#### Electrification rate
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0%</td>
<td>Citybee: 1.4% Spark: 100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### System Integration

#### Integrated ticketing system
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>No</td>
<td>1 ticket, integrating bus and trolley bus.</td>
<td>1 ticket, integrating all modes</td>
</tr>
</tbody>
</table>

#### Integrated information system (websites/apps)
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>No</td>
<td>2 options. 1 of which also integrates car-sharing with PT</td>
<td>3 options. Integrating only PT (no bike and car-sharing information)</td>
</tr>
</tbody>
</table>

#### Integrated stations
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>No</td>
<td>4 intermodal stations, including train connection at central train station.</td>
<td>Many intermodal stations among different PT modes. None between PT and sharing modes.</td>
</tr>
</tbody>
</table>

### Actions by authorities

#### Existing policies addressing multimodality
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>A few schemes with a focus of infrastructural developments, transport and logistics activities in the cities.</td>
<td>SUMP projects in Vilnius have guidelines addressing multimodality.</td>
<td>Mobility Plan Future (MOPZ) to create multimodal hubs/mobility points integrating PT with shared modes of transport.</td>
</tr>
</tbody>
</table>

### User awareness and perception (based on surveys)

#### Awareness of sustainable mobility and multimodality
<table>
<thead>
<tr>
<th></th>
<th>Rostock</th>
<th>Vilnius</th>
<th>Pskov</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>60% agree that using bikes and PT is more sustainable and can fight traffic jams</td>
<td>9% have reduced car usage, 9% have increased PT use, 8% have increase bike usage, for safety, health and environmental issues</td>
<td>Around 38% of the surveyees use bikes for environmental reasons.</td>
</tr>
</tbody>
</table>
### Target cities

<table>
<thead>
<tr>
<th>#</th>
<th>Perception of quality of multimodal travel options</th>
<th>Perception of spatial accessibility of multimodal travel options</th>
<th>Perception of economic accessibility of multimodal travel options</th>
<th>Perception of safety while using multimodal travel options</th>
<th>Willingness for a sustainable modal shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>30.5 % are very satisfied. 56.0 % are satisfied whereas 7.4 % are dissatisfied &amp; 0.5% very dissatisfied with PT. Majority are dissatisfied with cycling culture</td>
<td>On a scale of 1-5, Pskov got an above average score of 3.04 for its convenience in location of PT stops and a low score of 1.73 for cycling infrastructure</td>
<td>On a scale of 1-5, Pskov got an average of 2.67 for fares and pricing.</td>
<td>On a scale of 1-5 for safety, Pskov got an above average score of 3.15 for PT and a below average score of 2 for biking</td>
<td>36.14% willing to adopt biking if provided with well-developed cycling infrastructure. 33.92% willing to use PT if it was well developed.</td>
</tr>
<tr>
<td></td>
<td>On a scale of 1-10, respondents marked the overall quality of PT in Vilnius to be 7.7</td>
<td>N.A.</td>
<td>On a scale of 1-10, respondents rated the whole experience of ticketing and purchasing to be 9.4.</td>
<td>45% respondents feel very safe to rather safe, with only 8% feeling rather unsafe to very unsafe.</td>
<td>52% respondents do not wish to change their existing travel behaviour. 34% however wish to walk more.</td>
</tr>
<tr>
<td></td>
<td>Almost 87% of the surveyees are satisfied with PT</td>
<td>N.A.</td>
<td>PT in Rostock is quite expensive (see A3)</td>
<td>N.A.</td>
<td>8% willing to reduce car use, 20% aim to increase bike usage whereas majority respondents do not want to reduce their car usage</td>
</tr>
</tbody>
</table>

Source: CMM data  
(See A1: Pskov CMM data, A2: Vilnius CMM data & A3: Rostock CMM data)

In the following sub chapters we dig deeper into each city, studying its background, transport characteristics and analyzing the factors that could function as drivers or barriers of multimodality.
A TALE OF THREE CITIES:  
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4.3 Start-up city, Pskov

4.3.1 Background

Pskov (shown in Figure 4) is a small city in Russia, measuring 95.6km$^2$. It has a population of 209,840 and has seen a gradual population growth of 0.6% over the last few years. It is densely populated with about 2195 inhabitants/km$^2$, having one of the highest population densities amongst the 10 partner cities. Unemployment rate in Pskov is a negligible 0.69% having a bulk of its workforce employed in manufacturing industries, trade industries, public administration, education and medicine (See A1: Pskov CMM data).

Figure 4: Map showing the city of Pskov, Russia

Source: Google maps 2018

4.3.2 Multimodality in Pskov

Pskov is characterized in the Start-up city category of multimodality. A closer look at Table 3 is very telling of the fact that Pskov strongly lacks multimodality.

Surveys taken as a part of CMM’s preparatory analysis, gathering information on user perception, travel pattern and behavior shows that on a scale of 1-10, majority of the 858 surveyed ranked their satisfaction with the PT in their city to be 5. Although about 35% of the surveyees use buses every day, they wish for an improvement in the system, which could be brought about by allocating separate bus lanes on the road for smooth movement of traffic, locating bus stops more conveniently and by increasing the number of buses per line to increase frequency (at present, every 8-25 minutes). As Pskov lacks websites and apps providing
information on the bus routes and schedules, the provision of information boards with RTI, at stops at points of interest can greatly enrich user experience. The PT system in Pskov, consisting of 9 bus lines, is the only other alternative means to PMV; thus it is not surprising to see the city’s strong car dependence. Hence Pskov having such a high car ownership rate (not only the highest among the three target cities selected for this thesis, but also amongst all the CMM partner cities) is self-explanatory. Because of the high volume of private cars on the street, and Pskov’s only means of PT also being road based, road congestion, traffic jams and parking stress are a serious issues in Pskov (see A1: Pskov CMM data).

In spite of having high car dependence and car ownership rate, it is astonishing to note that there are no car-sharing operators or park and ride stations in Pskov. Upon interviewing Kristina Kobyz, mobility expert from Pskov, the reason for this was made known. Pskov, as she says, is considered to be a small city by Russian standards and many citizens suffer with the notion that car-sharing systems would only be successful in bigger cities (see A8: Pskov interview). In areas with high stress on parking, owning a car can be a great inconvenience. By introducing various push and pull strategies, such as paid parking and car free zones etc., authorities in Pskov can tackle the earlier mentioned traffic related issues, embracing efficient mobility. Baptista et al (2014) show us in their studies, that on an average every car-sharing vehicle replaces a minimum of 6 private cars off the street and hence car-sharing could greatly reduce the car ownership rate in Pskov. Survey results show a high level of awareness amongst citizens on the need to shift to more sustainable modes of transport and if provided with a well-developed PT system, 33.92% of the surveyees would be ready to switch from PMV to PT. A similar figure was observed where 36.14% were ready to shift to biking from their PMV if the city was retrofitted with biking infrastructure. This potential shift from PMV to PT and biking could positively impact the issue of traffic congestion in the city (see A1: Pskov CMM data).

One realizes the absence of any kind of proper infrastructure for cyclists such as bike lanes, racks and docks, as a result of which, cycling has an obvious low modal share of 5.6%. Pskov’s 6.6kms of biking lanes are all concentrated within a single neighbourhood, in the pilot area, discussed in chapter 7.3.1, and is a result of the Pskov city development strategy. Surveys show that 41.52% of the surveyees do not ride a bike, while 33% did not even have a single bike in their household. 50% responded that their reason for using bikes is purely for the leisure. Infrastructural
measures are mandatory to recognize biking as a mode of transport and not just for leisure. Despite various barriers, such as the average annual weather in Pskov being as low as 5.9 Celsius, the feeling of insecurity while parking their personal bikes and the fact that certain sections of the population identify private cars as a status symbol, 11.57% surveyees would use bikes as their main mode of transport throughout the year, and 43.63% would use bikes as their main mode, seasonally, if provided with good biking infrastructure. The importance of physical infrastructural interventions by planners and authorities in charge is highlighted here. The most popular suggestion provided by surveyees on the improvement of biking conditions in Pskov after the provision of more bike lanes was to implement a connected network of bike paths around the city and to provide clearly demarcated lanes separate for bikers and pedestrians. Provision of bike racks and also instilling a sense of security to the bikers by illuminating the bike paths was the second most popular answer (see A1: Pskov CMM data).

While we see public awareness and willingness to shift to a more sustainable travel behavior as a big driver of multimodality in Pskov, there are quite a few barriers as well. The main barrier to achieving multimodality in Pskov is not only the absence of proper infrastructure for pedestrians, bikers and PT, but also the absence of more transport options for users to choose from, and stricter legislations for environment protection (see A1: Pskov CMM data).

4.4 Scale-up city, Vilnius

4.4.1 Background

Vilnius (shown in Figure 5), the capital city of Lithuania, with a population of 617,000 and area of 401km² is the largest city in the country. It has a population density of 1,538.6 inhabitants/km² at present with a tendency to increase. Based on land use the city is divided into the central zone, consisting of the old town and the city centre, the middle zone, having dense residential area, industrial districts as well as historical suburb, and the peripheral zone consisting of reserve territories for future urbanization. Due to its zoning, wherein workplace areas are located differently from residential areas, a large number of trips are generated daily. Vilnius is more than 4 times the size of Pskov having about thrice its population. However in terms of
population density, Pskov is 1.4 times denser than Vilnius (see A2: Vilnius CMM data).

**Figure 5: Map showing the city of Vilnius, Lithuania**

![Map showing the city of Vilnius, Lithuania](image)

Source: Google maps 2018

### 4.4.2 Multimodality in Vilnius

The status of multimodality in Vilnius is much more advanced in comparison to Pskov, hence placing it in the category of Scale-up cities. Vilnius provides its citizens with more mobility choices, having two modes of PT- buses and trolleybuses; and bike and car-sharing alternatives. While its citizens are satisfied in general with the public transportation system in Vilnius, there are a few features that require to be improved. Vilnius’ PT provides its users with great experience in terms of ticketing, route timetable presentation, websites and apps providing multimodal information and also punctuality of services. Users also feel safe and secure while riding the PT, as surveys show, however they lack a certain comfort. The PT frequency of trips, working hours, speed and coordination of interconnections, while satisfactory still have room for improvement. Working on these issues could greatly alter the modal share, tipping the scales in the favour of PT (see A2: Vilnius CMM data).

Keeping in mind the insufficient biking infrastructure in Vilnius, having only 63kms of biking lanes and about 2000 bicycle stands in public spaces, for a population of 617,000, it is not surprising to see biking has the poorest share in the modal split, a mere 1.5%, not just among the different modes in Vilnius, but in comparison to all the other participant cities in CMM. In addition to that, there is only 1 bike-sharing operator in Vilnius. Having a better average annual temperature of 6.6 degrees, in comparison to Pskov, and also having bike-sharing facilities, one would
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expect Vilnius to have a stronger biking culture than Pskov, however in reality it is far behind. In order to encourage biking as a viable mode of mobility in Vilnius, and to bring a sustainable modal shift, efforts in the form of physical infrastructural interventions need to be taken (see A2: Vilnius CMM data).

Although PMV make up the largest component (48.6%) of the modal share, higher than in Pskov (30.06%), Vilnius’ car ownership rate, 443 cars per 1000 inhabitants, is lower than that of Pskov (662/1000 inhabitants). One may credit this to the role played by car-sharing in Vilnius. There are two car-sharing operators in Vilnius, one of which, Spark has attained 100% electrification of its cars, a step in the right direction towards attaining sustainable mobility. By introducing car-sharing, the capital city has managed to reduce the number of cars on the street which could have otherwise added to its traffic congestion, keeping in mind that Vilnius’ PT system is also road based (see A2: Vilnius CMM data).

Achieving a desirable level of multimodality in Vilnius may not require as much time and effort as in Pskov. Surveys show that 34% of the respondents are willing to reduce car use by switching to walking and other sustainable modes. In order to enforce multimodality and ease the transition from one mode to another, Vilnius also has 4 intermodal transport stops, linking buses, trolleybuses and also regional trains arriving into the city at the central train station (see A2: Vilnius CMM data).

4.5 Lighthouse city, Rostock

4.5.1 Background

The city of Rostock in Germany, with an area of 181.4km², is located 18.3kms off the coast of the Baltic Sea. It is divided into its eastern and western half by the Warnow River (as shown in Figure 6) and has a population of 207,492 inhabitants. With a population density of 1,144.1 inhabitants/km² (half the population density of Pskov), an increase in population by over 25,000 people in the next 20 years is predicted. In comparison to the other two cities, Rostock is almost twice the size of Pskov, having a population almost equal to it. Vilnius however is the largest city out of the three, more than twice the area and almost thrice the population of Rostock (see A3: Rostock CMM data).

Being the largest and only metropolis in the northern state of Mecklenburg-Vorpommern, Rostock’s most important sectors are maritime economy, logistics,
aerospace industry, wind industry and life sciences. Having the biggest cruise port, and being a famous tourist destination, tourism is also an important sector in Rostock. The eastern part of the city is dominated by industrial estates and the Rostocker Heide forest, whereas the western side encompasses the city centre having the largest built up area (see A3: Rostock CMM data).

**Figure 6: Map showing the city of Rostock, Germany**

Source: Google maps 2018

### 4.5.2 Multimodality in Rostock

As illustrated in Table 3, we see that Rostock is classified as a lighthouse city because of its fairly good level of multimodality. Taking a closer look at the indicator table, we see that even though PMV have the highest modal share (which seems to be a common phenomenon in most cities); Rostock has an impressive share of biking and walking. In comparison to Pskov and Vilnius, it has the highest share of green mobility (biking and walking). The success of biking in Rostock can be credited to its infrastructure, 192.6kms of biking lanes, and the presence of 3861 bike stands and racks in public spaces. Rostock has two bike-sharing operators with 75% electrification of its bikes (see A3: Rostock CMM data).

In addition to providing its citizens with a good biking network, Rostock has a multi-optional PT system. In terms of information, ticketing and stations, Rostock has a well-integrated system. It has one ticketing system for all 5 modes of transport, as well as websites and apps providing its users with multimodal travel information and
RTI. In addition to that, most of the PT stops in Rostock are intermodal, enabling the comfortable transition of its users among modes (tram, city bus, regional bus, train and ferry). In spite of providing its citizens with 5 modes of PT, it is astonishing to see Rostock having the least PT modal share as compared to Pskov and Vilnius. According to the expert interview with Lisa Wiechmann, member of the mobility department in Rostock municipality, in charge of CMM, one of the reasons contributing to this fact could be that PT in Rostock is “quite expensive”. Also due to the city being divided by the Warnow River, journeys via PT are made longer; as ferries are the only PT means traversing the river (see A6: Rostock interview).

Rostock also has the lowest car ownership ratio amongst the three target cities. Like many other German cities (Bremen and Munich in the case of this thesis), we see car-sharing of growing importance and popularity in Germany. Enforcing the policy of using without owning, Rostock has three private car-sharing operators, however during the interview, Wiechmann expresses concern over the poor visibility of these services in the public realm, wishing for more popularity and usage of car-sharing systems (see A6: Rostock interview).

In comparison to the other two cities, Rostock is already well ahead in enforcing sustainable multimodal transport with its programs and strategies. The Mobility Plan Future addresses the fact that none of the transport hubs in Rostock are linked to bike/car-sharing stations and is trying to set up multimodal hubs. This could also increase PT ridership as they are the origin/destination points for bike and car-sharers (see A6: Rostock interview).

The concept of multimodal hubs or mobility points as an approach to multimodality is discussed in the next section.

4.6 Mobility points as an approach to multimodality

As described in chapter 3.1, technological advancements in the Information and communication industry along with innovative schemes in vehicular and mobility field have resulted in the emergence of various shared mobility services such as car-sharing, bike-sharing and many others. Simultaneously, the change in consumption culture from owning to using, and easy availability of knowledge and options of mobility via mobile apps and internet platforms, further encourage users to turn to more sustainable means of transport (Miramontes et al 2017).
“An efficient integration of multiple mobility services has the potential to compete against the flexibility and convenience of private cars by enabling comfortable, cost and time-effective door-to-door travel” (Miramontes et al 2017).

A concept of growing popularity these days is that of a “mobility point” or “mobility hub” linking the different modes of transport to promote “environmentally sound mobility” (Randelhoff 2016). One should not underestimate the importance of a physical station in doing so. Through their visibility and physical impact on the urban space, they function as advertising tools for multimodal transport services and can become important landmarks within neighbourhoods through adequate planning and designing. These points are extremely beneficial in areas of high density having many housing units per hectare. The scarcity of parking spaces for PMV, parking fees and fines are a growing controversy today and thus having car-sharing, bike-sharing and PT options all at one spot, within the neighbourhood can be very effective. The bundling of all these services in one spot not only improves the utilization of PT but also of other services such as carpooling and shared taxis (Randelhoff 2016).

Mobility points at strategic locations, such as busy commercial zones and dense residential neighbourhoods, are usually origins or destinations of travel, servicing large crowds of people. Hence carpooling and shared taxis are effective here as the price per passenger would have to pay is less. Mobility points function as “mobility guarantees” as they guarantee users with the availability of different options (in case of suspension or maintenance of one of the services) due to the bundling of various modes (Randelhoff 2016). We discuss more in depth about mobility points in the following chapter.
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Source: Singer (n.y.)
https://carbusters.org/2010/12/19/no-exit-poor-woman-walking/
5. **Mobility points**

Mobility points, hubs or stations can be defined as connectivity hubs seamlessly linking diverse travel modes- sustainable PT modes, bike and car-sharing as well as walking; and are most often located in areas with high degree of commercial, residential and recreational activities. Mobility points help to decrease dependence on PMV by providing users with an array of transport modes to pick form in one concentrated area, all usually within a 5-7 min walk radius thus reducing traffic congestion (San Diego Forward n.y.). CMM also defines mobility points as

> “a place where the interchange between at least two (sustainable) mobility modes is facilitated. This can be done through combining bicycle racks/storage/sharing in connection to PT hubs, parking and charging of electric cars at a station and much more” (CMM n.y. b).

Figure 7 gives us an idea of a mobility point with all its elements.

**Figure 7: A mobility point with all its components**

Source: Modification on image by Pirquin (n.y.)

Although the primary objective of a mobility point is to reduce the ownership ratio and dependence on PMV by ensuring multi modal linkages, it also provides its users with an amalgamation of other amenities and services. Its ancillary functions
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depend on its location and hence a mobility point in a residential neighborhood will be different from one in a commercial neighbourhood as illustrated in Figure 8 (Urban Design studio n.y.). Depending on the nature of the neighbourhood it is to be installed at, mobility points can function as meeting points, information points on neighbourhood level activities etc. Other services such as digitally locked parcel lockers and drop off/ collection points for online purchases also help in drawing the masses to these mobility points (Taxi Stop n.y.). In the future, the introduction of automated vehicles to enhance the travelling experience of passengers of all ages and abilities is a possibility (San Diego Forward n.y.).

Figure 8: A mobility point with respect to the nature of the neighbourhood

(i) Mobility point essentials  
(ii) A mobility point in a business area

(iii) A mobility point in a residential area  
(iv) A hi-tech mobility point

Source: Pirquin (n.y.)
5.1 Characteristics of mobility points

In order to be classified as a mobility point, it has to satisfy a few essential criteria. The availability of at least two parking lots for the different types of shared cars, preferably covered for weather protection is one such criterion. Ideas to incorporate solar panels to generate green energy could be considered. In addition to the car parking lots, sheltered bicycle parking should also be provided. This zone also needs to be within close proximity with a comfortable walking distance to a PT stop to ensure the linkage between shared and sustainable modes of transport. Planners need to ensure that this space is barrier free for people of all ages and abilities. And lastly quality lighting of the space gives its users a sense of safety and eliminates feelings of insecurity at dusk. To ensure extra mobility, park and ride zones or separate lanes for carpooling and taxis are a plus. Bike-sharing docks, bicycle pumps, and charging points for E-car and E-bikes provide users with added mobility options. To provide comfort to its users, sheltered benches and resting spots for PT riders and carpoolers are a requirement. Installation of ramps, and keeping the space “level free” as much as possible would ensure comfortable experiences to those who are visually impaired, wheelchair bound or walking with a baby pram. The provision of recycling bins, drinking water fountains, public toilets and WIFI hotspots in turn enrich the experience of its users. Mobility points could also provide additional features such as RTI panels, parcel lockers or function as collection and delivery points for online purchases, donation and charity boxes, racks with free newspapers and magazines and also charging stations for smart phones (Taxi Stop n.y.).

Mobility points aim to provide a seamless mobility experience, promoting multimodality by offering its users various transport options. Planners keep pedestrians, riders and drivers in mind while designing and implementing the space to enhance user experience. These mobility points also become attractive public features, providing a dynamic mixed use environment while leaving a negligible ecological footprint. For the implementation of these mobility points to be a success, it is very important that all the concerned stakeholders, public and private are well incentivized. Thorough cooperation and involvement of the actors and the clear division of responsibilities is pre-requisite for the smooth implementation and functioning of any mobility point. Mobility points have to be planned flexibly in order to accommodate for future growth, expansion and changes in technology (Metrolinx
n.y.). “It is the interaction and balance between transportation, land use, and place making functions.” (Urban Design studio n.y.).

“Mobility stations [have] the goal of promoting eco-mobility, offering alternatives for private cars, [consequently], a reduction in private car ownership and usage. Others goals are to promote the efficient use of mobility options by demonstrating the benefits to the environment and the users” (Miramontes 2018).

Figure 9 summarizes the various objectives and functions of a mobility point in one image.

**Figure 9: Objectives of mobility points**

Source: Metrolinx (n.y.)

**Note:** A mobility point, although having various similarities to a city’s main PT stop (Hauptbahnhofs offering multiple mobility modes), shouldn’t be confused to be the same, as mobility points are erected with the main goal of bringing multimodality to the users, spreading multimodal awareness - by increasing the visibility of different mobility options. Another point differentiating it from main PT stops is that a mobility point aspires to make the use PMV obsolete, reducing car ownership ratio promoting low carbon sustainable urban mobility (see A5: Bremen interview).
Rebecca Karbaumer, Sustainable Mobility project coordinator for Bremen stated the most important point of difference between mobility points and main PT stations is “size” and “location”. She adds:

“A multimodal PT stop is on a macro level, centrally located, and [...] doesn’t necessarily serve daily mobility needs. [...] A mobility point is a micro hub for daily services, located where journeys start, close to where people live, in their same street. Hauptbahnhofs are major transport hubs in a city, mobility points are one step closer to the neighbourhoods” (see A5: Bremen interview).

Michael Glotz Richter, Bremen’s senior project manager for sustainable mobility and “father of mobility points”, also delivers the main difference between mobility points and PT stations to be that “PT moves around the larger streets. [...] Mobility points [...] help you get to those larger streets via car and bike-sharing options” (see A5: Bremen interview).
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Source: Singer (n.y.):
https://streets.mn/2015/03/16/st-paul-city-council-to-vote-on-bike-plan/
6. Case studies

This chapter deals with successful mobility points across three cities, analyzing what planning and implementation factors boosted their success and which indicators could be used to assess their impacts.

6.1 Selection criteria

The selection of mobility points as cases of study in this thesis relied on various factors. Keeping in mind the context of the CMM project, the search for mobility points was also limited to European cities. The concept of mobility points being a rather new one, and mostly widespread in German cities, helped in identifying two out of the three mobility points in Germany. Additionally, those mobility points that are in operation long enough to have caused any noticeable changes in the mobility pattern of its neighbourhood/ city have been selected. Evaluation studies in most cases are carried out 2 years after the implementation of the strategy and hence mobility points inaugurated in 2016 and earlier were selected. Data availability also played an important role in narrowing the mobility points for selection for this thesis. As a result of the limited number of cases satisfying the above mentioned criteria, the following mobility points were selected for analysis:

- Münchner Freiheit - Munich, Germany
- Mobil.Punkt - Bremen, Germany
- MO.Point - Vienna, Austria

6.2 Munich

6.2.1 Background

Munich is the capital of the German federal state, Bavaria located in south western Germany. It has an area of 310.4km² and a population of around 1.5 million and is the third largest city in Germany following Berlin and Hamburg. It is the most densely populated city in the country with a population density of 4500 inhabitants/km² (World Population Review 2018).

Figure 10 illustrating the modal share of the city of Munich, clearly represents the car dominance in this city. However, it is also interesting to note, that walking has the second highest modal share in the city, surpassing PT use and cycling.
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Figure 10: Modal share of Munich City

![Modal share of Munich City](image)

Source: Own graphics based on data from CIVITAS (n.y. a)

Public transport

The following table, Table 4 throws light on the various PT modes in Munich.

Table 4: Munich Public transport figures

<table>
<thead>
<tr>
<th>Mode</th>
<th>No. of lines</th>
<th>Network length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tram</td>
<td>13 tram/ 4 night lines</td>
<td>79kms</td>
</tr>
<tr>
<td>Bus</td>
<td>71 routes/14 night lines</td>
<td>482kms</td>
</tr>
<tr>
<td>U-Bahn</td>
<td>8 lines</td>
<td>95kms</td>
</tr>
<tr>
<td>S-Bahn</td>
<td>7 lines</td>
<td>434kms</td>
</tr>
</tbody>
</table>

Source: CIVITAS (n.y. a)

Car Network

In terms of its road and public transportation network, Munich boasts 2330kms of road network. The car ownership in the city in comparison to the country’s average is low at 550 vehicles/1000 inhabitants, having about 819,737 registered motor vehicles as of July 2016. The individual motor car ridership is about 1.25 million (CIVITAS n.y. a). Car-sharing is quite popular in Munich. There are seven station based car-sharing (SBCS) providers, STATTAUTO and Flinkster being the two most important ones. Drive Now and Car2go are Munich’s main FFCS providers (Miramontes et al 2017).

Cycling network

Munich’s cycling network covers over 1200kms and 80% of the population owns at least 1 bike. Munich is a bike friendly city and the infrastructure is very telling
of this fact. There are over 28,000 bike parking infrastructures in Munich. Bike-sharing was introduced in 2015 by MVG Rad and with 125 stations and 1200 bikes; it is an added feature to the PT system. It also provides free floating service. Another free floating bike-sharing company of growing popularity in Munich is Call a Bike (CIVITAS n.y. a).

6.2.2 Münchner Freiheit

In November 2014, the City of Munich and MVG, the transport provider, launched the pilot project of a mobility point, a multimodal hub to integrate PT and shared mobility options with the goal of providing “citizens with a suitable transport mode for any and every trip purpose, in a way that owning a car [...] becomes unnecessary” (Miramontes 2018). Located in Schwabing (shown in Figure 11), which is a densely populated district with 12,800 inhabitants/km², Münchner Freiheit is in a 10 minute walking radius to 18,000 people. This neighbourhood is young and dynamic with mixed land use offering residential, cultural, shopping and recreational options. STATTAUTO and MVG Rad stations are also in the vicinity (Miramontes et al 2017).

Figure 11: Location of the Münchner Freiheit

As mentioned previously, Münchner Freiheit enables intermodal changes by being in close proximity to diverse transport modes. Figure 12 shows the different
components of Münchner Freiheit. A taxi stand, two metro lines, one tram line and four bus lines serve this point. Additionally, Münchner Freiheit also provides six reserved parking spaces for car-sharing vehicles of STATTAUTO, Car2go and DriveNow, one MVG Rad bike-sharing station with 20 docks and a charging point for electric vehicles. RTI on the arrival and departure of PT options as well as the availability or car-sharing vehicles are all displayed on an information screen. Advertisement hoardings from the different stakeholders also encourage citizens to use alternate methods. Along with physical integration, partial tariff and deposit reductions also exists for PT users operating bike-sharing or car-sharing services (Miramontes et al 2017).

Figure 12: Components of the Münchner Freiheit


In order to assess the impact of the mobility point on awareness and perception of multimodality; travel behaviour and mode preferences; observations and surveys were carried out. Immediate numbers showed increased usage of the mobility points since inauguration. FFCS and free floating bike-sharing (FFBS) trips showed an increase from 164-500 per month between Nov 2014 and June 2016 and 265-800 per month between Oct 2015 and June 2016. A large majority of the surveys showed that PT was the main mode of mobility among FFBS and FFCS users. The increased usage of other mobility modes by these users shows an elevated degree of multimodality. In terms of awareness, 60% responded with positive awareness that
the mobility point “[offered] bundled and easy to combine alternatives to private cars”. 50% respondents admitted to stumbling upon the mobility point by chance while walking around headlining the importance of a physical station. Other factors promoting its popularity were stakeholder advertisements (24%), internet and mobile apps (24%) and the RTI board (20%). More than half of the FFCS and FFBS users admitted they preferred to rent from the mobility point as it was the closest option after getting off a PT mode. 75% believe owning a private car becomes unnecessary due to the vast number of transport alternatives provided at the mobility point and around 70% of the respondents gave their approval to the installation of more mobility points in the future (Miramontes et al 2017).

6.3 Bremen mobility point

6.3.1 Background

Port city Bremen (area: 326.7km$^2$), in north-western Germany is situated on the banks of river Weser, close to the North Sea. With a population of 555,000, it is Germany’s tenth largest city. It is an educational centre; and also a growing electronics, aircraft, automotive and food sector (CIVITAS n.y. b).

Figure 13: Modal share of Bremen City

![Figure 13: Modal share of Bremen City](image)

Source: Own graphics based on data from Loske (n.y.)

Public transport

Bremen’s PT system has good coverage, with 95% of its populated area within 600m from a PT stop. In spite of the good PT network density, we see that PT does not have an impressing share in the modal split (Loske n.y.). As PT in Bremen is road based (no trains), its low popularity is a result of slow speeds due to traffic congestion
on the streets (private cars cause 90% of the traffic), poor road conditions and also reduced speeds and time loss at signals (SUMP Bremen 2025).

Table 5: Bremen public transport figures

<table>
<thead>
<tr>
<th>Mode</th>
<th>No. of lines</th>
<th>Network length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tram</td>
<td>8 lines</td>
<td>114kms</td>
</tr>
<tr>
<td>Bus</td>
<td>44 routes</td>
<td>505kms</td>
</tr>
</tbody>
</table>

Source: BSAG (2012)

Car network

Figure 13 shows the PMV dominance in Bremen. As a counter initiative, car-sharing was introduced in Bremen and has helped to a good extent in reducing the number of private owned vehicles, in turn helping congestion crisis on the streets (SUMP Bremen 2025). The slogan “Would you buy a cow for a glass of milk?” was popularly used as part of a car-sharing marketing strategy and at present there are 42 car-sharing stations with about 160 cars (Loske n.y.). Bremen has also launched the “Car-sharing Action plan” with the goal of reaching 20,000 car-sharing users by 2020 from 11,000 users in 2015, by developing its car-sharing service (SUMP Bremen 2025).

Figure 14: Modal share comparison among German cities

Source: Own graphics based on data from SUMP Bremen 2025

Cycling Network:

Bremen’s biking network consists of 390kms of main, 44kms of supplementary and 270kms of recreational routes. Biking is the most common mean of transport in Bremen, with 420,000 bicycle trips being generated per day. “Cyclists characterize Bremen’s cityscape” and is a natural choice for all ages. Studies show that Bremen
has 916 bicycles for every 1000 residents (SUMP Bremen 2025). Figure 14 illustrates Bremen having the highest biking share in comparison to other cities in Germany. Bremen’s biking infrastructure is also far better having around 22 bike and ride stations (SUMP Bremen 2025).

Owing to the growing popularity of these shared mobility modes and the potential of Bremen’s PT, the concept of mobility points or Mobil.Punkt was introduced to facilitate seamless interchanges between car-sharing, PT and cycling with the main goal of reducing car ownership.

### 6.3.2 Mobil.Punkt

The mobility point concept was introduced in Bremen in 2003 to evaluate how car-sharing, bike-sharing, PT stops, pedestrian access as well as taxi stops, all concentrated at one point could help to reduce the parking issue and street congestion in the inner city area while also promoting sustainable multimodality. In order to do so Bremen implemented two pilot “Mobil.Punkt” (translating to mobility point). (CIVITAS n.y. b). Glotz-Richter explains.

> “The focus of mobility points to promote multimodal trips is something more suited to big cities, say Berlin, but since Bremen is smaller, our starting point is to reduce the number of cars in the street [by encouraging] car-sharing to be an alternative to car ownership” (see A5: Bremen interview).

There are over 24 Mobil.Punkt stations in Bremen at present (10 larger ones on main roads- Mobil.Punkt, and 14 smaller stations in narrow streets-Mobil.Punktchens), most of which are within the inner city. The points can be found at a distance of 300m from each other forming a dense network. The outer regions, away from the inner city, have fewer points, however, since 2013; efforts have been taken to spread these stations to peripheral areas as well. Based on the location and requirements of the mobility point, their execution can cost anywhere from 5,000 to 40,000 Euros/ station. Mobil.Punkt not only ensure the physical integration, but also organization and tariff integration of different modes. An example of which can be the car-sharing ads one can see while riding the trams (VCD n.y.).

Reduction of private car ownership can be stated as the most significant achievement of this concept. Surveys carried out as part of the evaluation study of these stations, showed that out of the 50% of new car-sharing users who also owned
PMV, only 13% kept it, while 37% discarded their PMV upon realizing that car-sharing is just as convenient if not better (Glotz-Richter 2015). Surveys also showed that car-sharers are more inclined to cycling and using PT. According to studies, each car-sharing vehicle in Bremen has a relieving rate of 16 cars, which equals to the replacement of over 5000 cars on the street by car-sharing users (Karbaumer 2018). The same result would have been achieved by building underground garages by investing 65-90 million Euros (Mobil.Punkt n.y.). Bremen aims at raising that figure to 6000 cars by 2020, leading to freer roads, wider pavements, green spaces and overall betterment of cyclist and pedestrian infrastructure (Glotz-Richter 2015). Figure 15, shows a Mobil.Punkt station of Rembertiring along the main road, inaugurated in 2010, proving bike-sharing and car-sharing vehicles, which was later extended in 2017 to provide e-vehicles.

**Figure 15: A Mobil.Punkt station at Rembertiring**

![Mobil.Punkt station at Rembertiring](image)

Source: Own photograph (2019)

Trying to enforce the culture of “use it, don't own it”. Glotz-Richter, said in one of his interviews,

"I'm not talking as someone official [from] the city, but as a user, if I won a car tomorrow in the lottery, I would sell it the day after, because there’s nothing as convenient as not owning a car. [...] We are a real cycling city, and I need a car only from time to time,” (Hurley 2014).
These points are a visible symbol of Bremen’s new mobility culture and can be identified by a 3m tall Mobil.Punkt pillar (Glotz-Richter 2015). According to Miramontes (2018), studies show that Mobil.Punkt stations have a higher usage index than other car-sharing stations, and could be credited to its greater visibility, easier access and more mobility options present in comparison to solo car-sharing stations. The idea of the Mobil.Punkt was quoted in the German parliament urging cities to adopt this measure and has hence developed a role-model effect. The German cities of Leipzig and Nuremberg, and Bergen in Norway have built mobility stations according to the Bremen example (VCD n.y.) Mobil.Punkt has received various awards: the best practice award by the Association of Spatial and Urban Planning in 2010, the German Minister for Construction and Urban Development in 2008 and the German Motor Club ADAC 2006 (CIVITAS n.y. c).

Glotz-Richter says with confidence, for mobility points to seamless become a part of the urban landscape, “three things need to come together. The service should
be provided physically; people should see it; and they should accept it mentally." (see A5: Bremen interview).

**Figure 17:** A Mobil.Punkt stele (left) and the different car-sharing models provided there by Cambio (car-sharing provider) (right)

Source: Own photograph 2019

6.4 Vienna mobility point

6.4.1 Background

Vienna, the capital city of Austria is spread over an area of 414.65km² and is populated by over 1.8 million inhabitants (Statistics Austria n.y). Vienna is known for its high quality of life and was ranked the world's most livable city in 2018 (BBC 2018). For 9 consecutive years, Vienna has also been on the top of Mercer's list for its quality of living (Mercer 2018).

Vienna’s Urban Development Plan STEP 2025, has set a target to achieve a sustainable modal shift, where 80% of the trips would be made by sustainable modes, leaving only 20% by PMV (PASTA 2017). Figure 18 shows the current modal share of Vienna city.
Figure 18: Modal share of Vienna city

Source: Own graphics based on data from Wiener Linien (2018)

Public Transport

Vienna’s extensive PT network is spread over 1,150kms, providing its citizens with various mobility options: bus, tram or underground. More details about Vienna’s PT modes can be seen in Table 6.

Table 6: Vienna public transport figures

<table>
<thead>
<tr>
<th>Mode</th>
<th>No. of lines</th>
<th>Network length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tram</td>
<td>28 lines</td>
<td>175.6km</td>
</tr>
<tr>
<td>Bus</td>
<td>128 lines (including night lines)</td>
<td>845.7kms</td>
</tr>
<tr>
<td>U-Bahn</td>
<td>5 lines</td>
<td>87.4kms</td>
</tr>
</tbody>
</table>


Wiener Linien, Vienna’s PT operator, is responsible for Austria's biggest PT network, carrying over 2.6 million passengers/day. With 38% of daily trips being made by PT, we see a large volume of passenger traffic being carried by PT lines in comparison to PMV, which is an anomaly in the trend seen in other big cities. It is interesting to note that in 2015, due to reduction in ticket prices, there were 15,000 more Wiener Linien annual pass holders (travel card) than registered vehicles in Vienna which successfully highlights the importance and preference of PT over PMV in Vienna (Wiener Linien n.y. a).

Cycling Network

Over the last few years, the share of biking in Vienna has been a constant 7%. Vienna has over 1300kms of bike path, many of them traversing through areas of low traffic. In addition to biking lanes, the capital city also has around 17,000 bike racks
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located at important public areas, traffic junctions and subway stations to provide ease in multimodal transfers. The presence of bicycle air pumps and charging stations all around the city and along the major cycling routes ensures a pleasant cycling experience to its citizens (Wiener Linien n.y. b). 55% of the households in Vienna own a bicycle, a figure that could be improved further (PASTA 2017). Citybike, Vienna’s bike-sharing operator is a docking-based system with 120 stations, in addition to other operators that provide FFBS (Wiener Linien n.y. b).

**Car Network**

Vienna has 2,777kms of municipal road and 47kms of federal roads. In 2015, the car density ratio in Vienna was around 372.5 cars/ 1000 individuals. The number of PMV has been decreasing and can be credited to various policies and initiatives introduced in Vienna (PASTA 2017). The success of the government’s push policy, of enforcing paid parking in most districts, adding to the cost of owning a car; and pull policy by making PT more attractive to users is represented by the low PMV share in the modal split. In order to achieve a more sustainable modal shift, Vienna has 4 car-sharing operators, providing approximately 1000 cars (PASTA 2017). With the aim to achieve its goal of a sustainable modal shift, Vienna took to various measures, MO.Point being one of them. The following mobility point is slightly different from the conventional mobility points discussed in the previous two cities.

**6.4.2 MO.Point**

Vienna introduced its first mobility point, known as MO.Point in 2016 in the residential area of Perfektastraße58 (Figure 19). This mobility point, different from the first two case studies, is situated within the residential building, providing shared mobility means to its residents; promoting the “message of sustainability, more space, individual flexibility, lesser transportation costs and lower emissions”. The construction of this mobility point was planned into the construction of the building, hence integrated perfectly and providing the inhabitants of its 115 units and neighbouring residents, with options of using either e-bikes, e-cars, e-wheels or also conventional cars (Spirit Design n.y.). In addition to the availability of these shared means at one’s doorstep, the extreme proximity of the U-Bahn 6 line station and the promise of a free Wiener Linien ticket (PT ticket) to the residents of Perfektastraße 58.
registering for car and bike-sharing services, encouraged the idea of this innovative mobility point urging residents to give up or reduce the use of PMV (VCÖ n.y. b).

**Figure 19: MO.Point at Perfektastraße 58, Vienna**

Source: ÖGUT (n.y.)

**Figure 20: Access stairway (left) leading to MO.Point (right) in the basement**

Source: Spirit Design (n.y.)

As mentioned in chapter 5, although the basic function of a mobility point is to reduce private car usage by ensuring sustainable mobility linking shared modes to PT, it does provide various other services to its users. In the case of MO.Point, registered users are given an identification card that not only grants them access to vehicles for their personal or professional use but also provides users with complementary facilities such as delivery lockers and all-day-long bicycle repairs etc. (Spirit Design n.y.). On the first day of inauguration, 30% of the residents had already...
registered for the MO.Point services (Vienna Business Agency n.y.). Figure 20 shows the access stairway leading to the MO.Point parking in the basement.

The number of obligatory parking spaces required for the residential building was reduced due to the mobility service provided by the MO-point, bringing down construction cost, benefitting not only the project developers, and the inhabitants but also adding “adding value for real estate developments [leading] to a better quality of life in cities and communities - all in a sustainable manner” (Spirit Design n.y.). This mobility point enforces the idea of sustainable mobility during the planning phase of residential areas as “one’s place of residence and personal mobility behavior cannot be considered separately” (Spirit Design n.y.).

Winner of the VCO Mobility award in 2016, beating over 300 competitors, MO-point won Austria’s biggest award for sustainable mobility in the first year of its implementation. Under the motto, “Mobility in city and country”, the 25th VCO award went to “MO.Point Perfektastraße - Where mobility is at home” (VCÖ n.y. a). Very often, PMV emerge as winners when it comes to choosing modes due to its proximity to the user in comparison to other sustainable or shared means, but in the case of the Perfektastraße MO.Point, by bringing shared sustainable means right to one’s doorstep, it has changed the equation. Following the success of the MO.Point and further developments in Information and communication technology, Vienna is now in the pilot phase of mobility points along various subway lines of highly dense areas.

The next sub chapter looks at an example of a mobility point in the Indian context, in the state of Kerala lying on India’s south western coast.

### 6.5 Miscellaneous Points - Kerala, India

Vytilla mobility hub (VMH) in Kochi, Kerala- India is the first of its kind in the country. Inaugurated in February 2011, this hub is an urban facility, strategically located for the integration of road transport (short and long distance buses), inland water transport and metro rail service on a 25 acre stretch of land along the Kaniyampuzha River, as shown in Figure 21. It provides commuters with diverse mobility options and also facilitates an easy change from one mode to another. The VMH campus also provides numerous other services, housing various shopping, refreshment kiosks and entertainment options. In addition to that there is also provision for clean drinking water, public toilets, CCTV guarded platform areas, as
well as ample parking space for commuters to leave their personal vehicles and board the other sustainable modes of transport (Mobility Hub Vytilla n.y.). The VMH has 150 bus parking spaces and 71 bus bays. It also provides space for 120 auto rickshaws and 900 cars in its parking lots (The New Indian Express 2010). The main aim of this mobility hub is to reduce traffic congestion and pollution by promoting sustainable modes of transport over PMV (Mobility Hub Vytilla n.y.)

It is interesting to note that the concept of this mobility station is very similar to that we see in the European context. Due to the seamless integration of the different modes of water, rail and road transport in one area, this mobility hub is promoting the use of sustainable modes. By providing ample parking for cars, the “park and ride’ culture of the west is observed here, where users are presented with the option of leaving their PMV in the station parking lots and proceeding to complete their journey with other sustainable modes. All these measures are taken with the main goal of counteracting its traffic choked streets by reducing one’s dependence on PMV, in turn reducing all the ill effects it has on the environment.

Figure 21: View of Vytilla mobility hub, linking water and road transport

Source: Kochi Metro Rail (2016)
https://twitter.com/metrorailkochi/status/790839665246953472

6.6 Planning and implementation factors for higher success of mobility points

Drawing from mobility points in Munich, Bremen and Vienna, it is interesting to note that there are a few recurring factors contributing to the successful functioning of these points, either directly or indirectly. “Success” in this context can be defined in terms of public acceptance, usage and popularity, making these cities role-model/best-practices for other cities trying to improve their multimodality through mobility
points. Also aided by the expert insight gained via the expert interview conducted with Montserrat Miramontes, transport planner at city of Fürstenfeldbruck, Munich, who has worked on evaluation studies conducted for mobility points in Munich, Offenburg and Wurzburg, the following factors come to light. These factors, if considered during the planning and implementation phase of the mobility point can greatly add to its successful functioning.

Public transit is often considered the ‘backbone’ in providing users with a sustainable multimodal system (Frisbie 2017). In the examples of all three mobility points, we see the importance of having a public transport stop within close proximity to the mobility point, providing the seamless transfer of passengers between different modes. Regardless to say, a greater number of PT alternatives translates into more travel options available to users. Miramontes also states in her interview that PT is an intrinsic factor in designing mobility points as its close proximity facilitates intermodal transfers, giving users many options and alternatives for a trip from point A to B. “It is a good thing to be close to PT stops” (see A4: Success factors). According to survey results in the case of the Münchner Freiheit, the availability of three PT modes, metro, tram and bus automatically compelled the increased usage of PT by majority of the bike-sharers and free-floating car-sharers, thus displaying an increased degree of multimodal behaviour in these users (Miramontes et al 2017). Glotz-Richter also said in one of his interviews that when selecting sites for new mobility points in Bremen, the most important criterion to meet is to build around a thriving transit stop (Frisbie 2017).

In addition to being in close proximity to a public transit stop, proximity to users is very important. Münchner Freiheit, located within one of the densest areas in Munich, is within a 10-minute walking radius to about 18,000 people. Miramontes expressed her opinion in saying that Münchner Freiheit’s proximity to both, a PT hub and a large number of users contributed to its popularity and attractiveness. “The closer a mobility point is to the users, the more chances of it being used and that is my definition of success, acceptance by users, that the users use it.” She adds to this factor by pointing out that in many residential areas, PT catchment is not up to the mark, and having mobility points in such areas will help to bring these residents closer to multiple mobility options (see A4: Success factors). Glotz-Richter also said “[...] it’s important for hubs to be close to the needs of their users; they should be
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close to where people live, or to the buildings where they work” (Frisbie2017). He further added “You have to be close to the user, if you want to compete with the private car, you can even be better than the private car if you achieve this.” (see A5: Bremen interview). In the case of Bremen, traffic congestion and parked cars on streets were the main issues that lead to the execution of Mobil.Punkts and Mobil.Pünktchens. Mobil.Pünktchens are mobility points at a much smaller scale that are implemented in the narrow street laden dense neighbourhoods of Bremen, in order to provide multimodal mobility options to the inhabitants of those neighbourhoods. Bremen aims at opening 10-15 such Mobil.Pünktchens every year in these dense neighbourhoods to reach more citizens (Frisbie 2017). In the case of Vienna’s MO.Point, one can credit most of its success to availability of mobility options at its residents’ door step, completely solving the first/last mile conundrum. With the innovative idea of “bringing mobility home” MO.Point was able to beat the comfort of proximity that PMV provide their owners.

Mobility points are also most effective in areas where owning PMV is inconvenient, due to strain and high pressure on street space and parking. Talking about mobility points, Glotz-Richter says “We want to get into areas where people are a little pissed off with car ownership, the willingness to give up private cars is higher when owning a car is a pain in the butt” (Frisbie 2017). Miramontes points out that pressure on resources, especially space, function as “triggers” for cities to do something and change their mobility patterns (see A4: Success factors). When owning a private car is an inconvenience, people automatically switch to more sustainable modes. Districts enforcing time based paid parking, a push strategy by transport authorities; makes active modes of transport a more attractive option. According to evaluation studies in Bremen, out of the 50% car-sharers who also owned PMV, 37% gave them up due to the convenience of car-sharing and inconvenience of owning a car in terms of finding parking in the heavily crowded streets on Bremen (Glotz-Richter 2015).

In the examples of Munich and Bremen, the importance of a physical symbol/recognition element of the station is highlighted. Mobility points in Bremen are marked with a 3m long blue pillar with a sign easily identifying it as a Mobil.Punkt (Frisbie 2017). Glotz-Richter added “This pillar stands for something. This physical thing is shown with pride!” (see A5: Bremen interview). The Münchner Freiheit is also demarcated by a tall information board that is very similar to the Bremen stele and is
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the most important success factor according to Miramontes (see A4: Success factors). 50% of the users of Münchner Freiheit agreed to have walked into out of curiosity thus discovering the mobility station. The presence of a mobility point needs to be felt strongly among the residents in order for it to be used (Miramontes et al 2017). Public awareness plays a key role in making sure that the mobility point is being used to its full capacity. Having a physical symbol linked to the mobility point will also benefit the city in the long run while implementing more mobility points forming a network, as users already “recognize” the initiative.

Figure 22: Recognition element in Bremen (left), Munich (middle) & Vienna (right)


To spread awareness among users, along with a physical sign representing a mobility point, marketing, advertising and publicity play an equally important role. Bremen is really big on marketing and advertising. It even has its own mascot for car-sharing, UDO, a male name in German, and an acronym for car-sharing “Use it, Don’t Own it” (Glotz-Richter 2016). In addition to that, mobility points are often advertised through promotional videos and on billboards and signage boards near public transit stops (Frisbie 2017). Car-sharing advertisements were also displayed in trams (VCD n.y.). Launch ceremonies and press releases for new mobility points prior to and immediately after inauguration help to spread awareness amongst masses. Münchner Freiheit gained popularity through stakeholder advertisements,
internet websites and mobile apps (Miramontes et al 2017). Additionally, the city of Munich also targeted non-car/ bike-sharing users, with letters explaining the services and encouraging the use of the mobility point, signed by the mayor addressed to 5000 households within small radius of the mobility point (Miramontes 2018). Miramontes further talks about the importance of “multimodal advertising” where all sustainable modes of transport are marketed as a package encouraging intermodal transfers (an example of which can be seen in Figure 23) and not for the benefit of individual providers (see A4: Success factors).

**Figure 23: Facebook advertisements for Münchner Freiheit post inauguration**

![Facebook advertisements for Münchner Freiheit post inauguration](image)

**Incentives**, as part of the city’s pull policy; encourages more people to use these services. In the case of Vienna, in 2015, the reduction of the price of Wiener Linien annual pass (PT travel pass) boosted the use of PT since then. This policy benefited MO.Point as well, as residents were promised a free Wiener Linien ticket if they registered for the mobility services provided at the MO.Point (VCÖ n.y. b). As a result, on the first day of inauguration, 30% of the residents had already registered to the MO.Point services (Vienna Business Agency n.y.). In Munich, PT users who
registered for bike and car-sharing received partial tariff and deposit reductions. Bike-sharers also received free credit upon returning a bike back to the docking station. (Miramontes et al 2017). An excerpt from the letter addressed to 5000 households, signed by the mayor, popularizing the mobility point and incentivizing the users reads as follows:

“as an inhabitant of this city you know that being active in Munich means being mobile. The diverse transport supply offers you enormous flexibility.

This is especially true at the Mobility Station at Münchner Freiheit, where the right mode of transport for almost any trip is available. Next to metro, bus, tram, and taxi, you can find the public bike-sharing system ‘MVG Rad’, as well as reserved parking spaces for the various car-sharing offers. A charging station for electric car-sharing vehicles complements the offer.

Test this offer and try to be mobile without your own car during a week. If you are not yet a PT subscriber, we give you the possibility to try PT for one week for free. Order your free week-pass for the PT services within the MVV inner area” (Miramontes 2018).

These incentives play the role of a “kick-starter” in popularizing any new scheme or initiative in the city.

The successful implementation of mobility points also requires the constant involvement of various actors and stakeholders from various fields and sectors of the city. In addition to co-operation among the different actors, the clear assignment of responsibilities is mandatory. PT providers and shared mobility providers need to collaborate not only with each other for the provision of attractive deals and incentives to users, but also with the municipality for site allocation, building permits and regulations (Luginger 2016). Miramontes, in the interview, highlights the importance of having one “proactive initiator” who brings together all the other stakeholders, and oversees the functioning of the initiative (see A4: Success factors). In the case of MO.Point, we see strong cooperation amongst the municipality, the residential complex developers and car and bike-sharing providers in the
implementation of this mobility point within the residential complex. The involvement of the PT provider providing free Wiener Linien tickets to the registered residents deserves a noteworthy mention. In Bremen, we see strong stakeholder involvement in the form of active media support and their cooperation with the municipality, in publicizing mobility points through their mascot UDO, large billboards and hoardings.

**User experience and comfort** at the mobility point also affect their perception of the mobility modes available there. If first time users are not presented with a good experience at the mobility point, it could deter them from using it a second time developing a bias in their minds posing these alternatives to the private car as an inconvenience. In addition to the essential mobility point features mentioned in chapter 5.1, provision of barrier free access, ramps, adequate sheltered seating, drinking water and public toilets enhance user experience.

Mobility points also need to mould their **amenities and services** according to the nature of the neighborhood they are servicing. As seen in Figure 8, a mobility point in a residential area is different from one in a business area. Mobile retail services, food trucks and parcel lockers attract more users. Information boards and interactive kiosks help in the proper planning of multimodal trips. Some cities also provide Wi-Fi hotspots enabling residents and travellers to access travel information on their smart phones and other mobile devices. Users are attracted to the station not only because of the mobility options but also due to these services. Quoting Miramontes “A station without these amenities would still function, but having these amenities adds value to the station, making it more attractive.” (see A4: Success factors). In Bremen, Mobil.Punkts also provide a help service connecting to call centres. They then assist the users of the mobility point with taxi and car-sharing bookings (Frisbie 2017). Vienna’s MO.Point provides its citizens with complementary services such as parcel lockers and 24/7 bicycle repairs adding value to the station (Spirit Design n.y.).

Summarizing the above points, the factors that should be considered during the planning and implementation of mobility points to guarantee a higher possibility of success are as follows:

- Close proximity of the mobility point to PT stops
- Close proximity of the mobility point to users
- High stress/pressure on road space and parking in the mobility point locality
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- Physical symbol/recognition element of the mobility point
- Marketing, multimodal advertising and positive publicity
- Incentivizing the users of the mobility point
- Active involvement and strong cooperation among stakeholders
- User experience and comfort at the mobility point
- Amenities and services provided at the mobility point

6.7 Indicators to assess the impact of mobility points

Similar to the indicators in chapter 3.3 used to assess the level of multimodality in Pskov, Vilnius and Rostock, it is very important to formulate indicators to assess the impact of mobility points after its installation and use. Since a successful mobility point contributes to multimodality, it is not surprising to see various indicators of multimodality repeating in this section. The indicators of successful mobility points are comparative indicators, comparing results before and after the execution of the point.

As noted earlier, the transport culture of a city can be realized in a single glance with respect to its modal share. By observing a city’s modal share over a couple of years, its mobility trend can be studied. The impact of transport policies and projects on a city can be studied by reviewing the modal share a few years post project implementation. Similar studies can be conducted over smaller areas to test the impact and success of strategies and policies implemented in the area. Examples of Munich and Bremen show us that car and bike-sharers are more prone to using PT as they are often located at their points of origin or destination. Mobility points, being in close proximity or at PT stops, provide users with the convenience of easily transferring from car/bike-sharing to PT. A successful mobility point should be able to alter the modal share of the neighbourhood in that respect. In Munich, after the implementation of Münchner Freiheit, an impressive boom in the number of car-sharing trips from 164 to 500 trips per month, and bike-sharing trips from 265 to 800 per months were observed. Thus, by demonstrating an increase in the modal share of PT, active and shared modes of transport in the area, after the implementation of a mobility point, it indicates its success (Miramontes et al 2017).

Along with the increased number of trips by sustainable modes, the success of mobility points can also be indicated by the increased number of car and bike-
sharing users, depicting the impact of the mobility point in attracting more users. Mobility points have a complementary function of advocating shared mobility modes. Munich, Bremen and Vienna, all noticed an increase in the number of car and bike-sharers after the implementation of mobility points. Two years after the Mobil.Punkt execution in Bremen, telephonic surveys that were carried out, revealed an average of 435 car-sharing registered users in a radius of merely 500m between two stations (LiMIT4WeDA n.y.). The city of Bremen seems confident in reaching its ‘20,000 car-sharing users by 2020’ target under the Car-sharing Action Plan, considering that there already were 11,000 registered users in 2015 (SUMP Bremen 2025). Expert interview with Glotz-Richter from Bremen reveals that the city plans to achieve this target by the (i) densification of its car-sharing stations, (ii) integration of car-sharing into new building designs, (iii) further integration with PT, and (iv) spreading awareness and information amongst non-users (see A5: Bremen interview). Münchner Freiheit also increased awareness and patronage about its mobility services. Many of the existing car-sharers there registered for bike-sharing and vice versa after the execution of the point (Miramontes et al 2017).

The car ownership ratio of the area in question is also a strong indicator of the impact a mobility point has on its citizens. A mobility point, when successful, provides its users with an integrated mobility system, more attractive and convenient in comparison to PMV. Survey results from Bremen, effectively prove this point. The success of Mobil.Punkts and car-sharing have replaced over 5000 PMV, which if placed end to end is a 25km long line of cars! This reduction is either due to users disposing their own car or putting off their decision of buying a new one, resulting from the convenient travel options provided to them at mobility points. On an average we see a single car-sharing vehicle has replaced over 16 PMV, greatly reducing traffic congestion and the strain for parking in Bremen (Karbaumer 2018). The car replacement ratio in Bremen has been on a rise since the last decade, being 1:9 in 2005, 1:11 in 2014 and now 1:16 in 2018. An average reduction of over 90 cars is observed in the vicinity of Mobil.Punkt stations in Bremen, greatly relieving parking stress (Luginger 2016). One should also keep in mind what a big step in the direction towards sustainable mobility this is, by taking into consideration that large fleets of car-sharing vehicles are electric ones. Figure 24 shows how the success of car-sharing in Bremen has affected its car ownership ratio.
The level of Greenhouse gas (GHG) emission in the neighbourhood also gets affected by the number of PMV trips made. The higher use of PMV contributes directly to the increase of these gasses in the environment having a negative impact on global climate change. Hence the successful acceptance of mobility points would result in a decrease in the number of trips made via PMV, due to the provision of a well-integrated sustainable transport system, directly reducing the GHG emission levels.

Apart from the above mentioned quantitative indicators, a qualitative indicator of equal importance in indicating the success of mobility points is the impact it has on its user’s perception and multimodal awareness. The purpose of mobility points on the whole is to not only promote multimodality for a single trip, but to promote multimodal living, a change in mindset, and to make users realize for themselves the perks and benefits of using other sustainable modes as an alternative to PMV. This goal being fulfilled is clearly visible in the case of Münchner Freiheit, where 80% of the users agreed that they could always find the right travel option at the mobility point, with 75% admitting to that fact that the mobility point makes having a private car useless. In addition to that, an impressive 70% asked for more mobility points to be installed in the city of Munich, showing keen interest by suggesting the locations for preferred mobility points in the future, mostly being in city centre, along high capacity PT nodes and in residential areas, both in the central districts and suburban areas (Miramontes et al 2017).

Summarizing the above mentioned indicators, the successful impact of mobility points can be assessed by:

- Change in modal share in the mobility point neighbourhood
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- Change in the number of car/bike-sharing users in neighbourhood
- Change in car ownership ratio in the mobility point neighbourhood
- Change in the GHG emission level in the neighbourhood
- Change in the user’s perception and multimodal awareness living in the mobility point neighbourhood regarding PT and shared means of mobility

As mentioned in chapter 3.2, the end result of CMM is the installation of mobility points in the pilot areas of each city to better the level of multimodality in these cities. In the following chapter, we investigate the pilot areas and the proposed mobility point strategies to be implemented in each city.
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Source: Singer (n.y.):
https://i.pinimg.com/originals/a0/a6/9b/a0a69ba115560a99c87f5e42a31f4bd3.gif
7. Mobility point strategies in target cities

As mentioned in chapter 3.2, the main goal of CMM is to enforce the use of sustainable modes by strengthening multimodality in the 10 partner cities. Attempting to strengthen multimodality in the cities, each of them will be implementing mobility points in the chosen pilot areas. CMM is expected to be completed by the end of the year 2020, and the mobility points are to be implemented within this time frame. Pskov will not be implementing a mobility point within the scope of the project, however the strategies/ proposal for the mobility points in Vilnius and Rostock are already developed and form an integral part of this thesis. Expert interviews with CMM representatives in Rostock (see A6: Rostock interview), Vilnius (see A7: Vilnius Interview) and Pskov (see A8: Pskov interview) provide the necessary data regarding the strategy envisioned in each city.

Before diving into the strategies developed, the pilot areas of each city will be investigated to gain better understanding of the characteristics and mobility services of the sites picked as part of the CMM for the implementation of mobility management schemes and mobility points.

7.1 Rostock

7.1.1 Pilot area

The pilot area in Rostock selected for CMM (orange shade in Figure 25) with an area of 1.23km² is located in Kröpeliner-Tor-Vorstadt city quarter (purple shade) in the western half of Rostock. It the most densely populated zone in Rostock having a population of 14,914 inhabitants and population density of 12,125.2/km² and is characterized mostly by residential buildings but also having various multi use buildings such as schools, hospitals, churches and various other service providers. A new residential complex is also being planned within the pilot area (see A3: Rostock CMM data). This zone is serviced by PT, biking infrastructure, bike-sharing and car-sharing stations (Table 7).
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Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

Figure 25: Pilot area in Rostock

Source: CMM (see A3: Rostock CMM data)

Table 7: Pilot area facts and figures - Rostock

<table>
<thead>
<tr>
<th>Public Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of PT modes servicing the pilot area</td>
</tr>
<tr>
<td>3 modes. Bus, tram &amp; train. Ferry service unavailable</td>
</tr>
<tr>
<td>Public bus service</td>
</tr>
<tr>
<td>3 + 2 night lines. 2 lines (nos. 27 &amp; 28) every 20 minutes on weekdays and 30 minutes on weekends. 1 line (no. 25) every 10 minutes on weekdays and 15 on weekends</td>
</tr>
<tr>
<td>Tram service</td>
</tr>
<tr>
<td>5 lines. 2 lines (nos. 1,5) every 10 minutes and 3 lines (nos. 2,3,4) every 20 minutes</td>
</tr>
<tr>
<td>Train service</td>
</tr>
<tr>
<td>3 lines (S1, S2, S3), on 1 railway track in one station.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biking infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike lanes</td>
</tr>
<tr>
<td>15kms of biking lanes</td>
</tr>
<tr>
<td>Bike parking</td>
</tr>
<tr>
<td>1667 stands</td>
</tr>
<tr>
<td>Bike-sharing</td>
</tr>
<tr>
<td>2 bike and ride facilities with a total of 137 parking spaces</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car ownership rate</td>
</tr>
<tr>
<td>350/1000 inhabitants (KTV city quarter). Every third citizen owns at least one car</td>
</tr>
<tr>
<td>Car-sharing</td>
</tr>
<tr>
<td>5 stations with a total of 10 cars</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticket, information and physical stations</td>
</tr>
<tr>
<td>Multimodal ticketing and information integration as mentioned in Table 3. Physical stations: 2 intermodal stations for tram- bus. And 2 intermodal stations linking city train, bus and tram.</td>
</tr>
</tbody>
</table>

Source: CMM (see A3: Rostock CMM data)
7.1.2 Mobility point strategy

Upon interviewing Lisa Wiechmann, from the municipality of Rostock, lead partner in CMM, responsible for the implementation of planned activities and coordination of actors, the planned proposal for the Rostock mobility point was made known. In the densely populated pilot area chosen by CMM, stationary traffic was identified as a big problem. The streets, being narrow and laden with parked cars on both sides, result in traffic congestion and road blockages. As mentioned in chapter 4.5.2, despite having 3 car-sharing operators, its visibility amongst the masses is limited and has failed to reach its full potential in ensuring sustainable mobility. There is a lot of car traffic entering and exiting the pilot area, and for longer trips the car is the main mode of mobility. However, within the pilot area, walking and cycling seem to be the main modes (see A6: Rostock interview).

Cycling in the pilot area is quite popular due to the provision of good cycling infrastructure, in terms lanes and density of bike racks. Another factor contributing to the impressive share of cycling and walking is the median age of its residents. Being below average, consisting mostly of students and young couples, the residents of the pilot area are the main target group of this proposal. Wiechmann further informs that studies show that for every 1000 inhabitants in Rostock, there are over 900 bikes. As a result of this, the promotion of biking/ bike-sharing does not seem to be the most important aspect of the mobility points planned in this region (see A6: Rostock interview).

Wiechmann thinks that cargo bikes are the future “because they [..] have the potential to replace the private car” in carrying out trips to the supermarket or moving around with children and Rostock plans to introduce a newly developed system of cargo bike-sharing at the mobility point. She defines mobility points as “a small hub where you can connect at least two transport modes, in the case of Rostock this [being] car-sharing and cargo bike-sharing, [with a few] cycle racks [all] in connection with a PT stop”. Rostock plans to implement 1-3 mobility points on the basis of the available financial resources and is at present in between the concept and implementation phase (see A6: Rostock interview).

The funding details of the mobility points, be it from the CMM budget or the municipality of Rostock is beyond the scope of this thesis. The analysis of the three chosen sites has been carried out, in terms of demographics and evaluation of the
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current traffic situation. One of these points is to be directly integrated at the existing intermodal PT stop, integrating tram lines, train lines and bus lines, including night buses. The second mobility point is to be located at a point of interest, near a shopping mall within walking distance from the PT stop and the third is located within a residential complex with a visible line of sight to the PT stop. The idea is to form a network of these mobility points within a distance of approximately 800m from each other. The success of this ‘network of 3 mobility points’ in the pilot area could then function as a pilot to the entire city, as Rostock plans on replicating this network into a widespread one, expanding all over the city (see A6: Rostock interview).

The main objective of these points is to make car-sharing more visible in the pilot area, and to introduce the new system of cargo bike-sharing. In addition to these services, the pilot area is in dire need of a reduction in the number of PMV due to the heavy stress on parking. Bike racks are to be provided to encourage bike and ride. Additional services such as bike repairing tools and air pumps, along with a packet station for the pickup and drop off packages for online shipping will also be provided, if space permits. To promote visibility of these stations, a tall stele is to be erected at these mobility points making visible the different mobility options provided to the users. No real time trip information will be provided at the mobility point and information regarding the different modes of transport and bike-sharing/ car-sharing operators will have to be accessed by users via their smart phones. Wiechmann also points out the possibility of incorporating solar panels to light up the mobility points at dusk. One can see the strong influence of Bremen's Mobil.Punkts on Rostock’s mobility point proposals, considering that the expert interview revealed Bremen and Dresden to be inspirations in the planning of these strategies (see A6: Rostock interview).

The realization of these mobility points is to be carried out with little investment, and the provision of shelters (roofing structure), WCs, water fountains, benches and other such amenities of comfort do not seem to be a priority. The expert interview also revealed that Rostock’s biggest barrier is a legal one as it is not permitted to reserve public parking spaces for private car-sharing vehicles. If no solution is found in this respect, it could result in the exemption of car-sharing as a transport mode in mobility points installed on public lands, or the erection of mobility points with car-sharing options on non-public land which would then be a big
disadvantage in terms of visibility, proximity to large crowds etc. The proposal also faced criticism by the Rostock transport department on the reduction of the already scanty public parking spaces in the pilot area for the reservation of parking spots by private car-sharing operators at the mobility points. However, what is not realized is the long term benefit of having spaces reserved for car-sharing. The constant availability of car-sharing options in the vicinity acts as a driver encouraging its use. Once the users are made familiar of the comfort and convenience of using a car-sharing vehicle, owning a personal car becomes less attractive thus reducing the number of cars on the street, influencing the public in putting of their decision of buying a car in the near future and probably even discarding their PMV in the long run (see A6: Rostock interview).

7.1.3 Success analysis of Rostock’s mobility point proposal

By virtue of Table 1, designed to analyze the mobility point proposals against the PISF derived in chapter 6.6, the possible success of the mobility point proposal in Rostock can be envisioned as shown in Table 8.

Table 8: Success analysis of Rostock mobility point proposal

<table>
<thead>
<tr>
<th>No.</th>
<th>Planning &amp; Implementation Success factor (PISF)</th>
<th>Rostock’s proposal</th>
<th>Does Rostock satisfy the PISF?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Close proximity to public transport</td>
<td>The 3 locations identified as future mobility point sites are all within close proximity of public transportation. 1 of which is to be erected at the PT stop, whereas the other two are located within close walking distance.</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Close proximity to users</td>
<td>All 3 sites are located within the dense city centre. In addition to 1 point being located at the PT stop servicing large crowds, the other 2 are to be located close to the masses, 1 at a point of interest (mall) and the other within a residential neighbourhood</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>High pressure on street space and parking</td>
<td>The main problem identified in the pilot area is stationary traffic. The mobility points are to be located in the streets where traffic congestion and road blockages are a common phenomenon due to cars parked on both sides of the street because of parking scarcity. Also every 3rd citizen in the pilot area</td>
<td>Yes</td>
</tr>
</tbody>
</table>
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<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><strong>Physical symbol</strong></td>
<td>The mobility point will be recognized by virtue of a stall stele to be erected at the site, illustrating the different transport options available for use.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Marketing and advertising</strong></td>
<td>Rostock realizes the importance of marketing and advertising in increasing the usage of its mobility points, and plans on using media as tool for the same, by promoting the benefits and functionalities of the mobility points.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Incentives to users</strong></td>
<td>As of now no incentives are to be offered to the users. No tariff or fare reductions on combining modes are to be provided. This could be a barrier to its success considering the fact that PT in Rostock is quite expensive.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Stakeholder involvement</strong></td>
<td>The proposal lacks support from Rostock’s transport authorities and has received criticism regarding the reduction of parking spaces by assigning them to park car-sharing vehicles in the mobility point. Additionally, it also faces legal issues due to the law that prevents the assignment of public land for private car-sharing.</td>
</tr>
<tr>
<td>8</td>
<td><strong>User comfort and experience</strong></td>
<td>The mobility points are to be erected with minimal investment, hence provision of roofing structures, WCs, water fountains, benches for seating are not a priority. No digital boards providing information are to be provided and trip related information will have to be accessed via the users’ smart phones.</td>
</tr>
<tr>
<td>9</td>
<td><strong>Amenities and services</strong></td>
<td>In addition to linking PT with car-sharing and cargo bike-sharing services, the mobility points will also provide racks for private bikes, additional services such as bike repair equipment, air pumps and lockers for parcel delivery and collection.</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

Rostock’s mobility point proposal satisfies 6 out of the 9 identified PISF, scoring 6. Referring Table 2, depicting the score bracket and success category, Rostock’s mobility point proposal falls in the **median bracket of success**.
We see Rostock’s mobility point proposal, while satisfying a large majority of the PISF, lacks when it comes to incentivizing its users and providing them with an ambience that would make using the mobility point a comfortable experience. As seen in the cases of Munich, Bremen and Vienna, and also mentioned in chapter 6.6, incentives function as pull strategies, not only luring the public to use these sustainable modes of transport but also helping them realize the benefits and convenience of using these modes in the long run. Modest incentives, tying together the different modes of transport at the mobility point can go a long way increasing its user ship. The importance of providing a comfortable environment at the mobility points should not be underestimated as very often a bad user experience can create “captives to PMV by choice” by strengthening the budding bias that PMV users may have against shared modes of transport. Provision of sheltered seating, water fountains, a WC and digital information boards can greatly enrich the user experience at the mobility point.

Friction between the stakeholders and participant groups is one issue that requires being tackled immediately for the successful implementation and functioning of the mobility points. It is quite evident from the expert interview with Weichmann that Rostock’s mobility point proposal has not received complete support from its local transport authorities. Awareness campaigns and workshops involving all these stakeholders could help inform them about the long term benefits of mobility points in areas that are struggling to cope with the pressure of road traffic and parking stress. However the legal barrier Rostock is facing in terms of reserving public lands for private car-sharing company vehicles is a serious one, and requires more effort, expertise and time for amendments to be made in the existing law. In the case of the Münchner Freiheit, the city of Munich, gave MVG (Munich’s PT provider), also functioning as the operator of the mobility point, a special use permit- Sondernutzungserlaubnis, which allowed the reservation of 10 public parking spaces at the mobility point for private car-sharing vehicles, without paying a fee for the usage of public land. This was achieved by the joint efforts of the city of Munich along with the Department of Public order (KVR) and the Department of Urban Planning and Building Regulation (PLAN). The car-sharing providers using space at the mobility point, however had to pay a fee to a municipal company, P+R Park and Ride GmbH that was commissioned by MVG to undertake the supervision and maintenance of the mobility point (Miramontes 2018). A similar solution could be
adopted by the city of Rostock. Another alternative way to work out this problem could be the commencement of a public car-sharing company, eliminating the hassle created by “private” car-sharing vehicles occupying “public” lands.

### 7.2 Vilnius

#### 7.2.1 Pilot area

The pilot area chosen in Vilnius is the middle zone (blue shade in Figure 26), in close proximity to the city centre. Spread over an area of 6.54km² and having a population of about 15,600 inhabitants, it consists of a densely urbanized zone and a growing academic zone (see A2: Vilnius CMM data). Table 9 presents more information on the different mobility options servicing the pilot area.

**Figure 26: Map of Vilnius showing the pilot area (blue)**

![Image of Vilnius map with pilot area highlighted]

Source: CMM (see A2: Vilnius CMM data)

**Table 9: Pilot area facts and figures - Vilnius**

<table>
<thead>
<tr>
<th>Pilot area modal share</th>
<th>Car: 64.3%, PT: 22.1%, Biking: 2.6%, Walking: 11%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Transportation</strong></td>
<td></td>
</tr>
<tr>
<td>No. of PT modes servicing the</td>
<td>2 modes</td>
</tr>
<tr>
<td>pilot area</td>
<td>Bus and trolleybus</td>
</tr>
</tbody>
</table>
Mobility point strategies in target cities

<table>
<thead>
<tr>
<th>Public bus service</th>
<th>8 regular lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolleybus service</td>
<td>6 lines, with a frequency of 6-20 minutes</td>
</tr>
</tbody>
</table>

**Biking infrastructure**

<table>
<thead>
<tr>
<th>Bike lanes</th>
<th>1.5kms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike parking</td>
<td>Approx. 30-50 stands.</td>
</tr>
<tr>
<td>Bike-sharing</td>
<td>No bike-sharing stations in the pilot area</td>
</tr>
</tbody>
</table>

**Car**

<table>
<thead>
<tr>
<th>Car ownership rate</th>
<th>347 cars/1000 inhabitants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car-sharing</td>
<td>Citybee covers 1/5 of pilot area and Spark has 2 stations (4 charging points)</td>
</tr>
</tbody>
</table>

**System Integration**

| Ticket, information and physical stations | Multimodal ticketing and information integration as mentioned in Table 3. And 3 intermodal stations linking buses, trolley buses and suburban buses |

Source: CMM (see A2: Vilnius CMM data)

### 7.2.2 Mobility point strategy

It is not astonishing to see that Vilnius, falling in the Scale up category of multimodality, unlike Lighthouse city Rostock, has its main goal as the improvement of its transport system followed by the implementation of mobility points as its secondary goal. Kristina Gauce, mobility expert in the city of Vilnius, provides her expertise in various urban mobility projects in Vilnius, and does the same for CMM. She also provides her insight in the implementation of the SUMP in Vilnius city. Upon interviewing her for the purpose of this thesis, it was made clear that higher chances of success of a mobility point in Vilnius would be achieved if it was being supported by the simultaneous improvement of its transport system, and that is the approach adapted by Vilnius (see A7: Vilnius Interview).

The site chosen for the implementation of the mobility point is well serviced by PT (buses and night buses); however, the issue lying here is the peaked capacity and low priority for PT vehicles on the road. The capacity of PT vehicles has been utilized to the maximum, and may not be able to successfully cater to the increased users brought about the mobility point. In addition to that, PT suffers a great deal during peak hours due to the absence of designated bus lanes and even if the mobility point is used to its full capacity, and people want to switch to PT, they are
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stuck in the same traffic flow with private cars and taxis. “The mobility point would raise awareness and probably save 40-50 trips made by cars but it wouldn't solve the main problem”. Schemes to address this are being developed as part of the SUMP for Vilnius city. Frequency of buses is an attractive feature of Vilnius’ PT system, and hence it is the capacity of the buses that needs to be increased. The addition of extra stops along the usual bus routes is an alternative solution to increasing the capacity of buses. There are also discussions on assigning one of the car lanes to PT so that buses can move smoothly during peak hours as well, making PT appear more attractive to users. This strategy could also decrease the attractiveness of PMV, due to the decreased space allocated to private car traffic, urging citizens to use other modes. In terms of cycling, Vilnius has a poor modal share, and owes this to the insufficiency of its biking infrastructure, which also justifies the higher popularity of car-sharing in Vilnius in comparison of bike-sharing. To increase awareness and promote biking amongst its citizens, Vilnius is redesigning its cycling lanes linking the city centre to the selected mobility point site. The mobility point is also being designed to provide a comfortable experience for the cyclists in Vilnius (see A7: Vilnius Interview).

The mobility point planned in Vilnius is different in comparison to the mobility point in Rostock. Vilnius’ citizens are familiar with the concept of Park and Ride, having 3 such lots, functioning in the city already and hence its mobility point proposal is building on this fact, using this familiarity and awareness as a driver to attract users to the mobility point. This point, providing a variety of modes for users to choose from would be different from the other initiatives undertaken in Vilnius till date targeting its excessive car use. The mobility point proposed in Vilnius is to be a combination of a park and ride, with about 80 spaces to park private cars, and roughly 10 spaces reserved for car and bike-sharing platform, in addition to its proximity to PT stops. Charging stations for e-vehicles will also be provided. To make this mobility point more comfortable for cyclists, bike racks and a separate shed is to be provided for the storage of bikes and other items. Planners are also prioritizing the needs of specially-abled, making the zone barrier free, and reserving parking spots and vehicles for them. A toilet, vending machines and parcel locker system are also being discussed as services to be provided. RTI boards are also to be provided to inform users about the various travel schedules. This mobility point will also
incentivize its users, as buying a parking ticket to leave their car there would also guarantee a free PT ticket to its users for the whole day, which is the scheme that the other Vilnius Park and ride systems work on. This scheme present is cheaper than the cost of buying two PT tickets, and in comparison to expense of parking cars in parking lots in the city centre; this deal practically ‘comes free’. Also, in discussion is a scheme to provide bike-sharing and car-sharing at a reduced rate upon buying a parking ticket for the park and ride component of this mobility point (see A7: Vilnius Interview).

During the interview, Gauce also talks about the support this proposal is receiving form different stakeholders. This initiative is gaining support from political and municipal authorities, PT operators, biking organizations and mobility experts as well. She is confident while saying that ‘the most important stakeholders are already onboard and could be a success factor in the planning, decision making and implementation’. The mobility point aims to target two groups of users, first being the public that have to transit through this location on the way to the city centre, so that they could park their cars at this point and then choose from the PT mode or the shared mobility modes at this station. These would be the residents living in the posh neighbourhoods nearby, not very well serviced by PT. The second target group would be the residents of the pilot area, who would use this point for its additional mobility options and put off the decision of buying another car, which is one of the objectives of this mobility point as owning at least two cars per household is a common phenomenon in Vilnius. With this mobility point, Vilnius hopes to increase awareness amongst its users regarding the benefits of using other sustainable modes as an alternative to PMV. Lowering the motorization level and tipping the modal split in favour of walking, cycling and PT usage are the most desired results of this mobility point. If successful, Vilnius plans on implementing more mobility points in other strategic locations, as the park and ride initiative alone hasn't proved very successful in solving the mobility issues in the city. However as Gauce mentioned frequently in the interview, ‘Mobility points are [the secondary goal of this city] after the improvement of the Vilnius transport system (see A7: Vilnius Interview).
7.2.3 Success analysis of Vilnius’ mobility point proposal

By virtue of Table 1, designed to analyze the mobility point proposals against the PISF derived in chapter 6.6, the possible success of the mobility point proposal in Vilnius can be envisioned in Table 10.

Table 10: Success analysis of Vilnius mobility point proposal

<table>
<thead>
<tr>
<th>No.</th>
<th>Planning &amp; Implementation Success factor (PISF)</th>
<th>Vilnius’ proposal</th>
<th>Does Vilnius satisfy the PISF?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Close proximity to public transport</td>
<td>The planned mobility point site is in close proximity to the PT stop and is well serviced by buses and trolley buses.</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Close proximity to users</td>
<td>The site identified for the mobility point is in close proximity to a student campus and residential areas where PT network is not satisfactory.</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>High pressure on street space and parking</td>
<td>The pilot area sees higher modal share of car use in comparison to the city. Owning two cars per household is also a common practice in this area adding to the parking strain and traffic congestions in the pilot area.</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Physical symbol</td>
<td>As of now, the proposal does not seem to include any sort of identifiable feature (pillar, stele etc) that would function as the mobility point recognition element.</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Marketing, advertising and publicity</td>
<td>The mobility point proposal has received negative publicity from certain NGO groups owning to the similarity this proposal has to the previous park and ride initiatives that have not been entirely successful.</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Incentives to users</td>
<td>This mobility point will already offer a free PT ticket on buying a parking ticket as part of the park and ride system. In addition to that there are also other schemes in discussion to provide combined tickets for parking of cars and using shared cars/bikes.</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Stakeholder</td>
<td>The mobility point proposal has received</td>
<td></td>
</tr>
</tbody>
</table>

Yes
| 8  | User comfort and experience | Thought has been given to accommodating the needs of the handicapped while designing the mobility point. Additionally vending machines, WCs and benches are to be provided. Info boards displaying RTI on PT schedules will also enrich user experience. | Yes |
| 9  | Amenities and services       | The proposal has incorporated various services in addition to the car and bike-sharing and PT. Bike racks, a separate parking shed for personal bikes and storage units for users to keep their belongings will be constructed. Charging stations for e-vehicles and parcel lockers for delivery and collection will also be provided. | Yes |

Vilnius’ mobility point proposal satisfies 7 out of the 9 identified PISF, thus scoring 7. Studying Table 2, depicting the score bracket and success category, we see that Vilnius’ mobility point proposal falls in the “high bracket of success”.

In contrast to the strategy Rostock has proposed, Vilnius has given importance to element of user comfort and incentives at its mobility point, by providing various features to attract users and enrich their experience. Additionally, having good support and involvement from its stakeholders and not having to overcome any kind of legal barrier is an added advantage. However, an important aspect that Vilnius is lacking is in terms of providing its mobility point with a physical identity or a recognition element. In the case of Bremen, all the mobility points, big or small are equipped with a 3m tall Mobil.Punkt steel pillar that has now become its identification symbol. This pillar helps Bremen citizens to locate and identify the nearest shared mobility-providing mobility point to them. In the case of Rostock as well, the erection of a tall stele making visible all the different mobility options is well included within the proposal. In doing so, Vilnius can brand its mobility point, and users will be able to recognize the future mobility points that will be implemented. Additionally, this element will also help to set this mobility point apart from the previously existing park and ride points in Vilnius. In terms of marketing and advertisement, the mobility point
Vilnius has received “bad publicity” from certain NGO groups. This is due to a misunderstanding that this point is going to be another park and ride facility, which although has managed to reduce vehicular traffic, hasn’t been able to achieve its full potential. The damage caused by this “bad publicity” can however be undone, by educating the indifferent groups on the additional features this point has to offer, and how it differs from the conventional park and ride initiatives in Vilnius. This can be achieved by hosting workshops and meetings, illustrating the different successful examples of mobility points in different parts of the world.

7.3 Pskov

7.3.1 Pilot area

The pilot area chosen in Pskov lies in the historical part of the old city of Pskov as shown in Figure 27. Situated along the Velikaya River it covers an area of 4.92 km² and is populated by 15,600 residents. 9 bus lines service this area with a varying frequency of 8-25 minutes. Biking infrastructure in the whole of Pskov is weak, the pilot area having 3kms of bike lanes. Since Pskov is not implementing a mobility point, this pilot area is the main focus of various public awareness campaigns and activities related to mobility management (see A1: Pskov CMM data).

Figure 27: Pilot area in Pskov

Source: CMM (see A1: Pskov CMM data).
7.3.2 Conditions required for future mobility point implementation.

Interviewing Kristina Kobyz, head of cross border and tourism department in the city administration and Pskov coordinator for CMM, the measures and strategies being undertaken in Pskov to improve its multimodality status were made known. Pskov, a Start-up city, is not implementing a mobility point within the scope of the project, but aims to do so in the future. In addition to having financial restrictions within the project, there are other reasons delaying Pskov from being able to achieve the conditions that would favour mobility points. As Kobyz mentioned in the interview, a mobility point has to facilitate a “change between various modes of transport”, have charging stations for electric vehicles, impart a sense of comfort to its users, and most importantly satisfy the needs of the people. But the main barrier standing in the way of achieving sustainable urban mobility in Pskov is the lack of sustainable modes. Buses being the only alternate mode of transport to PMV cannot help Pskov achieve its goal of sustainable mobility and this can only be made possible when the city is able to provide its citizens with additional modes of transport. In light of improving the multimodality status in the city, various capacity building and knowledge transfer meetings are held monthly, involving all the actors and stakeholders (youngsters, NGOs, government organizations actively supporting biking etc.) that could help to better the transport situation in Pskov. Having a rich history, Pskov is home to various historical sites, monasteries and churches with tourists flocking to the city from Moscow and St. Petersburg, hence we see tourism companies also attending these monthly meetings, taking interest in improving the city’s transportation system to make Pskov more attractive and enjoyable for its tourists (see A8: Pskov interview).

The city having most of its residential area in the new part of the town sees heavy inflows of traffic to the city centre in the morning and the same in the evening, out of the city centre. Public buses, private cars and taxis jam the roads during peak hours. Pskov is drawing inspiration from the other partner cities, studying the method of dealing with such traffic by providing separate designated lanes for buses, cars and bikes. The city is fortunate to have the support of its governor and transport authorities, in the improvement of its biking infrastructure, providing more biking lanes, racks and also allocating more space for pedestrian movement. At present the city only has bike rental stations, but will see the introduction of bike-sharing systems as an additional mode of transport from April 2019, according to Kobyz. New roads
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are also being constructed on account of federal money. Additional digital boards providing RTI on arrival and departure times of public buses (Pskov only has 3 at the moment) are also to be installed. The support this city is receiving from its regional government, city municipality and various other organizations is a big driver in developing it to its full multimodal potential. One should also not forget the importance of public awareness. The citizens of Pskov understand the need for mobility that is sustainable and are willing to reduce the use of private cars if provided with other sustainable modes. Citizens are already aware of the benefits of car and bike-sharing systems as they have seen and used these modes in other cities in Russia. Kobyz does mention in her interview, that many seem to think that car-sharing systems should be reserved for bigger cities, as by “Russian standards, Pskov qualifies as a small city”. However having a population similar to Rostock which has various car and bike-sharing operators (and Pskov having a population twice that of Rostock) car-sharing could definitely relieve the traffic and parking stress the city faces, owing to its high car ownership rate. Kobyz is however positive, when she says that the possibility of introducing car-sharing in Pskov in the near future in being discussed and is one of the future strategies to be implemented there (see A8: Pskov interview).

When it comes to mobility point implementation in the future, the selection of its site and services being provided there are of utmost importance. Kobyz believes that the way to proceed is by researching and conducting extensive surveys to assess the needs of the citizens. Pskov draws inspiration from the German city of Bremen, and also its neighbouring CMM cities (Tartu, Vilnius, and Riga). By targeting the younger members of the society, who are more flexible and open to change, Pskov hopes to become a more connected city, after the implementation of mobility points. Kobyz concludes the interview by saying “We [...] want to make Pskov a more connected city, We have buses, [...] cars and bikes but they aren’t connected yet, with mobility points this could be achieved” (see A8: Pskov interview).
"Isn't it nice to see children walking to school?"
8. Transfer criteria

This section is a result of the careful study and analysis of (i) cities with functioning mobility points (Munich, Bremen and Vienna), (ii) cities in the process of executing mobility points (Rostock and Vilnius) and (iii) cities aspiring to implement these points in the future (Pskov). Building on the lessons learnt from cities with already executed points; the set of conditions achieved by cities that are midway in their execution; and the goals and targets set to be achieved by cities aiming to implement point in the future, this transfer criteria should not be confused with PISF of chapter 6.6 which are tools to increase the success possibility of mobility points. This chapter talks about the conditions that need to be achieved, by a city for it to be able to implement mobility points in the first place. These conditions are prerequisites for any city wanting to implement mobility points. When achieved, mobility point can be designed along the lines of PISF in chapter 6.6 to boost its success, the impact of these points can then be assessed using the indicators formulated in Chapter 6.7. Figure 28 exhibits the relationship between the three findings and their practical application.

Figure 28: Figure depicting the relation between the transfer criteria, success factors and success indicators.

Source: Own graphics

When bringing about any change in a city the most important factor that can influence the course of that initiative is the physical and financial support it receives from the government and other legal authorities. All the necessary
stakeholders need to be onboard, providing their input and expertise wherein needed. The city should have a legal framework that supports and encourages the initiative. If that is not the case, the system needs to be flexible enough so that immediate action and amendments in the laws can be drafted and passed out in favour of the project. In the case of Rostock, we see one of the largest barriers it is facing is the law prohibiting the city to reserve public parking spaces for private car-sharing vehicles. Rostock is currently working on a legal solution to overcome this barrier. Judging from the expert interview with Vilnius and Pskov, it is evident that these cities are receiving unwavering support from their municipalities, PT authorities and shared mobility providers, which is pivotal in furthering the success of their mobility points. In Munich, the Münchner Freiheit was a result of the close cooperation and joint initiative taken by the city of Munich and the local PT provider MVG. In Vienna, a fair share of MO.Point’s success could be credited to the generous support provided by Vienna’s PT provider, Wiener Linien in cooperation with that of the builders of the Perfektastraße residential complex and the shared mobility providers.

In addition to governmental bodies, support from NGO’s, community groups and media are of great significance as well. These bodies have a more-direct connection with the general public in comparison to other governmental authorities and can be highly influential in helping people form an opinion about matters of importance. The effect that newspaper articles, street hoardings and online articles have when trying to communicate with the general public cannot be ignored. In Vilnius, the mobility point proposal received criticism and negative publicity due to a misunderstanding that lead NGO groups to believe that the city was building another park and ride facility (see A7: Vilnius Interview). Bremen on the other hand outshines all other cities when media support is concerned. Prior to the inauguration of any new mobility point, Bremen advertises in mobility points through promotional videos, bill boards and hoardings, launch ceremonies and press releases (Frisbie 2017). The support of these bodies prior to the implementation of any initiative is mandatory.

When conceptualizing any policy or initiatives at a city or community level, the problems faced by the general public, their wants and needs, have to be voiced out, heard and taken into consideration. No strategy, initiative or proposal can be completely successful unless it is co-produced, i.e. a solution is reached as a result
of the dialogue between the people who use the services to be introduced and the ones who provide the new service. Co-production partnership, as defined by Davidson, is the “meeting of minds coming together to find a shared solution.” (Davidson 2011). It is only when citizens feel their needs are being addressed and they opinions are welcomed; will they be ready for a change. Same goes in the case of mobility points. Unless citizens realize the need for and want other alternatives to the PMV, the mobility point initiative introduced by the city will not be whole heartedly accepted or utilized to its full potential. Citizens need to recognize the pressing need for a change in their mobility pattern and adapt a sustainable modal shift. By employing various push and push strategies, cities can help its citizens come to this realization. In the city of Vilnius, the previous park and ride initiatives did help the city curb its traffic problem to an extent, by giving citizens the option to leave their car in secure parking lots and riding the various PT options to the city centre practically free. Various workshops with the different participant groups were also held prior to the drafting of the proposal with the purpose of making known the expectations of the public from the mobility point initiative. In Bremen, the problem posed by narrow streets that are made even narrower due to parked cars on either side automatically generated the need for other alternative modes. Additionally, during the Interview with Kobyz from Pskov, the importance of researching and carrying out public surveys to assess the needs of the citizens as the first step prior to its mobility point implementation was made clear (see A8: Pskov interview). Once the need for change is realized, the public is made aware of it and their opinions are considered in the decision-making process, one can guarantee the whole-hearted acceptance of the introduced initiative addressing the same.

For a city to be able to reduce private car usage via mobility point implementation, the availability of an array of mobility options is the next checkbox that needs to be fulfilled. The city needs to have at least one PT mode and one shared mode so as to facilitate the change between these modes. In the case of Pskov, the main reason for it not implementing mobility points is the absence of any other sustainable mode of transport apart from its public bus system. Due to which, as part of the steps Pskov is undertaking to prepare itself for mobility point implementation in the near future, is the introduction of bike-sharing systems in the city by April 2019. The debut of car-sharing is also being discussed, drawing from the
examples of its neighbouring cities (see A8: Pskov interview). Table 11 shows the different mobility options available to the users at each of the discussed mobility points.

Table 11: Transport options available to users at each mobility point

<table>
<thead>
<tr>
<th>Mobility point</th>
<th>Public transport</th>
<th>Car-sharing</th>
<th>Bike-sharing</th>
<th>Private car parking</th>
<th>Private bike parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Münchner Freiheit, Munich</td>
<td>Yes, 3 modes. Train, tram, bus &amp; taxis</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Mobil.Punkt, Bremen</td>
<td>Yes, 2 modes. Tram and bus</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>MO.Point, Vienna</td>
<td>Yes, 2 modes. Train and bus</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rostock proposal</td>
<td>Yes, 3 modes. Train, tram and bus</td>
<td>Yes</td>
<td>Yes, Cargo bike-sharing</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Vilnius proposal</td>
<td>Yes, 2 modes. Bus and trolley bus</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pskov(If MP is implemented right away)</td>
<td>Yes, 1 mode, Bus (Car-sharing is discussed now)</td>
<td>No (Car-sharing will be launched in April)</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Own analysis

Hence, evident from Table 11, if Pskov was to implement a MP right away, it would not qualify as a mobility point due to the lack of mobility options in the city. After it implements shared mobility modes, Pskov will be “ready” for mobility point implementation.

However, having multiple options of mobility, while the infrastructure in the city is not satisfactory will not benefit its citizens in any way. Glotz-Richter pointed out that to increase the share of PT, biking or walking you have to give citizens the proper conditions for it as “working on infrastructure needs brave political decisions.” (see A5: Bremen interview). In Vilnius, despite having a bike-sharing system, the modal share of biking is poor, and can be attributed to the lack of proper biking infrastructure in the city. Vilnius will witness the redesigning of its biking lanes linking the city centre to the mobility point site to keep its infrastructural developments at par with the introduction of this new concept. This city plans the simultaneous development of its transport system and infrastructure along with the introduction of
mobility points as it realises that it is a prerequisite for the success of its mobility point strategy. Pskov is also bettering its infrastructure and preparing itself for mobility points in the near future by installing more bike racks, constructing more bike lanes and allotting more space to pedestrians.

This section functions as a checklist, enlisting the necessary conditions that need to be fulfilled by a city for it to be able to implement mobility points in the future. In other words, mobility points can be transferred to those cities that have satisfied these conditions.

✓ Does the city have physical, financial and legal support from the government?
✓ Does the city have the support of NGO’s, community groups and media?
✓ Does the city require a change in its mobility culture?
✓ Does the city have an array of sustainable mobility options to choose from?
✓ Does the city have satisfactory infrastructure?
Source: The Onion (2011):
https://www.theonion.com/congested-values-1819590506
9. Conclusion

This chapter gives an overview of the principal findings constituting this thesis resulting from the critical analysis of data obtained from various research papers, educational journals and news articles; and multiple expert interviews, in a brief and condensed manner. The limitations of this study and recommendations for further research are also provided in this chapter.

The work presented in this thesis was triggered by the increasing number of initiatives taken by city governments to curb PMV usage (and the environmental degradation resulting from it) with the aim of promoting low carbon sustainable urban mobility. For individuals to turn away from their PMV, cities need to be able to provide them with efficient transport alternatives and satisfactory infrastructure that makes using those sustainable modes safe, pleasurable and comfortable. One’s mode of choice and travel behaviour is greatly influenced by the level of car-dependency or bike-friendliness the city one lives in has. Cities need to escalate their level of multimodality if they aspire to achieve their goal of low carbon sustainable urban mobility. Multimodality as detailed out in chapter 3 is nothing but the integration and combined usage of sustainable transport modes for the purpose of movement of passengers and goods. How multimodal a city is, can be assessed by virtue of indicators established in chapter 3.3. These indicators assess the characteristics of a city’s PT transport and travel behaviour, its biking conditions, its car-sharing scenario, the measures and activities undertaken by its government and the awareness amongst its citizens; and can help transport planners ascertain what steps need to be taken to augment its multimodality.

These indicators are used to justify why the cities of Rostock, Vilnius and Pskov (picked as target cities for this thesis) have good multimodality (Lighthouse category in CMM), intermediate multimodality (Scale-up category in CMM) and poor multimodality (Start-up category in CMM) respectively in chapter 4. However, a limitation in this method of city categorization is that it solely depends on the comparison between the 10 CMM partner cities, based on data provided by them, and does not necessarily mean that the cities falling in Lighthouse category have achieved multimodality pinnacle. It only means that among the 10 partner cities, Rostock has comparatively better multimodality, hence a Lighthouse city, Vilnius, a
Scale-up city has an intermediate level of multimodality and Pskov still has some way to go in the multimodality sphere and hence is a Start-up city. If a sample of larger than 10 cities is taken, the categorization may be completely different.

Developments in the field of information and technology have resulted in breakthroughs in the field of shared mobility. Riding the public transport, walking, biking and modes of shared mobility (car-sharing, bike-sharing, scooter-sharing, carpooling etc.) are all green alternatives to PMV. In addition to a city being able to provide its citizens with these options, they also need to be guided on how to use these modes in a combined fashion. The concept of mobility points, first introduced in Bremen in 2003 by Michael Glotz-Richter, is an answer to this conundrum.

Mobility points, detailed out in chapter 5, are neighbourhood transport hubs that function as connectivity nodes, linking PT, walking, biking, car and bike-sharing with the aim of reducing car ownership and usage. In addition to providing the seamless integration between these sustainable modes, mobility points also help in creating an attractive public realm, with minimal ecological footprint. These points also attract users through the other amenities and services it provides, such as package delivery lockers, storage lockers, mobile food units, WIFI hotspots, drinking fountains, WC’s etc. However, irrespective of these additional features, the main goal of a mobility point is to promote eco-mobility by reducing car ownership and PMV dependence thus encouraging green sustainable modes. An important feature of distinction between mobility points and multimodal PT stops is that a mobility hub is on a micro level, closer to users, solving their first/last mile problems in contrast to PT stops that only service larger main roads.

Upon critically analyzing the evaluation studies and articles published post mobility point installation on the Münchner Freiheit in Munich; Mobil.Punkt and Mobil.Pünktchens in Bremen; and MO.Point in Vienna, selected as case studies for this thesis, the positive impacts of these points in their cities were evident (chapters 6.2.2, 6.3.2 and 6.4.2). In addition to increasing multimodality in their cities by promoting the combined use of PT and shared mobility modes, these points have also received multiple awards and are coined as role-model/ best-practice cities. Looking for similarities in the mobility points of these three cities, a set of 9 PISF are identified (chapter 6.6), which added to the success of these points. Success, in this context refers to the populous user ship and public acceptance it received; and
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depends on the proximity of the mobility point to a PT stop; its proximity to users; the strain on parking and street space in the neighbourhood it is to be implemented in; the presence of a physical recognition elements or stele; positive publicity and multimodal advertisement of the mobility point; incentivizing the users of the mobility point; the involvement and cooperation amongst all the stakeholders; the comfort and quality of experience provided to the users of the mobility point and the amenities and services provided there. These PISF, resulting from the analysis of three mobility points, although a small sample size, gain credibility due to expert interviews and insights gained fromMontserrat Miramontes, Rebecca Karbaumer and Michael Glotz-Richter who is crowned to be the father of mobility points.

Once the mobility point is installed and has gained user ship, an assessment of the impact it has had on the travel pattern of the neighbourhood is necessary and is detailed out in chapter 6.7. A change in the modal share of the neighbourhood, an increase in the number of bike and car-sharing users in the proximity of the mobility point, a decrease in the car ownership ratio of the neighbourhood, a reduction in the GHG levels and a positive perception of the users living in the neighbourhood of the mobility point speak volumes of the successful impact it has had on the travel pattern of the neighbourhood.

To put these findings into practice, the mobility point proposals of the cities of Rostock and Vilnius are analyzed on the basis of the PISF of chapter 6.6. Data collection regarding the proposals strongly relied on expert interviews with officials heading the CMM project in their city. These expert interviews threw light on the process of implementation of mobility points in these cities, confirming the hypothesis of this thesis that the implementation processes will vary from Rostock to Vilnius to Pskov, as a result of their varying levels of multimodality. Expert interview with Lisa Wiechmann, from Rostock revealed that the city is directly diving into the installation of its mobility points. Having already achieved an adequate level of multimodality, due to its multiple PT modes, shared mobility modes and good biking infrastructure, Rostock’s mobility point proposal showcases that (chapter 7.1). Upon analyzing it on the basis of the PISF of chapter 6.6, Rostock’s proposal falls into the “median bracket of success” (Table 8). It can however increase its chances of success if it takes into account the role that providing users with a good comfortable experience and
incentives play in popularizing any newly introduced initiative. Additionally, Rostock is experiencing a legal barrier, one similar to the one Münchner Freiheit had during its implementation.

In the case of Vilnius (Scale-up city), the interview with Kristina Gauce, brought into open, Vilnius’ efforts to improve its PT system and infrastructure simultaneous to the implementation of its mobility point (chapter 7.2). To promote cycling as a mode of travel and not just for leisure, Vilnius is undertaking the redesigning of its bike lanes from the city centre to the mobility point site. Vilnius is also trying to increase the number of bus stops along the routes and is hoping to provide a separate bus lane providing priority to these modes in traffic, to make its PT more efficient and attractive. Despite falling in the “high bracket of success” (Table 10), Vilnius’ proposal still has room for improvement in terms of the negative publicity is received as a result of misunderstanding and miscommunication with NGO groups; and the absence of a recognition element (stele/ pillar). A limitation, however, with this method of proposal analysis for Rostock and Vilnius is that it solely depends on the data available and the stage the proposal was developed into at the time of interview. Had there been more data available, the results could vary.

Interviewing Kristina Kobyz from Pskov revealed that the scenario is different in this city. Keeping aside the budgetary constraints in CMM, Pskov, a Start-up city, cannot implement a mobility point due to the unavailability of PMV alternatives. If Pskov implements a mobility point under the given circumstances, it wouldn’t qualify as a mobility point as it does not satisfy the main goal of facilitating transfers between PT and shared mobility modes. In order to prepare itself for future implementation, Pskov is launching its first bike-sharing system in April 2019, and has begun discussing the possibility of introducing car-sharing. It is also undertaking measures to improve its PT system and biking infrastructure (chapter 7.3). It is evident, from the interviews, how these three cities have approached the implementation of mobility points in different ways based on their level of multimodality, thus verifying the hypothesis of this study.

Reflecting on all the cities considered for the purpose of this thesis: Munich, Bremen, Vienna, Rostock, Vilnius and Pskov, it can be pointed out that cities need to meet certain criteria in order to implement mobility points (chapter 8). A checklist to prepare itself so that mobility points can be transferred to said “prepared” city. Once a
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city is able to respond to these questions with a “yes”, mobility points can be transferred to these cities:

- Does the city have physical, financial and legal support from the government?
- Does the city have the support of NGO’s, community groups and media?
- Does the city require a change in its mobility culture?
- Does the city have an array of sustainable mobility options to choose from?
- Does the city have satisfactory infrastructure?

Through their proposal strategies it is evident that the cities of Rostock, Vilnius and Pskov are trying to achieve all these conditions prior to successfully implementing mobility points.

Due to constraints of time, certain areas could not be dealt with in more detail. The effects of FFCS system on the usage of car-sharing vehicles present at the mobility points and vice versa; the effects that autonomous vehicles could have on mobility points; and the effects of mobility points on PMV captives by choice pose as topics for further research.

The road to sustainable urban mobility lies ahead.
Let’s bike to it!
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<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apps</td>
<td>Applications</td>
</tr>
<tr>
<td>ch.</td>
<td>Chapter</td>
</tr>
<tr>
<td>CMM</td>
<td>Cities.Multimodal</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FFBS</td>
<td>Free Floating Bike-sharing</td>
</tr>
<tr>
<td>FFCS</td>
<td>Free Floating Car-sharing</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
</tr>
<tr>
<td>KVR</td>
<td>Department of Public Order (Kreisverwaltungsreferat)</td>
</tr>
<tr>
<td>MVG</td>
<td>MünchnerVerkehrsgesellschaft</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>PASTA</td>
<td>Physical Activity Through Sustainable Transport Approaches</td>
</tr>
<tr>
<td>PISF</td>
<td>Planning and Implementation Success Factors</td>
</tr>
<tr>
<td>PLAN</td>
<td>Department of Urban Planning and Building Regulation (Planungsreferat)</td>
</tr>
<tr>
<td>PMV</td>
<td>Private Motorized Vehicles</td>
</tr>
<tr>
<td>PT</td>
<td>Public Transport</td>
</tr>
<tr>
<td>SUMP</td>
<td>Sustainable Urban Mobility Plan</td>
</tr>
<tr>
<td>RTI</td>
<td>Real Time Information</td>
</tr>
<tr>
<td>UNFAO</td>
<td>United Nations Food and Agricultural Organization</td>
</tr>
<tr>
<td>VMH</td>
<td>Vytilla Mobility Hub</td>
</tr>
</tbody>
</table>
Appendix

A1: Pskov CMM data

Phase 1:

General information on the city, the pilot areas, the pilot institutions and transport infrastructure

In the first phase general data on the cities, as well as data on their transport infrastructure and on the pilot areas with regard to the situation of Multimodality and Mobility Management will be collected. It should be possible to conduct this data gathering by a simple desktop research based on existing quantitative data or by brief consultations of respective experts. The results from this phase of data collection will enable a first cross-city comparison and build a basis for identifying transferable practices. Moreover they will build an information basis for planning measures tailored to the specific conditions and requirements of each city.

Indicators

Please describe your city/pilot area for multimodality:

<table>
<thead>
<tr>
<th>General Indicators describing city/pilot area for multimodality</th>
<th>Unit</th>
<th>City Pskov</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Square kilometres</td>
<td>95,6</td>
<td>4,92</td>
</tr>
<tr>
<td>Population size</td>
<td>Number in thousands</td>
<td>209,840</td>
<td>15,6</td>
</tr>
<tr>
<td>Population growth</td>
<td>Rate in %</td>
<td>0,6</td>
<td></td>
</tr>
<tr>
<td>Geographic location</td>
<td>Country and state</td>
<td>Russia, North-West region</td>
<td></td>
</tr>
<tr>
<td>Economy (i.e. employees per sector / unemployment rate)</td>
<td>Textual descriptions with numbers / percentages</td>
<td>Unemployment rate is 0.69% (December 2017)</td>
<td></td>
</tr>
<tr>
<td>Climate (Average Temperature per month / …)</td>
<td>Degree Celsius</td>
<td>January -5.1, February -5.7, March -1.0, April +6.1, May +12.2, June +15.8, July +18.3, August +16.5, September +11.1, October +5.8, November 0, December -3.8 Approx. year +5.9</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Characteristics of the urban morphology (land use / density / physical structure / city centres)</td>
<td>Textual description</td>
<td>Main territory - 95,6 sq.km, including living territories – 14,4 sq.km, public-business zones 1.7 sq.km, production zones – 10.02 sq.km. The area of forest plantations – 10 sq.km. The area of the parks – 1.42 sq.km. The area of water bodies and water areas of rivers – 4,2 sq.km. Population density 2 195 persons per square meter. In the pilot area “Old city of Pskov”</td>
<td></td>
</tr>
</tbody>
</table>
many administrative organizations, state university, the main sightseeings of the city.

Characteristics of the regulatory background: Organisational structure of administration, government (parties), specific relevant local political goals, …

Textual description

The local authority represented by the 2 branches: executive (Pskov City Administration) and legislative (Pskov City Council). Pskov City Council including deputies from 5 political parties: “YedinayaRossiya”, “LDPR”, “KPRF”, “SpravedlivayaRossiya”, “Yabloko”. The main goals are listed in the main City Document “Strategy of socio-economic development of Pskov till 2020”.

Please add any other specific Indicator that you consider as relevant

Textual description

Please give us some more information on your transport infrastructure related to multimodality:

<table>
<thead>
<tr>
<th>Transport infrastructure indicators, Multimodality</th>
<th>Unit</th>
<th>Pskov city</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Transport modes</td>
<td>Number</td>
<td>1 (bus)</td>
<td>1 (bus)</td>
</tr>
<tr>
<td>Public Bus system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>total length – 162.4 km passengers per month – 2 800 000 Number of lines - 9</td>
<td></td>
</tr>
<tr>
<td>Trolley bus system</td>
<td>Existing? Yes / no. / Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Electrification rate of Public Bus system</td>
<td>% of vehicles of total fleet</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subway system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tram system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>City train (or regional train in the city)</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Public Transportation network density</td>
<td>Share in % of people living in a walkable distance to PT (bus 300m, Tram 500m, subway or city train)</td>
<td>No information</td>
<td></td>
</tr>
</tbody>
</table>
### Phase 2:

The aim of phase 2 of Preparatory Analysis was to get more detailed information about the pilot area regarding multimodality and Mobility Management.

**Qualitative assessment – expert interviews with stakeholders**

Data were gathering from individual in-depth interviews (interviews with tete-a-tete and phone calls) with the following specialists:

- Acting Head of the Department of Urban Services of Pskov City Administration;
- Head of the Transport and Communication Division of the Department of Urban Services of Pskov City Administration;
- Head of the State Traffic Inspectorate of the Ministry of Internal Affairs of Russia in the city of Pskov;
- Head of the Operation Department Pskov Region State Enterprise «Pskovpassazhiravtotrans»;
- Director of the MKU of Pskov "Stroytechnadzor";
- Director of LLC "SDM project".

<table>
<thead>
<tr>
<th>Questions to be addressed regarding multimodality</th>
<th>Target group / Examples of experts that can be consulted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which political programmes and strategies exist that address multimodality in the specific city quarters that are in focus of CMM?</td>
<td>Complex scheme of organization of traffic in Pskov Pskov city development strategy until 2020:</td>
</tr>
</tbody>
</table>
Phase 3:

Pskov public transport

The data which is filled is the subject to statistical processing, used anonymously. (the last data 29.06.2018)

### Specify gender

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>542</td>
<td>63,39%</td>
</tr>
<tr>
<td>Male</td>
<td>313</td>
<td>36,61%</td>
</tr>
</tbody>
</table>

### Specify age

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>121</td>
<td>14,15%</td>
</tr>
<tr>
<td>15-17</td>
<td>136</td>
<td>15,91%</td>
</tr>
<tr>
<td>18-29</td>
<td>237</td>
<td>27,72%</td>
</tr>
</tbody>
</table>
A TALE OF THREE CITIES:
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

<table>
<thead>
<tr>
<th>Age</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-49</td>
<td>288</td>
<td>33.88%</td>
</tr>
<tr>
<td>50-65</td>
<td>57</td>
<td>6.67%</td>
</tr>
<tr>
<td>65 and more</td>
<td>16</td>
<td>1.87%</td>
</tr>
</tbody>
</table>

**Social status**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker</td>
<td>427</td>
<td>49.94%</td>
</tr>
<tr>
<td>Student</td>
<td>352</td>
<td>41.17%</td>
</tr>
<tr>
<td>Pensioner</td>
<td>16</td>
<td>1.87%</td>
</tr>
<tr>
<td>Disabled</td>
<td>4</td>
<td>0.47%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>11</td>
<td>1.29%</td>
</tr>
<tr>
<td>Housewife</td>
<td>15</td>
<td>1.75%</td>
</tr>
<tr>
<td>temporarily not working</td>
<td>30</td>
<td>3.51%</td>
</tr>
</tbody>
</table>

**Choose the data in the table**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of people in the family</td>
<td>12</td>
<td>65</td>
<td>175</td>
<td>265</td>
<td>254</td>
<td>90</td>
</tr>
<tr>
<td>Number of cars in the family</td>
<td>230</td>
<td>421</td>
<td>161</td>
<td>28</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Number of driver licenses in the family</td>
<td>130</td>
<td>308</td>
<td>358</td>
<td>48</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Number of bicycles in the family</td>
<td>284</td>
<td>250</td>
<td>172</td>
<td>83</td>
<td>37</td>
<td>32</td>
</tr>
<tr>
<td>Number of underage children in the family</td>
<td>322</td>
<td>305</td>
<td>182</td>
<td>37</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**Which kind of transport do you use most frequently?**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I walk on foot</td>
<td>192</td>
<td>22.46%</td>
</tr>
<tr>
<td>I ride a bicycle</td>
<td>40</td>
<td>4.68%</td>
</tr>
<tr>
<td>Bus</td>
<td>317</td>
<td>37.08%</td>
</tr>
<tr>
<td>Taxi</td>
<td>19</td>
<td>2.22%</td>
</tr>
<tr>
<td>Car</td>
<td>257</td>
<td>30.06%</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>3.51%</td>
</tr>
</tbody>
</table>

**Transport costs (euro per month)**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 7 euro</td>
<td>162</td>
<td>18.95%</td>
</tr>
<tr>
<td>7-14 euro</td>
<td>260</td>
<td>30.41%</td>
</tr>
<tr>
<td>14-30 euro</td>
<td>162</td>
<td>18.95%</td>
</tr>
<tr>
<td>More than 30 euro</td>
<td>209</td>
<td>24.44%</td>
</tr>
<tr>
<td>There is no transport costs</td>
<td>62</td>
<td>7.25%</td>
</tr>
</tbody>
</table>

Please rate on a scale of 0 to 10, how much are you satisfied with the pedestrian infrastructure in Pskov?
## Estimate the pedestrian infrastructure in Pskov?

<table>
<thead>
<tr>
<th>Parameter</th>
<th>1☆</th>
<th>2☆</th>
<th>3☆</th>
<th>4☆</th>
<th>5☆</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streets, pleasant for walks and travels</td>
<td>104</td>
<td>174</td>
<td>203</td>
<td>193</td>
<td>54</td>
<td>2.91</td>
</tr>
<tr>
<td>Street events (festivals and holidays)</td>
<td>145</td>
<td>166</td>
<td>275</td>
<td>199</td>
<td>70</td>
<td>2.86</td>
</tr>
<tr>
<td>Commercial and social. activity on the ground floors of buildings</td>
<td>122</td>
<td>163</td>
<td>256</td>
<td>193</td>
<td>121</td>
<td>3.03</td>
</tr>
<tr>
<td>Safe pedestrian crossings, crossroads</td>
<td>150</td>
<td>217</td>
<td>306</td>
<td>142</td>
<td>40</td>
<td>2.65</td>
</tr>
<tr>
<td>High-speed mode of vehicles (sensation of vulnerability when passing near a vehicle)</td>
<td>147</td>
<td>157</td>
<td>268</td>
<td>195</td>
<td>88</td>
<td>2.91</td>
</tr>
<tr>
<td>Street cover (sliding surfaces)</td>
<td>277</td>
<td>209</td>
<td>240</td>
<td>94</td>
<td>35</td>
<td>2.30</td>
</tr>
<tr>
<td>Visual comfort</td>
<td>150</td>
<td>214</td>
<td>271</td>
<td>167</td>
<td>53</td>
<td>2.72</td>
</tr>
<tr>
<td>Non-barrier environment</td>
<td>253</td>
<td>222</td>
<td>239</td>
<td>98</td>
<td>43</td>
<td>2.36</td>
</tr>
<tr>
<td>Convenient navigation</td>
<td>157</td>
<td>170</td>
<td>244</td>
<td>204</td>
<td>80</td>
<td>2.86</td>
</tr>
<tr>
<td>Noise comfort</td>
<td>185</td>
<td>185</td>
<td>264</td>
<td>153</td>
<td>68</td>
<td>2.69</td>
</tr>
<tr>
<td>Climate comfort</td>
<td>171</td>
<td>185</td>
<td>280</td>
<td>155</td>
<td>64</td>
<td>2.71</td>
</tr>
<tr>
<td>Security on the streets</td>
<td>162</td>
<td>180</td>
<td>298</td>
<td>184</td>
<td>31</td>
<td>2.70</td>
</tr>
<tr>
<td>Fresh air</td>
<td>148</td>
<td>201</td>
<td>246</td>
<td>191</td>
<td>69</td>
<td>2.80</td>
</tr>
<tr>
<td>Landscaping</td>
<td>102</td>
<td>151</td>
<td>235</td>
<td>247</td>
<td>120</td>
<td>3.15</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>152</td>
<td>186</td>
<td>316</td>
<td>151</td>
<td>50</td>
<td>2.72</td>
</tr>
<tr>
<td>Recognizing the appearance of Pskov</td>
<td>52</td>
<td>70</td>
<td>180</td>
<td>307</td>
<td>248</td>
<td>3.73</td>
</tr>
<tr>
<td>Saving of historical elements</td>
<td>70</td>
<td>96</td>
<td>236</td>
<td>271</td>
<td>182</td>
<td>3.47</td>
</tr>
<tr>
<td>Involving citizens in decision-making</td>
<td>299</td>
<td>226</td>
<td>215</td>
<td>73</td>
<td>42</td>
<td>2.22</td>
</tr>
</tbody>
</table>

### Your suggestions for improving the pedestrian infrastructure of Pskov
- 1. Asphalted pedestrian paths. 2. Road repair (especially crossroads) because of puddles and mud, it is difficult to pass, and there is also a great chance of being stained by passing transport. 3. Installation of more urns, not only near the shops. 4. One free toilet for the whole center is not enough! 5. In the Children's Park
- a huge number of horses near painted signs with fines and police does not do anything.
- 1. Repair pavement. 2. Provide safe exits for baby strollers. 3. Planting trees, not just cutting them down. 4. Fence green area, curbs. 5. Flower beds and flowers (not only in the center)
- Pedestrian crossings are often not reasonably located - to cross one street you can have to cross the road three times. It is advisable to make more pedestrian crossings at such intersections and forks in order to save time and not to create inconveniences for pedestrians. More attention should be paid to the condition of the sidewalks on the periphery of the city. Or at least their presence.
A TALE OF THREE CITIES:
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

- Install small "monuments" - installations with interesting designs, which then, perhaps, will become associated with Pskov. 2. Fountains. 3. On the main streets of the city, especially in historical houses, make uniform windows (not a mosaic of white and dark ones), there you can put flowers on the balconies windows (even the residents of such apartments can pay for their care) 4. A separate place for a city tree and festivals, so as not to block the movement. 5. Pouring in the yards of skating rinks (many), installation of "left policemen", bicycle paths. Normal, new and interesting swings for children of different ages and playgrounds (different and interesting, and at different ages
- More frequent location of transitions. 2. Pedestrian crossings on each side of junction 3. Security Islands, 4. Adjustable crossings through 2 or more lanes to each side 5. Padded elevations, exit from adjacent territories on a level with the sidewalk, 8. Timely repair and cleaning of sidewalks.
- 1. Make everywhere new smooth asphalt, without pits and puddles; or tiled sidewalks; 2) plant trees instead of cut down, so that Pskov became green again; 3) make beautiful flower beds; 4) make a Park in the city 5) make new parks with trees and benches!!!!!
- A neat fence, concrete pavements, asphalt
- Asphalting of hiking trails in those parts of the city where they are not. And repairing old ones.
- asphalting paths, raising sidewalks over the lawn to drain water from pavement on the lawn and not vice versa, the reduction of the phases of the red signal for pedestrians on pedestrian crossings, the return of retracted pedestrian crossings on many streets, first of all on Lenin Square
- Asphalting of sidewalks
- safe pedestrian crossings, restrict the entry of transport to the centre, prohibit parking in the green area
- Landscaped parks create bike paths, pedestrian areas, make safer road traffic, clean streets, and create areas for physical exercises for children and teenagers, so that their energy was directed to the right channel.
- Landscaping of the park between Prospect Entuziastov and Trudastreet
- Higher curbs between the pedestrian zone and the highway
- more qualitatively lay asphalt and tile
- More precise pedestrian crossings, reflectors on signs of traffic
- more bike paths, create a comfortable bicycle infrastructure, make pedestrian crossings safer, increase business and commercial activity on the ground floors of buildings
- more smooth asphalt for roller skating
- More trees and other greenery
- more road junctions, refining parks, more entertainment
- More greenery and more paved roads! The quality of the sidewalks is very low.
- More greenery, cleaning of sand in spring-summer-autumn, more benches not only in parks (to sit down to rest), there are not enough bicycle paths and it's terrible to ride a bicycle on the road.
- More interested in cycling and bike parking
- More events
- More identification marks in Russian and English (directions, street names),
- repair of sidewalks, more lighting, urns and toilets
- More lighting near pedestrian crossings, fences along the road
- More lighting, improved pavement footpaths,
- More pedestrian roads; More bike lanes; Improved visual component;
- More walking paths in the historic city center

Please rate on a scale of 0 to 10, how much are you satisfied with the bicycle infrastructure in Pskov?

<table>
<thead>
<tr>
<th></th>
<th>1☆</th>
<th>2☆</th>
<th>3☆</th>
<th>4☆</th>
<th>5☆</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of bicycle paths</td>
<td>456</td>
<td>234</td>
<td>121</td>
<td>25</td>
<td>19</td>
<td>1.73</td>
</tr>
<tr>
<td>quality of bicycle paths</td>
<td>325</td>
<td>190</td>
<td>169</td>
<td>98</td>
<td>73</td>
<td>2.30</td>
</tr>
<tr>
<td>Bicycle parking</td>
<td>317</td>
<td>232</td>
<td>208</td>
<td>72</td>
<td>26</td>
<td>2.13</td>
</tr>
<tr>
<td>Convenience of routes</td>
<td>376</td>
<td>232</td>
<td>145</td>
<td>69</td>
<td>33</td>
<td>2.01</td>
</tr>
</tbody>
</table>

Estimate the bicycle infrastructure in Pskov?
## Appendix

<table>
<thead>
<tr>
<th>Safety</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>381</td>
<td>44,56%</td>
</tr>
<tr>
<td></td>
<td>211</td>
<td>24,68%</td>
</tr>
<tr>
<td></td>
<td>175</td>
<td>20,47%</td>
</tr>
<tr>
<td></td>
<td>62</td>
<td>7,25%</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3,04%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,00</td>
</tr>
<tr>
<td>Maintenance of bicycle paths / lanes</td>
<td>430</td>
<td>50,29%</td>
</tr>
<tr>
<td></td>
<td>170</td>
<td>19,88%</td>
</tr>
<tr>
<td></td>
<td>154</td>
<td>18,01%</td>
</tr>
<tr>
<td></td>
<td>73</td>
<td>8,54%</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>3,27%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,95</td>
</tr>
<tr>
<td>Bicycle culture</td>
<td>399</td>
<td>46,67%</td>
</tr>
<tr>
<td></td>
<td>192</td>
<td>22,46%</td>
</tr>
<tr>
<td></td>
<td>164</td>
<td>19,18%</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>8,30%</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>3,39%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,99</td>
</tr>
</tbody>
</table>

### Why do you use a bicycle in Pskov?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel to work / school</td>
<td>128</td>
<td>14,97%</td>
</tr>
<tr>
<td>For work</td>
<td>45</td>
<td>5,26%</td>
</tr>
<tr>
<td>On personal matters</td>
<td>176</td>
<td>20,58%</td>
</tr>
<tr>
<td>For shopping</td>
<td>66</td>
<td>7,72%</td>
</tr>
<tr>
<td>For rest</td>
<td>429</td>
<td>50,18%</td>
</tr>
<tr>
<td>Sport</td>
<td>230</td>
<td>28,90%</td>
</tr>
<tr>
<td>do not ride a bicycle</td>
<td>335</td>
<td>41,52%</td>
</tr>
</tbody>
</table>

### Are you ready to use the bike as the main vehicle?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use the bicycle now</td>
<td>50</td>
<td>5,85%</td>
</tr>
<tr>
<td>Ready to use bicycle all year round if there is a good bicycle infrastructure</td>
<td>99</td>
<td>11,58%</td>
</tr>
<tr>
<td>Ready to use bicycle seasonally if there is a good bicycle infrastructure</td>
<td>373</td>
<td>43,63%</td>
</tr>
<tr>
<td>No, the bicycle is not a vehicle</td>
<td>186</td>
<td>21,75%</td>
</tr>
<tr>
<td>Difficult to answer</td>
<td>120</td>
<td>14,04%</td>
</tr>
<tr>
<td>Other</td>
<td>27</td>
<td>3,16%</td>
</tr>
</tbody>
</table>

### Estimate on a scale from "Very Important" to "Not at all important" reasons for using cycling in Pskov

<table>
<thead>
<tr>
<th>Answer</th>
<th>Very important</th>
<th>Rather important</th>
<th>Rather not important</th>
</tr>
</thead>
<tbody>
<tr>
<td>An associated network of bicycle paths will appear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There will be convenient bicycle parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There will be an urban bicycle rental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The use of bicycle will be enshrined in legislation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officials will begin to ride bicycles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The maintenance of the car, including the cost of gasoline will exceed the budget</td>
<td></td>
<td></td>
<td>50/50</td>
</tr>
<tr>
<td>Bike will become popular and fashionable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All friends will use the bike</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Your suggestions for improving the cycling infrastructure of Pskov
- need bicycle parking near the schools of the city
- A connected network of bicycle paths" is very good. You can also make markings for bicycles.
- Enhancing the culture of safe cycling. 2. Improving the quality of bicycle routes (either an increase in cycling routes or the appearance of markings on the road where a bicyclist can ride.
- Making continuous cycling / cycling routes on the main streets of the city. 2. To do convenient for use bicycle parking in the streets (for example, U-shaped) 3. To make urban bike rental.
- Safe bike paths
- Safe illuminated bike paths
- Accomplishment
- More bicycle paths, safe bike parking, finding pedestrians on bike paths is unacceptable
A TALE OF THREE CITIES:  
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- More bike paths, bike parks.
- More bike paths, make descents from the curbs.
- More bicycle paths, they must be closed in the ring.
- More bike paths, parking places, legislative fastening.
- More bike paths, quality improvement, introduction of fines for misuse (walk with strollers, pedestrians).
- More bicycles, suitable in size.
- More bike paths, as well as more free bicycle parking.
- More bike paths, the appearance of an urban bike rental.
- More safe bike paths.
- More bike paths.
- More tracks for bicycles.
- More bike paths and parking.
- More places for skiing.
- More places for riding and pavement separation.
- More bike paths in the city (whenever possible).
- More clean and good paths, bike propaganda.
- More bicycles.
- More bicycles.
- Knowing that you will be safe while riding.
- Larger number of bike paths.

Please rate on a scale of 0 to 10, how much are you satisfied with the public transport in Pskov?

<table>
<thead>
<tr>
<th>Rate</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>36</td>
<td>4.21%</td>
</tr>
<tr>
<td>1</td>
<td>44</td>
<td>5.15%</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>7.84%</td>
</tr>
<tr>
<td>3</td>
<td>107</td>
<td>12.51%</td>
</tr>
<tr>
<td>4</td>
<td>97</td>
<td>11.35%</td>
</tr>
<tr>
<td>5</td>
<td>152</td>
<td>17.78%</td>
</tr>
<tr>
<td>6</td>
<td>110</td>
<td>12.87%</td>
</tr>
<tr>
<td>7</td>
<td>109</td>
<td>12.75%</td>
</tr>
<tr>
<td>8</td>
<td>72</td>
<td>8.42%</td>
</tr>
<tr>
<td>9</td>
<td>31</td>
<td>3.63%</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>3.51%</td>
</tr>
</tbody>
</table>

How often do you use public transport?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday</td>
<td>302</td>
<td>35.32%</td>
</tr>
<tr>
<td>Several times a week</td>
<td>209</td>
<td>24.44%</td>
</tr>
<tr>
<td>One time a week</td>
<td>40</td>
<td>4.68%</td>
</tr>
<tr>
<td>Several times a month</td>
<td>176</td>
<td>20.58%</td>
</tr>
<tr>
<td>Not use</td>
<td>92</td>
<td>10.76%</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>4.21%</td>
</tr>
</tbody>
</table>

How do you pay for public transport?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>one-time ticket</td>
<td>565</td>
<td>66.08%</td>
</tr>
<tr>
<td>ordinary travel card (per month)</td>
<td>202</td>
<td>23.63%</td>
</tr>
<tr>
<td>discounted travel card (per month)</td>
<td>47</td>
<td>5.50%</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
<td>4.80%</td>
</tr>
</tbody>
</table>

Estimate the bicycle infrastructure in Pskov?

<table>
<thead>
<tr>
<th></th>
<th>1☆</th>
<th>2☆</th>
<th>3☆</th>
<th>4☆</th>
<th>5☆</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fare</td>
<td>194</td>
<td>182</td>
<td>270</td>
<td>132</td>
<td>77</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>22.69%</td>
<td>21.29%</td>
<td>31.58%</td>
<td>15.44%</td>
<td>9.01%</td>
<td></td>
</tr>
<tr>
<td>number of buses along the route</td>
<td>125</td>
<td>174</td>
<td>303</td>
<td>179</td>
<td>74</td>
<td>2.89</td>
</tr>
<tr>
<td></td>
<td>14.62%</td>
<td>20.35%</td>
<td>35.44%</td>
<td>20.94%</td>
<td>8.65%</td>
<td></td>
</tr>
<tr>
<td>convenience of bus stops</td>
<td>115</td>
<td>162</td>
<td>264</td>
<td>206</td>
<td>108</td>
<td>3.04</td>
</tr>
<tr>
<td></td>
<td>13.45%</td>
<td>18.95%</td>
<td>30.88%</td>
<td>24.09%</td>
<td>12.63%</td>
<td></td>
</tr>
<tr>
<td>Convenience of routes (number of forced)</td>
<td>85</td>
<td>115</td>
<td>253</td>
<td>252</td>
<td>150</td>
<td>3.31</td>
</tr>
</tbody>
</table>
Your suggestions for improving the public transport system in Pskov

- More convenient location of bus stops
- To allocate a lane for public transport on the streets, for which pass routes 2 a single travel card for buses and minibuses. Increase the number of buses on Route 4. Normal timetables and route map (the one that hangs in buses, incomprehensible) 5. Electronic scoreboard at the stop (as on summer) or the application, in which can track the time before arrival at each bus stop 6. The possibility of paying for the fare by bank card.
- Updating the buses 2. Improving the culture of working with people on routes 3. Convenient and accessible schedules of city routes in electronic form: navigation app for mobile, for example.
- Connect public transport Pskov to Yandex.Transport2. It is unclear now how and at what stops to catch transport to the suburbs. 3. The stops are terrible. Glass-not always clean and not always with all glass, cold. Need normal maps schemes with map, routes, and timetable.
- Additional stop at the intersection of Kommunalnaya and Narodnayast. This is a requirement of the time. A huge area with new buildings, and available the stops are very far apart. The gap between ost. Petrovskaya and The city hospital is almost 1 km away!!! At the norm of the distances between stops in the city is 400 m. 2. Placement of timetables - their permanent update. 3. Equipment of comfortable benches at the stops 4. CONTINUOUS cleaning of buses during the day ... no one is doing. Sometimes you go in very dirty buses. 5. Additional information the scoreboard with the names of the streets (stops) inside the bus!
- 1. Electronic boards and a map with a route scheme at stops. 2. The electronic travel payment system. Updating of the buses. Make a fare payment system using cards 2) Make a normal schedule at the eye level with the names of stops on which the bus will stop, with city map 3) Continue to set the scoreboard at the stops, but make sure that buses burned on the scoreboard from top to bottom of the bus, which will arrive first of all to bus, which will arrive later only 4) in the long term - to revive tram.
- Absolutely not satisfied with the overlap of the Central streets of the city during the holidays and relay races
- Bus number 2 is a very long time to wait, they would be more
- the bus fleet should be updated
- Buses solo dirty, old, the seats are disgusting to sit down. The new buses are often inconvenient and are not designed for a large number of passengers. Frequent drunken cads, "terrorizing" all passengers. The professionalism of drivers leaves much to be desired. During peak hours, more buses are required on the routes. Bus number 6 at the weekend is very rarely goes. Conductors would be removed - unpleasant, when all the way you are hammering elbows with wagering conductors and every time they suspect of non-payment of travel. On some buses there are stickers on the availability of an audio guide - I have never heard it sound, although the idea is wonderful.
- Many streets are not covered by public transport.
- clean buses
- Adequately give buses on the route. During peak hours on popular routes-14,17,2,4,3 give big buses!!! Because all people from 8 to 10 go to work and study, and from 17 to 19 back!
- More buses on routes, a separate strip for public transport
- More buses, fleet renewal
- More news about the situation of weather, transport, business etc in town information board
- More Seating
- in the city of Pskov is a very large number of routes, it is necessary to reduce the number of routes and increase their frequency, not necessarily a person from point A to point B must get direct, it is necessary to create a system such as the Moscow metro, when a person sits on one metro line and then due to this, you can reduce the number of routes while increasing their frequency.
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- To install air conditioning in the bus, deactivate the oven during the hottest time of the year at peak times to run more buses, so passengers could sit and.
- In General, all satisfied.
- during peak hours run more buses, due to downtime in traffic buses are late by 40 minutes or more

How often do you use automobile?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday</td>
<td>326</td>
<td>38.13%</td>
</tr>
<tr>
<td>Several times a week</td>
<td>174</td>
<td>20.35%</td>
</tr>
<tr>
<td>One time a week</td>
<td>45</td>
<td>5.26%</td>
</tr>
<tr>
<td>Several times a month</td>
<td>104</td>
<td>12.16%</td>
</tr>
<tr>
<td>Not use</td>
<td>190</td>
<td>22.22%</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>1.87%</td>
</tr>
</tbody>
</table>

How much do you agree with the statement that the bicycle and public transport can become a worthy alternative to a car in the fight against city traffic jams?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rather agree</td>
<td>200</td>
<td>23.39%</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>318</td>
<td>37.19%</td>
</tr>
<tr>
<td>Rather disagree</td>
<td>155</td>
<td>18.13%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>98</td>
<td>11.46%</td>
</tr>
<tr>
<td>Difficult to answer</td>
<td>84</td>
<td>9.82%</td>
</tr>
</tbody>
</table>

Are you ready to change your personal car and to comfortable public transport or a bicycle?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Quantity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, in the presence of a well-developed bicycle infrastructure</td>
<td>309</td>
<td>36.14%</td>
</tr>
<tr>
<td>Yes, with a well-developed public transport system</td>
<td>290</td>
<td>33.92%</td>
</tr>
<tr>
<td>No</td>
<td>242</td>
<td>28.30%</td>
</tr>
<tr>
<td>Difficult to answer</td>
<td>128</td>
<td>14.97%</td>
</tr>
<tr>
<td>Other</td>
<td>52</td>
<td>6.08%</td>
</tr>
</tbody>
</table>
Appendix

A2: Vilnius CMM data

Phase 1:

General information on the city, the pilot areas, the pilot institutions and transport infrastructure

In the first phase general data on the cities, as well as data on their transport infrastructure and on the pilot areas with regard to the situation of Multimodality and Mobility Management will be collected. It should be possible to conduct this data gathering by a simple desktop research based on existing quantitative data or by brief consultations of respective experts. The results from this phase of data collection will enable a first cross-city comparison and build a basis for identifying transferable practices. Moreover they will build an information basis for planning measures tailored to the specific conditions and requirements of each city.

Indicators

Please describe your city/pilot area for multimodality:

<table>
<thead>
<tr>
<th>General Indicators describing city/pilot area for multimodality</th>
<th>Unit</th>
<th>City</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Square kilometres</td>
<td>401</td>
<td>6,54</td>
</tr>
<tr>
<td>Population size</td>
<td>Number in thousands</td>
<td>617 thousands</td>
<td>14,4 thousands</td>
</tr>
<tr>
<td>Population growth</td>
<td>Rate in %</td>
<td>0,2%</td>
<td>0,2%</td>
</tr>
<tr>
<td>Geographic location</td>
<td>Country and state</td>
<td>Lithuania</td>
<td>Lithuania</td>
</tr>
<tr>
<td>Economy (f.i. employees per sector / unemployment rate)</td>
<td>Textual descriptions with numbers / percentages</td>
<td>Unemployment rate in Vilnius region – 7,6 % in 2015, 5,6 % in 2016, 4,8 % in 2017. While in Lithuania this rate was 9.49% in 2016.</td>
<td>-</td>
</tr>
<tr>
<td>Climate (Average Temperature per month / …)</td>
<td>Degree Celsius</td>
<td>Jan -4,1 Febr -3,9 March -0,1 April -6,9 May -12,8 June -15,6 July -17,9 August -17,0 Sep -12,0 Oct -6,7 Nov -1,2 Dec -2,8</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Characteristics of the urban morphology (land use / density /physical structure / city centres)</td>
<td>Textual description</td>
<td>Vilnius is not very dense city and has tendency to expand. Workplace concentration is located differently from residential districts, this cause’s daily commuting pendulum. Based on land use by purpose - city is divided into three zones – central, middle and peripheral. In the central zone we have old town, city center that is being developed and undeveloped city center. In the middle zone we have districts of dense residential areas, industrial districts, historical suburbs as well as wide range of services. In the peripheral zone we have centers – satellites, reserve territories for the urbanisation and un-urbanised territories. There are large green areas inside the city as well (forests and parks). City structure is amorphous with tendency to follow the river bank.</td>
<td>Area is in the middle zone, relatively close to the City centre, part of it is densely urbanised, the other part is used by academic society – academic town is developing and growing.</td>
</tr>
</tbody>
</table>

Characteristics of the regulatory background: Organisational structure of administration, Textual description The main administrative organisation is Vilnius’ Municipality. It has the Pilot area mainly is in Antakalnis eldership. But all the analysis was done taking
A TALE OF THREE CITIES: 
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

<table>
<thead>
<tr>
<th>government (parties), specific relevant local political goals, …</th>
<th>Mayor, head of administration and the city council (51 members). Under it there are elderships that administrate smaller city parts.</th>
<th>into account Vilnius transport districts (which are slightly different than the boundaries of Antakalnis eldership).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please add any other specific Indicator that you consider as relevant</td>
<td>Textual description</td>
<td>-</td>
</tr>
<tr>
<td>Please add a map of your pilot area in which you plan your mobility points to demonstrate multimodality and locate your (possible)pilot institution(s) for mobility management (if applicable): Pilot area is marked blue:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pilot area up-close. It has 6 sub-areas (depending on main commuting nets (matrixe)

Please give us some more information on your transport infrastructure related to multimodality:

<table>
<thead>
<tr>
<th>Transport infrastructure indicators, Multimodality</th>
<th>Unit</th>
<th>City</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Transport modes</td>
<td>Number</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Public Bus system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>116 regular lines; 6 “fast” lines; Frequencies are different, from 5 min. to once per hour; 2128 km; 10.6 mln. pass. Per month; 342 vehicles</td>
<td>8 regular lines; 2 “fast” lines; Frequencies are different, from 5 min. to once per hour; 58 km; About 300 thousands pass. Per month 28 vehicles</td>
</tr>
<tr>
<td><strong>Trolley bus system</strong></td>
<td><strong>Existing? Yes / no. / Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</strong></td>
<td><strong>Yes; 18 lines; Every 6-20 min.; 408 km 5,4 mn. pass. per month; 188 vehicles</strong></td>
<td><strong>Yes; 6 lines; Every 6-20 min.; 37 km; About 450 thousands pass. per month; 15 vehicles</strong></td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Electrification rate of Public Bus system</strong></td>
<td>% of vehicles of total fleet</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subway system</strong></td>
<td><strong>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</strong></td>
<td><strong>No subway</strong></td>
<td><strong>No subway</strong></td>
</tr>
<tr>
<td><strong>Tram system</strong></td>
<td><strong>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</strong></td>
<td><strong>No tram</strong></td>
<td><strong>No tram</strong></td>
</tr>
<tr>
<td><strong>City train (or regional train in the city)</strong></td>
<td><strong>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</strong></td>
<td><strong>5 suburban lines; Frequency - 15-20 times per day; Several very important regional lines (to Lentvaris, Trakai and Kaunas), that have frequency up to 15 rides per day; No information of fleet size and pass. per month. 660 thousand rides per day.</strong></td>
<td><strong>No train</strong></td>
</tr>
<tr>
<td><strong>Public Transportation network density</strong></td>
<td><strong>Share in % of people living in a walkable distance to PT (bus 300m, Tram 500m, subway or city train 1000m)</strong></td>
<td>82%</td>
<td>74%</td>
</tr>
<tr>
<td><strong>Bike Lanes</strong></td>
<td><strong>Total length in Km</strong></td>
<td>63 km</td>
<td>1.5 km</td>
</tr>
<tr>
<td><strong>Bicycle parking stands in public space, number</strong></td>
<td><strong>Total number of bicycle parking stands</strong></td>
<td><strong>No specific information on subject, preliminary about 1750 – 2000 stands.</strong></td>
<td><strong>No specific information, but it could be about 30-50 stands</strong></td>
</tr>
<tr>
<td><strong>Bicycle parking stands in public space, density</strong></td>
<td><strong>Total number of bicycle parking stands per 1000 inhabitants</strong></td>
<td><strong>About 3/1000</strong></td>
<td><strong>About 2.5/1000</strong></td>
</tr>
<tr>
<td><strong>Public and private bike sharing operators</strong></td>
<td><strong>Numbers of providers with numbers of stations, bicycles, users</strong></td>
<td><strong>1; 37 stations; 300 bicycles; 1,3 thousand rides per day; 4500-5000 subscribed users per season</strong></td>
<td><strong>No sharing stations</strong></td>
</tr>
<tr>
<td><strong>Public and private bike sharing operators: Electrification rate</strong></td>
<td><strong>% of bicycles of total fleet</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Car ownerships rate</strong></td>
<td><strong>Cars per household / cars per 1000 inhabitants</strong></td>
<td>1.05 car per household; 443/1000</td>
<td>0.82 car per household; 347/1000</td>
</tr>
<tr>
<td><strong>Public and private car sharing operators</strong></td>
<td><strong>Numbers of providers with numbers of stations, vehicles, users</strong></td>
<td><strong>2; 1)Citybee: no stations (only charging stations for e-cars) and free float zones where you can find/leave the car; 2) Spark – 21 charging points (stations); With both operators -3,96 thousand rides per day</strong></td>
<td><strong>2 1) Citybee zone covers only about 1/5 of pilot area (the densely urbanised part); 2) Spark – 2 stations (4 charging points)</strong></td>
</tr>
<tr>
<td><strong>Public and private car sharing operators: % of cars of total fleet</strong></td>
<td><strong>Citybee – 1,4% Spark – 100%</strong></td>
<td><strong>Citybee – 1,4% Spark – 100%</strong></td>
<td></td>
</tr>
</tbody>
</table>
A TALE OF THREE CITIES: 
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

The specific area for the multimodality point is very suitable because of big passenger flows to situate here workplaces, academicals and medical facilities. Area is on the edge of the city and has good public transport service, which is very important in order for car users to change to public transport.

Phase 2:

The aim of phase 2 of Preparatory Analysis was to get more detailed information about the pilot area regarding Multimodality and Mobility Management.

Qualitative assessment – expert interviews with stakeholders

Venue: Vilnius Municipality Date: 4th of May, 2018, Interviewed experts:
- Aušra Sičiūnienė - Chief specialist at Development planning division of the City’s development department at Vilnius’ municipality. CMM coordinator for Vilnius;
- Birutė Jatautaitė - Manager of international projects at ME "Suisiekimopaslaugos";
- Kristina Gaučė - CMM consultant for Vilnius;
- Dalia Bardauskienė – Advisor to the Mayor;
- Lina Melianienė - Head of Investment projects department at Vilnius’ municipality;
- Linas Bartusevičius - Head of the Infrastructure division of the Transport department at Vilnius’ municipality;
Summary of the results regarding bilateral discussion/workshop on multimodality:

Workshop had started with discussion: “Multimodality. What is it?” – it was obvious that not everyone is familiar with this term and many participants confused Park & Ride with the multimodality point, discussed if walking should be counted as a travel mode or not. Eventually it was agreed that for having multimodality point – one arrived into multimodality point should be able to choose from at least 2 modes for travelling (and walking is not taken into account).

According to the representative of Ministry of Transport, the most multimodality-oriented national document in Lithuania is Feasibility study for promoting multimodality, which was done at the initiative of the Ministry of Transport in 2013 (some basic advises for biggest Lithuanian cities are delivered as outcome of this study). In the National guidelines for preparation of Sustainable urban mobility plans – multimodality is one of the topics as well.

When discussion turned to the activities for increasing multimodality, all the participants agreed that its business that is forcing changes and offers new possibilities for commuting in the city. One of the earliest (2012) attempts to open multimodality alike point was project for Balsiai (one of the satellite districts in Vilnius). The idea was to create secured lot near public transport route, where local inhabitants could store their bikes and continue journey by bus (so the issue of first-last mile would be solved). Bikes would have been secured by guard from socially vulnerable group (e.g. people with disabilities), in such way engaging person into the labor market. Unfortunately with no clear reason why - this idea wasn’t implemented, Vilnius city municipality possibly wasn’t interested in such a small project, and there were no local business willing to invest in it.

Other activities increasing multimodality is “Cyclocity” (bike-sharing) network in the city center and near the main stations. Also “Citybee” and “Spark” (car-sharing) networks, which cover almost all the city, including pilot area. Participants agreed that main Vilnius station (trains, buses) already is unofficial multimodality point – anyone coming from anywhere to Vilnius, can choose to continue his trip by public transport, bike-share, car-share (including e-cars), taxi services. These activities are business-based, but they operate with participation and support from Vilnius municipality.

During workshop preconditions and causes to implement multimodality point were discussed as well if the chosen area meets those criteria’s or not. All the participants agreed that the most important preconditions for multimodality point’ success is - good public transport service, benefits for passengers (saved money and time). Urban planners suggested, that it is crucially important for the point to happen in the everyday life’s route, e.g. near the school, shopping mall and etc. Head of Lithuanian Cyclists’ Association raised discussion if the car should necessarily be part of multimodal journey, maybe the point should be oriented only to other means of travelling (like above mentioned example – making first-last mile with bike, scooter and then switching to the PT). He also stated, that according to researchers done in UK, regular Park & Ride facilities cause bigger emissions of CO2 and his concern was if we need something similar to Park & Ride in the almost City Center at all.

Summary of the data and additional information gained during discussion with experts (following the questions addressed to experts in phase 2 guidelines).

Right now, two documents are being prepared for Vilnius – sustainable urban mobility plan (SUMP) and Master plan, those are happening to be the core strategies for mobility management in Vilnius municipality. Other documents addressing mobility management - Vilnius municipality’s parking strategy (2017), Strategy for promoting eco-friendly transport in Vilnius municipality (2018), other plans and projects for smaller parts of the city. According to the mobility expert, who works on Vilnius’ sustainable mobility plan, there are two household surveys on mobility conducted – one during the process of preparing Master plan and one in SUMP process. Modal split situation in Vilnius is calculated from results of Vilnius’ SUMP household survey, these are the results:

Average modal split in all Vilnius:
- Public transport – 25.4%;
- Bicycle – 1.5%;
- Pedestrians – 24.5%;
- Car – 48.3%;
- Car sharing – 0.3%.

Average modal split in pilot area:
- Public transport – 22.1%;
- Bicycle – 2.6%;
- Pedestrians – 11.0%;
- Car – 64.3%.

Appendix

- Jonas Damidavičius - Representative from the Ministry of Transport and Communication;
- Algvydas Karalius – Vilnius SUMP project manager;
- Marija Frolova – Mobility expert, ES projects’ specialist at ME “Vilniausplanas”;
- Sima Balčiūtė - Architect, projects’ manager at ME “Vilniausplanas”;
- Martynas Marozas – Urban planner, projects’ manager;
- Vytautas Buinevičius – Urban planner;
- Eduardas Krščiūnas - Head of Lithuanian Cyclists’ Association;
- Vytautas Višinskis - Representative from “Uber” (ride share).
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![Figure 2: Share of age group who use particular transport mode more than 5 times per week](image)

- 63% of men and 45% of women as a favorite transportation mean had indicated – driving a car;
- 28% of men and 56% of women indicated that are constantly driven as a passenger;
- To use public transport like 36% of men and 47% of women (2nd place in list of favorite transportation means);
- To ride a bicycle like 20% of men and 10% of women;
- Car sharing is used by 7.5% of men and 3% of women;
- Bike sharing is used 8.4% of men and 4.4% of women.

Conclusions
- Mobility management and improvement of multimodality is necessary for Vilnius, though the ways it should be implemented and the initiatives to start from are being seen differently among different stakeholders;
- Place for multimodality point should be very reasonable and selected logically, it must have good public transport service and good bicycle communication, easy to access by foot;
- It’s business that can help in providing sustainable mobility options; municipality should be communicating and coordinating the process.
- Open data for every operator is also the background for multimodality.

PHASE 3:

QUALITATIVE ASSESSMENT – Surveys on travel behavior, problems,
Below in this report one can find a short description of surveys and data quality, it’s comparison with data, suggested by WP leaders. In the second part of report, qualitative analysis on multimodality in Vilnius pilot area is presented (including conclusions).

I. Surveys and data
Sources and area of the survey:
- Vilnius citizens’ poll on mobility behaviour and conditions (2017). 302 respondents in Middle northeast zone (Zone within black stroke). 50 respondents from Antakalnis (Saulėtekis) district (blue zone), which is our pilot area for first multimodality point. It is less than 100 in pilot area, but over 300 together with close neighbourhood areas.
- ME “Susisiekimopaslaugos” (Transportation services manager) polls on public transport passengers’, parking lots’ users’ etc. satisfaction (2017). 1500 respondents from the entire city.
Appendix

General information about respondents of Vilnius citizens’ poll on mobility behaviour and conditions (2017)

Gender

- Male: 55%
- Female: 45%

Age

- 16 - 19 years: 25%
- 20 - 29 years: 40%
- 30 - 49 years: 30%
- 50 - 65 years: 5%
- >65 years: 1%

Occupation

- Pupil/student: 43%
- Employee: 41%
- Unemployed: 5%
- Maternity/paternity leave, housewife: 1%

Education

- Elementary: 49%
- Primary: 13%
- Secondary: 20%
- Vocational: 1%
- Higher: 1%
- College: 7%
- Bachelors’ degree: 43%
- Masters’ degree: 1%

Data we do not have

- Awareness of sustainable mobility and multimodality: Are you familiar with the term sustainable transportation or mobility?
- Perception of spatial accessibility: How easy to reach are multimodal services for the users? (Please note, that we don’t have properly organised multimodal services in Vilnius, so in my opinion this question shouldn’t be addressed to survey participants, but we could discuss it with experts).

II. QUESTIONS AND ANSWERS

Usage of sustainable mobility modes: 2 modes of transportation you are using most frequently for your regular trips?

Vilnius citizens’ poll on mobility behaviour and conditions (2017)

1st place: Car (driving, as a passenger, taxi, car sharing, business car) – 55% of the respondents;
2nd place: Public transport – 35%;
3rd place: Bicycle – 9%;
4th place: Motorcycle, scooter – 1%.

N.B. This questions is not representing modal split by number of trips, these are mostly used vehicles.

Car

24% of respondents mostly drive by themselves, 23% use a car as a passenger, 7% use taxis, 3% - car sharing, 2% - business car.
Most of the drivers are people from 30-49 years’ age group. 40% of them drive personal car, situation is the same or numbers are even bigger with car sharing and business cars. 51% of drivers have masters’ degree, 29% - bachelors’ degree; even 86% of drivers are working.

Women are more likely to travel as a passenger (67% of those who are driving by car as a passenger - women), 49% of passengers have masters’ degree, 26% - bachelors’ degree. 67% of passengers are working, 14% - retired, 12% - students.

Public transport (PT)
32% of respondents use PT within the city, 4% use intercity PT (42% of intercity PT users in this survey are more than 65 years old, 58% - 20-49 years old), 1% - suburban PT (50% of suburban PT users them are 20-29 years old). 63% of Vilnius’ PT users – women.

Bicycle
87% of respondents, who prefer to use bicycle, are 20-49 years old, only 7% of respondents are aged 50+ years chose bicycle as a most frequently used transportation mode. Share of men and women is almost equal.

Perception of quality of existing multimodal services: Are you satisfied with the time keeping, cleanliness, and safety, frequency of public transportation means that you are using and are they well connected to each other?
ME “Susisiekimosiai” polls on public transport passengers’, parking lots’ users’ etc. satisfaction (2017)

In the pilot area citizens rated these PT service qualities (1-10):
- Punctuality – 8,27;
- Frequency – 7,65;
- Working hours – 7,34;
- Speed – 7,54;
- Coordination of interconnections – 7,88;
- Presentation of timetables – 9,5;
- Safety – 8,03;
- Temperature in vehicles – 6,56;
- Drivers’ behaviour – 7,72;
- Comfortability – 6,9;
- Ticket purchase – 9,4;
- Overall quality – 7,76.

<table>
<thead>
<tr>
<th>Best feedbacks are from:</th>
<th>Worst feedbacks are from:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Age</td>
</tr>
<tr>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>&gt;60</td>
<td>16-29</td>
</tr>
<tr>
<td>Social status</td>
<td>Social status</td>
</tr>
<tr>
<td>Specialist</td>
<td>Unemployed</td>
</tr>
<tr>
<td>High</td>
<td>Education</td>
</tr>
<tr>
<td>Earnings per person in a</td>
<td>Earnings per person in a</td>
</tr>
<tr>
<td>household</td>
<td>household</td>
</tr>
<tr>
<td>&gt;1000 euro/month</td>
<td>&lt;200 euro/month</td>
</tr>
<tr>
<td>Personal car</td>
<td>Personal car</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Public transport comfort ability (Vilnius citizens’ poll on mobility behaviour and conditions (2017))

PT COMFORT
15% of respondents think that PT is very comfortable. 52% from those respondents are more than 65 years old, 40% have masters’ degree. 44% are working, 52% - retired.
56% of respondents think that PT is rather comfortable. 74% of these respondents are working. 43% have masters’, 26% have bachelors’ degree.
21% of respondents think that PT is rather uncomfortable. Even 77% of them are 20-49 years old and 71% are working.
4% of respondents think that PT is very uncomfortable. Even 50% of them are 20-29 years old, 33% - 30-49 years old. 66% have bachelors’ or masters’ degree.
4% of respondents were not sure about their perception and experiences, mostly - women (71%).

Overall men and women have similar perception on the PT services. Retired people rate PT better.
WILLINGNESS TO WALK MORE

34% of all respondents would like to walk more. 63% of respondents who answered so – women, even 76% from this share have bachelors’, masters’ or doctors’ degree.

Even 52% of respondents didn’t have opinion whether they want to start walk more.

14% of all respondents said they do not want to walk more. Among those respondents the share of men and women is almost equal.

Those, who want to start walking more are relatively younger than group, who do not want to.

 Were there any changes in your mobility behaviour in the past 12 months? (Vilnius citizens’ poll on mobility behaviour and conditions (2017))

9% of all respondents started to use car less (69% of them 20-49 years old, 85% - with bachelors’ or masters’ degree), 9% started to use PT more (70% of them – women, 22% - students, 70% - working people, 78% with bachelors’ or masters’ degree). 7% started to use taxi, Uber and similar services more, share of age, education and occupation groups are very similar as mentioned in other changes. 8% started to use bicycle more (86% of them are 20 – 49 years old, 91% are working, 91% with bachelors’ or masters’ degree).

What were the reasons to change your mobility behaviour? (Vilnius citizens’ poll on mobility behaviour and conditions (2017))

17% of respondents were not sure why they had changed their mobility behaviour. 14% of respondents changed it because of the safety issues, 11% caring about their health. Other reasons – care for better environment, financial issues, time management and etc.

Perception of economic accessibility: How affordable are multimodal services for the users? Please let us know on a five-point scale how you perceive the pricing of the public transportation means in your city. ME “Susisiekimopaslaugos” polls on public transport passengers’, parking lots’ users etc. satisfaction (2017). Citizens from pilot area rated the process of ticket purchase 9,4 (in a 1 to 10 scale). The rating is higher than in 2016 years’ survey.

Combination of different transport modes per trip: How many transport modes are usually combined in everyday trips? Please let us know which these transportation modes are.

Vilnius citizens’ poll on mobility behaviour and conditions (2017)

Only 1% of all the respondents said that they used more that one transport mode during their commuting trip (data from travelling diaries). Other 1% were not sure if they did. The rest were using one transport mode during the trip. Only two transport modes are combined, walking and PT or walking and private car.

N.B. Please note, that these are respondents from pilot area, located next to the City Centre, that explains a bit low need and level of multimodality.

Trip information sources: Which information sources are usually using for planning your trips? Do they offer information on several transport modes? Which ones?

Do you know and do you use these e-services for planning your trips, payments? (Vilnius citizens’ poll on mobility behaviour and conditions (2017))(App m.Ticket (PT routes, timetables, realtime information, PT tickets, trip planning – PT and walking), page www.stops.lt (PT routes, timetables, realtime information, PT tickets, trip planning – PT and walking), refill of PT ticket online, bicycle routes and objects nearby online, app m.Parking (payment for parking), Citybee, Spark, Uber, Taxify and other apps).

N.B. Those e-services were explained already in Phase 1 Report.

<table>
<thead>
<tr>
<th></th>
<th>Haven’t heard of it</th>
<th>Know about it, but do not use it</th>
<th>Tried it once or several times</th>
<th>Use it regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>m. Ticket app</td>
<td>12%</td>
<td>26%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>
The most actively used e-service is page www.stops.lt (24 % of respondents use it regularly), refilling PT ticket online and m.parking app share the second place (15 % of respondents use each one regularly). Least known e-service is information about bicycle paths (even 29 % of respondents haven’t heard about it). Shared ride and other private apps are those services, that people are well aware of, but do not use them (32 % of respondents).

m.Ticket app is more popular among women, than men (75 % among the respondents who use this app regularly – women). Share of retired respondents, who tried or use this app is 0.

29 % of respondents haven’t heard about information available online on current bicycle routes in Vilnius, also on objects in reach. 62% of them – women.

17 % of all respondents said they know about this service but do not use it. 6 % tried it. Only 2 % of all the respondents use this service and even 80 % among them are women.
Appendix

Shared ride and other private apps are quite known, only 14% of all respondents haven’t heard about those. 32% of respondents know about apps, but do not use them, 6% tried it. Retired and older people are informed worse than other age groups about this service. Only 5% answered that they use this e-service regularly and in this group the majority are men (64%).

**Perception of safety of a service by its users**
(Vilnius citizens’ poll on mobility behaviour and conditions (2017))

10% of all respondents feel very safe in PT, 35% feel rather safe, 6% feel rather unsafe and only 2% - very unsafe. 47% of respondents could not answer this question at all. Graphic below illustrates how this perception diversifies among males, females, and different age and occupation groups.

Share of people who feel rather safe on PT is considerably larger in female group than in male group. All the age and occupation groups feel rather safe in PT.

**Conclusions:**
The analysis is not properly indicating MM need in pilot area as respondents were mainly people living here, but not those travelling through. It would be useful to indicate and observe other target group – those who are crossing pilot area by car.

Features for our target group (MM point users) are already visible from this survey. Young, employed, educated with higher income men are more likely to change their habits, to try innovative things and etc. Therefore some deeper analysis on potential users needs must be done, including their expectations regarding layout and operational services in MM.
A TALE OF THREE CITIES: 
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A3: Rostock CMM data
Phase 1:

General information on the city, the pilot areas, the pilot institutions and transport infrastructure
In the first phase general data on the cities, as well as data on their transport infrastructure and on the pilot areas with regard to the situation of Multimodality and Mobility Management will be collected. It should be possible to conduct this data gathering by a simple desktop research based on existing quantitative data or by brief consultations of respective experts. The results from this phase of data collection will enable a first cross-city comparison and build a basis for identifying transferable practices. Moreover they will build an information basis for planning measures tailored to the specific conditions and requirements of each city.

Indicators
Please describe your city/pilot area for multimodality:

<table>
<thead>
<tr>
<th>General Indicators describing city/pilot area for multimodality</th>
<th>Unit</th>
<th>City</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Square km²</td>
<td>181.36 km² (2016)</td>
<td>1.23 km²</td>
</tr>
<tr>
<td>Population size</td>
<td>Number in thousands</td>
<td>207.492 (2016), Population density: 1,144.1 inh./km²</td>
<td>Kröpeliner-Tor-Vorstadt (KTV):119.397inh.(2016) Pilot area: 14.914 inh.(2017), Population density: KTV: 6,533.2 inh./km² (not in thousands) Pilot area: 12, 125.2 inh./km²</td>
</tr>
<tr>
<td>Population growth</td>
<td>Rate in %</td>
<td>According to current forecasts population of theCityofRostockwillincreaseby25,000 People during the next 20 years.</td>
<td></td>
</tr>
<tr>
<td>Geographical location</td>
<td>Country and state</td>
<td>Germany, Mecklenburg- Western Pomerania (MV)</td>
<td>Located on the western Side of the city, dense inner-city area</td>
</tr>
<tr>
<td>Economy (i.e. employees per sector / unemploymen t rate)</td>
<td>Textual description with numbers / percentage s</td>
<td>GDP, market price: 34,591 €/inh.; Gross-value added, basic price: 55,602€/employed person; Employed persons: 114,800 (2015) Unemployment rate: 9.8 % (2016) Agriculture: 0.1 % Industry:13.4% Services:86.5% Most important sectors: maritime economy (shipbuilding, sea port industries, cruises), Life Science, Logistic (freight and ferry transport – Gedser DK, Trelleborg SE, Hesinki – Tallin FIN/EST), aerospace industry, wind energy (on- &amp; off-shore), tourism (cruise tourism – biggest cruise port, one of most famous tourist destinations) - Rostock is the only regiopolis in MV</td>
<td>Unemployment rate, KTV: 4.2 % (2016)</td>
</tr>
<tr>
<td>Climate (Average Temperature per month )</td>
<td>Degree Celsius</td>
<td>Averageannualtemperature:10.1°C(2016)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Appendix

### Characteristics of the urban morphology (land use / density / physical structure / city centres)

**Textual description**
- Surface: 181.36 km² (2016): 56.21 km² for settlement, 18.12 km² traffic, 92.06 km² vegetation, 14.97 km² waters
- High percentage of vegetation
- High population density compared to surface dedicated to settlement: 3,691.37 inh./km²

- City located at the Baltic sea (18.3 km of coast)
- City separated by river Warnow in eastern and western side the city centre and largest build-up area is located on the western side
- The eastern part is dominated by industrial estates and a huge forest (Rostocker Heide) north-south, circa 20km

### Characteristics of the regulatory background:

**Textual description**
- Lord Mayor – three senators (finances, administration, public order; youth, social service, health, schools and sports; construction and environment)
- Most important political body - Municipal parliament: Left – Conservatives – Social democrats – Greens ...

- Advisory council Kröpeliner-Tor-Vorstadt

- 31 districts/quarters, 21 city areas – represented by 19 local advisory councils
- Local political goals: new SUMP called MOPZ, mobility management concept, e-mobility strategy a.s.o.

### Transport infrastructure indicators, Multimodality

<table>
<thead>
<tr>
<th>Unit</th>
<th>City</th>
<th>Pilot area Multimodality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Transport modes</strong></td>
<td>Number</td>
<td>5 modes (tram, city-bus, Regional busses, ferries, city-trains)</td>
</tr>
<tr>
<td><strong>Public Bus system</strong></td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>24/.../lines:320km, route: 169.7 km/circa 1 mio./68 (2016)</td>
</tr>
</tbody>
</table>
# A TALE OF THREE CITIES:
**Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points**

<table>
<thead>
<tr>
<th></th>
<th>Trolley bus system</th>
<th>Existing? Yes/no./Number of lines / frequencies / total length in Km/passengers per month / fleet size (Nr. Of vehicles)</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrification rate of Public Bus system</td>
<td>% of vehicles of total fleet</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Subway system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tram system</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>6/line 1+5 every 10 minutes, others every 20 minutes/lines: 76 km, route: 35.6 km /2.3 mio./53 (2016)</td>
<td>5/line1+5every10 minutes, others every20minutes</td>
<td></td>
</tr>
<tr>
<td>City train (or regional train in the city)</td>
<td>Number of lines / frequencies / total length in Km / passengers per month / fleet size (Nr. Of vehicles)</td>
<td>6/.../on3railwaytracks (S1-3; RB 1/12;RE 9)</td>
<td>3lineson1railway track, one station (Parkstraße)</td>
<td></td>
</tr>
<tr>
<td>Public Transportation network density</td>
<td>Share in % of people living in a walkable distance to PT(bus 300m, Tram 500m, Subway or city train 1000m)</td>
<td>No data available at city level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bike Lanes</td>
<td>Total length in Km</td>
<td>192.6 km (bike and bike/pavement (2016) (data not up-to-date)</td>
<td>Pilotarea ca. 15 km bike lanes, but most of the streets are Within Limit 20/30-km/h Zones</td>
<td></td>
</tr>
<tr>
<td>Bicycle parking stands in public space, number</td>
<td>Total number of bicycle parking stands</td>
<td>3,861 (open data)</td>
<td>KTV: 1,949 Pilot area: 1,661+6 (Werftdreieck)</td>
<td></td>
</tr>
<tr>
<td>Bicycle parking stands in public space, density</td>
<td>Total number of bicycle parking stands per 1000 inhabitants</td>
<td>18.61/1,000 inh. (own calculation)</td>
<td>Pilot area: 111.37/1,000 inh. (own calculation)</td>
<td></td>
</tr>
<tr>
<td>Public and private bike sharing operators</td>
<td>Numbers of providers with numbers of stations, bicycles, users</td>
<td>2 provider: RSAG with 5 stations à 30 pedelecs (elros); Deutsche Bahn with 2 stations à 10 bikes</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Public and private bike sharing</td>
<td>% of bicycles of total fleet</td>
<td>75%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>operators: Electrification rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>---</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Car ownership rate</td>
<td>Cars per household / cars per 1000 inhabitants</td>
<td>398/1,000 inhabitants (2017)</td>
<td>KTV: 350/1,000 inh. (2017)</td>
<td></td>
</tr>
<tr>
<td>Public and private car sharing operators</td>
<td>Numbers of providers with numbers of stations, bicycles, users</td>
<td>3 private operators (yourcars, greenwheels, flinkster) Yourcars: 5 stations à 5 cars Flinkster: one station à 2 cars Greenwheels: 13 stations à 14 cars and 200 registered users</td>
<td>Yourcar: 2 stations à 2 cars Greenwheels: 2 stations à 3 cars</td>
<td></td>
</tr>
<tr>
<td>Public and private car sharing operators: Electrification rate</td>
<td>% of cars of total fleet</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Park and ride facilities</td>
<td>Number and capacity in number of parking spaces</td>
<td>No consistent definition of P+R existing in Rostock, the administration counts 13 facilities (MOPZ), the transport association (VVW) counts 10 facilities with 3,280 parking spaces</td>
<td>0 (no use for P&amp;R because situated nearby the historical city centre)</td>
<td></td>
</tr>
<tr>
<td>Bike and Ride</td>
<td>Number and capacity in number of bike parking stands</td>
<td>No consistent definition of B+R existing in Rostock, the administration counts 6 locations (MOPZ), the transport association counts 27 locations (VVW) with each several bike parking stands</td>
<td>2 B+Rs with a) 88 + 7 bicycle parking spaces (Parkstraße) and b) 42 parking spaces (Holbeinplatz)</td>
<td></td>
</tr>
<tr>
<td>Integrated ticketing system for several modes existing?</td>
<td>Yes/no; number of modes integrated</td>
<td>Yes, composites tickets of the regional traffic association (VVW), 5 modes (tram, city-bus, regional busses, ferries, city-trains)</td>
<td>Yes, see left column</td>
<td></td>
</tr>
<tr>
<td>Multimodal information websites and (navigations) Apps existing?</td>
<td>Yes / no, numbers and names / description of features, functions, modes and area covered</td>
<td>Yes, 3 (integrating only public transport) 1) RSAG: <a href="http://www.rsag-online.de/">http://www.rsag-online.de/</a> PT in city area 2) VVW: <a href="https://www.verkehrsverbund-warnow.de/+App">https://www.verkehrsverbund-warnow.de/+App</a> PT in city area and county + several at national level: 3) DB: <a href="http://www.bahn.de">www.bahn.de</a> + App DB Navigator PT in city area and county, without ferries</td>
<td>Not applicable, see on the left</td>
<td></td>
</tr>
<tr>
<td>Intermodal stations existing (passenger transport)?</td>
<td>Yes/no; number of modes integrated</td>
<td>P+R: approximately 10 B+R: 6-27 Region + city: 6 (StadtRegion) public transport + car-/bike-sharing: 0 Many intermodal stations for tram/bus/city-train/ferry (T+B, T+B+CT etc.)</td>
<td>T+B: 2 (Doberaner Platz, Saarstraße) T+B+CT: 2 (Parkstraße, Holbeinplatz) B+R: 2 (Parkstraße, Saarstraße)</td>
<td></td>
</tr>
</tbody>
</table>
A TALE OF THREE CITIES:
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

<table>
<thead>
<tr>
<th>Intermodal logistic centres existing?</th>
<th>City logistic centre for freight traffic (GVZ and harbour)</th>
<th>Holbeinplatz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes / no; number</td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

| Intermodal freight distribution centers (e.g. lorry to bike) existing? | No (but planned as a model project for emission free city logistic in cooperation with a courier services) | No |

<table>
<thead>
<tr>
<th>Average modal split (including sharing systems)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>32.5 % feet</td>
<td>14.1 % bike</td>
</tr>
<tr>
<td>17.0 % public transport</td>
<td>36.4 % car</td>
</tr>
<tr>
<td>(System repräsentativer Verkehrsbefragungen; TU Dresden, 2013)</td>
<td></td>
</tr>
</tbody>
</table>

No data for pilot area available, but probably higher share of sustainable modes of transports than HRO average.

Phase 2
Introduction
The aim of phase 2 of Preparatory Analysis was to get more detailed information about the pilot area regarding Multimodality and Mobility Management. The pilot area is located in the dense inner-city area of Rostock. The pilot area counts nearly 15,000 inhabitants, living in an area of 1.23 km².

To deepen the knowledge about the pilot area and possible pilot institution for Mobility Management, four interviews were carried out with:

a) a traffic planner from the municipal administration
b) teacher from a primary school Werner-Lindemann-Schule
c) Director of the kindergarten Spielkiste
d) Project Manager of the new building project “Werftdreieck” from the local building company WIRO

Results regarding Multimodality:
Interviewee: Local Traffic planner responsible for the traffic planning in the pilot area, Staff member of Municipal administration of Hanseatic City of Rostock
Method: Personal face-to-face interview with guiding questions

What are the most important challenges in the pilot area regarding mobility/traffic?
Stationary traffic in general was identified as the main challenge in the pilot area. Streets are quite narrow and cars are parking on both sides, next to or on the pavement. Many streets are overcrowded with cars and car owners often disrespect existing traffic rules. This leads to problems like unauthorized parking on pavements, at intersections etc. A further consequence is that emergency and disposal services are hindered and emergency and disposal channels often blocked.

Furthermore, the interviewee identified conflicts between cyclists and pedestrians on pavements as another problem in the pilot area. Due to cobbled streets and their bad quality due to the high usage, cyclists often use illegally the pavement and not the street.
Impressions from the pilot area, Source: Weichmann Lisa

Existing political programs or strategies to support multimodality in Rostock and the pilot area:
According to the traffic planner, only few --specific programs or strategies exist addressing multimodality in Rostock. Also for the pilot area no recent concepts, strategies or programs dealing with mobility and traffic in the area exist.
Nevertheless, the integrated mobility plan approved in 2017 & valid for the next 10 years partly deals with the topic of Multimodality:
- Mobility Plan Future (MOPZ, Mobilitätsplan Zukunft): Several measures aim at the identification of public transport hubs and the extension of hubs to multimodal hubs, including B+R, P+R, car-sharing, information, bike-sharing, e-charging stations etc.
- a basis for this plan has been the Mobility Management Concept approved in 2016.

Existence of recent studies or concepts regarding mobility in the pilot area:
No studies or analysis was conducted in the pilot area during the last years. The latest analysis on stationary traffic dates back to 1997 and is not valid anymore. No further studies on mobility services, mobility types, parking etc. were conducted. And currently, the traffic department is planning no further analysis or concept in the pilot area, regardless the necessity and problem pressure. The only ongoing activity is the search for investors and a location for a garage/car parking in the pilot area.

Activities, drivers and barriers of Multimodality in Rostock:
Very little activities took place to further strengthen multimodality in Rostock. The last two activities to strengthen multimodality in the pilot area were first the installation of additional bicycle racks and second the decision to set up a new bus line through the pilot area from 2020.
In general, there were no specific drivers to support Multimodality in the pilot area. In contrary, according to the traffic planner, the lack of financial resources for the implementation of specific measures was in the past the main barrier to strengthen Multimodality in the pilot area. The traffic department itself undertook little activities to strengthen equal rights for all road users. The focus of the department is still very car-oriented. Currently, they are looking for investors and possible locations for a garage/car park in the pilot area in order to solve the main problem in the area – the stationary traffic and the space problem.
In general, according to the traffic planner, Mobility Management measures and the support of sustainable modes of transport are seen as supportive measures to improve the traffic situation in the pilot area but are not seen as being able to solve the named problems/challenges.
A possible driver could be the local advisory council (Ortsbeirat KTV) and its recent application addressed to the municipality, to set up a master plan for the KTV (incl. a plan for stationary and moving traffic).

Phase 3

SURVEY 1: ‘Kommunale Bürgerinnen- und Bürgerumfrage 2016‘ (Local citizens survey, 2016))
In the following, results from the “Kommunale Bürgerinnen- und Bürgerumfrage 2016” (local citizens survey) conducted in 2016 in the City of Rostock will be presented. The focus will be on the most important results regarding the mobility behavior of citizens in the pilot area.
Size of Random sample: 10.000 citizens weighted by city quarter, 3072 respondents (for whole city)
The results presented below reflect the responses from those citizens living in the city quarter ‘Kröpeliner-Tor- Vorstadt‘ – the pilot area within the CMM project. Out of 16.527 citizens living in the city quarter ‘KTV‘ 325 citizens of the pilot area responded to the survey.

Results:
Q9) How satisfied are you with the public transport in the Hanseatic City of Rostock?
30,5 % are very satisfied, 56,0 % are satisfied, 7,4 % are dissatisfied, 0,5 % are very dissatisfied with public transports in Rostock.

Q11) What are the most important problems in your residential area (city quarter = pilot area)? (Several options were possible. Participants were invited to write down the problems.)
31,2 % responded that ‘Traffic and public transportation‘ is the most important problem in the pilot area. This means that traffic is regarded as being the second largest problem in the area, behind ‘Order and Cleanness‘ (32,0%). Out of 249 respondents to this question, 148 responded that ‘traffic and public transportation‘ is the most important problem. 118 respondents named the lack of parking spaces as being the biggest ‘traffic problem‘. Others named a high traffic volume and the need of residential parking.
Q26) How do you assess the following aspects regarding bicycle traffic in Rostock? (scale: very good – good – bad – very bad)
a) bicycle friendliness of city
   48.4% good, 35.7% bad
b) feeling of safety when riding a bicycle
   45.3% bad and 11.9% very bad (more than >50% judge the feeling of safety as bad when riding a bike)
c) network of cycling routes
   43.3% good, but also >40% bad
e) cleaning of cycling routes
   >40% judge the cleaning as good or very good
f) the public bicycle racks
   >50% judges public bicycle racks as good or very good, still >35% judge them as bad or very bad

Q27) Which mode of transport do you use mainly for your daily trips during summer – to the city center; to school, university; to the surrounding area of Rostock; to work; in your free time/to the gym; for shopping; in your residential area/neighborhood

The graph shows that in average people living in the pilot area use more their bikes for daily trips than the average of all citizens in Rostock. People use their bikes or feeds for about 60% of the trips to work or for shopping. But these are trips where the car is still very prominent with 30% of trips. For trips to the surrounding area the car is the main mode of transportation. For trips within the pilot area, people use mainly the bike or go by feet.

Q28) Different modes of transport can be chosen for your daily trips. Please indicate, which criteria the most important are when choosing a mode of transport. (Different criteria proposed, selection of several criteria possible)
a) If I chose public transports, because of the following reasons:
The main reasons for choosing public transportation are – because of bad weather (48%), the distance is too far for using the bike (40.5%), lack of parking spaces (33.2%), road safety during winter times (30.2%).
b) If I chose the car/motorcycle, because of the following reasons:
The main reasons for choosing the car or motorcycle are – option of transportation (boot) (62.6%), the distance is too far for using the bike (36%), possibility to combine different trips (35.6%), the car is more convenient (32.9%)

c) If I chose the bike, because of the following reasons:
The main reasons for choosing the bike are – sports, fitness, fun (62.9%), time saving (56.1%), healthy (43.5%), environmental reasons (36.8%), lack of parking spaces (32.6%)

Q29) Are you planning to change your choice of using a certain mode of transport? Do you plan to change the choice of using public transports/the car/motorcycle or bike?
Possible answers: use more – no change – use less – no answer
The majority of respondents do not plan to change their choice of using the car or public transports. But more than 20% of respondents answered that they are planning to use their bike more in the future. Only 8% of respondents are planning to user their cars less.

SURVEY 2: ‘Wanderungsmotivbefragung 2013’ (Survey on migration motives, year 2013)
Size of Random sample: 3.200 incoming citizens and 3200 leaving citizens weighted by city quarter, 836 surveys from incoming citizens analyzed (for whole city)
The results below only reflect the responses from those citizens that moved into the pilot area – ‘Kröpelin-Tor-Vorstadt’ during the year 2012. This equals 125 respondents.

Results:
Q11a) Where is your work place or educational institution located?
78.3 % are working in the City of Rostock, 16.5 % are working outside the City of Rostock.
Half of the respondents whose workplaces/educational institutions are located in the City of Rostock use mainly the bike for their daily trips to work/educational institution. Only 11.1 % use their car. In contrast, 77.8 % of respondents whose workplace is outside the City go there by car, nobody uses the bike.

Q11d) What mode of transport do you use mainly for your trip to work or educational institution?
The bike is the mode of transport that is used most frequently for trips to work, with 40.4% of respondents using it.
The private car is the second important mode of transport with 21.9 % using it for their daily trip to work. Only 0.9 % of respondents share a car as passenger with others for their trip to work. Public transportation (17.5%) or going by feet (13.2%) follow.

Q12) Do you use several different modes of transport consecutively on your trip to your workplace or educational institution? Answer: yes - no
In comparison to all incoming respondents of the City, those immigrating into the pilot area are very unlikely to combine different modes (only 12.7% answered with ‘yes’ in comparison to 21.2% at city level). Frequent cyclists and car drivers are the most unlikely to combine different modes of transport. Users of public transportation or pedestrians instead are more likely to combine different modes of transport or in other words are more ‘multimodal’. 35% of those respondents, who mainly use PT for their daily trips to work/educational institutions, use different modes for this trip.

9.1.1 Pilot area located in City quarter Kröpelin-Tor-Vorstadt

Purple area: City quarter Kröpelin-Tor-Vorstadt
Orange area: pilot area
Scale:ca.1.3cm=1km
A TALE OF THREE CITIES:
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points
Appendix

A4: Success factors

Interview with Montserrat Miramontes, transport planner of city of Fürstenfeldbruck, regarding the planning and implementation success factors for mobility point
Chapter 6.6 was sent to Miramontes, for review, prior to the interview for her feedback and input during the interview.

Date: 05.01.2019
Time: 5:00pm – 6:00pm
Place: Skype interview
Interviewer: Renita Pais
Interviewee: Montserrat Miramontes

Renita Pais: Can you tell me about your experience working with mobility points?
Montserrat Miramontes: I had the opportunity to evaluate the impact of the mobility point Münchner Freiheit on behalf of the city of Munich. I have also done by doctoral dissertation based on these results. The same methodology used for Münchner Freiheit was used for two other mobility points in Offenburg and Wurzburg.

Can you give me your feedback on the success factors I sent you? Let’s go over it point by point:

Proximity to public transport
Yes PT is a success factor. It is an intrinsic part of it. I define mobility points as a combination of PT and other modes. It is a success factor. If it is closer to PT you facilitate intermodal transport and users have many options for a trip which is most suitable for this, cheapest, fastest, most comfortable. It is a good thing to be closer to PT stops.

Proximity to users
It is important to be close to PT stop but you also have to be close to the users in those areas where there is no PT, say in residential areas. So you are giving these users a chance to get closer to PT. The closer a mobility point is to the users, the more chances of it being used and that is my definition of success, acceptance by users, that the users use it. Both these factors make a mobility point successful and same are the case for Münchner Freiheit

Pressure on street space and parking
That is correct. I think it is a contextual factor. Pressure on street space and other resources, air quality or climate change, this pressure on resources, especially space, act as triggers for cities to says “okay we have to change! We have to do something”. It is a success factor for cities to start implementing mobility points. Car-sharing actually frees public space, because it substitutes about 16 cars.

Physical identity/ recognition element
There is an information screen in Münchner Freiheit that is similar to Bremen’s stele. I think it is one of the most important factors because it is very visible. It is a reason for people to be aware about the mobility point. It is a sort of advertisement. You need a network of mobility stations for it to be successful, and each of them having this stele helps in increasing its recognition or awareness.

Marketing, advertising and publicity
The most important factor for the success of Münchner Freiheit was the advertisement from the city of Munich to non bike and car-sharing users. They addressed 5000 homes in a small radius around the mobility station. They sent information fliers to them. A letter signed by the mayor telling them about the services available at the mobility point and they got the opportunity to try PT ticket for a week for free. And a good response rate was received due to this method. Additionally it is very important to have multimodal advertisement to advertise car-sharing bike-sharing PT all as one package.

Incentives
It is also in case of Munich. Users were attracted by incentives. Bike-sharing users received 10 mins credit when they returned bikes to the stations. This is very important for the users. The PT ticket free for a week was a good scheme I think because by giving incentives to non users the mobility station received lot of popularity and attracted more users.

Involvement and cooperation with stakeholders
This is an important planning success factor. You need a proactive initiator who put together all the stakeholders and of course sees the cooperation among them. The city of Munich has a lot of political support as erecting mobility points was an idea being planned for a very long time.
User experience and comfort and amenities
This point is very important. When we say mobility point, everyone only thinks of the different mobility options in one spot, but having comfort elements is also very important for users to choose this point. It also increases the good feeling there and they can also satisfy their other non mobility requirements, by picking and dropping packages etc. This is also another way of attracting users. A station without these amenities would still function, but having these amenities adds value to the station, making it more attractive. You can see more details in my thesis that I can send you.
A5: Bremen interview
Interview with Michael Glotz-Richter and Rebecca Karbaumer, working for the sustainable mobility project in Bremen regarding mobility points and success factors

Date: 24.01.2019
Time: 5:00pm – 6:00pm
Place: STARS workshop, Intercity hotel, Bahnhofspl. 17-18, 28195 Bremen
Interviewer: Renita Pais
Interviewees: Rebecca Karbaumer (5:00-5:15) & Michael Glotz Richter (5:20-6:00)

The interview with Rebecca Karbaumer and Michael Glotz-Richter took place post the Bremen Mobil.Punkt site visit and various talks on car-sharing.

Renita Pais: How would you define a mobility point? And also can you tell me how exactly is it different from multimodal train stations providing car and bike-sharing services?
Rebecca Karbaumer: There are different definitions and each city deals with it differently. For our Belgian project partners it should always include car-sharing, PT and bike parking in a public space or publically visible and accessible space. In Bremen also it has always been around the car-sharing service, Mobil.Punkt is a larger station in public street space with additional services linked to transport and Mobil.Punktchens are micro hubs with smaller neighbourhood level services in a clearly visibly designated reserved space. It always depends on the city. A multimodal PT stop is on a macro level, centrally located, and unless you are a long distance traveler, doesn’t necessarily serve the daily mobility needs. It includes specialty vehicles which people would use for longer distance travels. It differs from a mobility point in terms of size and location. A mobility point, a micro hub, is for daily services, located where journeys start, close to where people live, in their same street. Hauptbahnhofs are major transport hubs in a city, mobility points are one step closer to the neighbours. Also mobility points help with increasing the visibility of these services by pulling it to the public realm making it more accessible.

Renita Pais: Can you give me some insight on mobility points? Would it be right to define it as transport hubs linking PT and shared modes to promote sustainable mobility by reducing PMV usage?
Michael Glotz-Richter: We are focusing on reducing private car ownership by linking PT with car and bike-sharing modes. The focus of mobility points to promote multimodal trips is something more suited to big cities, say Berlin or Munich, but since Bremen is smaller, our task is not the same way, our starting point is to reduce the number of cars in the street working around the system of car-sharing to be an alternative to car ownership, when you don’t depend on cars for daily trips. One thing we learnt with the mobility points is that you have to be close to the user, if you want to compete with the private car and you can even be better than the private car if you achieve this. Surveys from team red also show proximity to the user is one of the top three criteria. The private car is parked somewhere, needs to be maintained, its one type of car. Here I can use the mini bus, a van or even a sports car. I am much more flexible in terms of car type. I don’t have to worry about maintenance, washing the car, nothing! And I’m still saving money, in my case, I don’t own a car. I sold my car and I rent out my private garage for 50 Euros a month! We have reserved parking spots to return car-sharing vehicles, which makes it so much more convenient. And we also aim to reach 20,000 car-sharing users by 2020 by dandifying car-sharing stations, integrating it into new building co operations, getting it closer to PT and also by spreading more awareness and information.

Would you say that a mobility point has a demonstrative effect, to show to the public the different sustainable modes and ease in using them?
Yeah I would say so. When you see that pillar, this pillar stands for something! This physical thing is shown with pride. I dare to say that it looks good and so it needs to be well designed. It serves several functions. You have more bicycle parking; the curb is extended giving more space to pedestrians. Walking is one of the most underestimated modes of travel. We need good conditions. When we want more people to use PT or bike or walk you have to provide them with better conditions for it. Sometimes you see sidewalks are completely useless to pedestrians because of parked cars. We have to see this in a broader picture, working on infrastructure needs brave political decision.

How important is incentives and amenities in attracting more users?
So let’s says there are three things need to come together. The service should be provided physically; people should see it; and they should accept it mentally. So someone who depends on car for status, but not usage, he is a difficult customer. We have to make car-sharing cool for these people. We need the infrastructure, which is the hardware, we need service quality which is the software, and we also need the mind-ware, which is understanding the needs of the customers. In smaller cities where you want to replace car ownership, you have to put into the picture how can I offer alternates to the car for daily trips.

How would you say these points are different to multimodal PT stops?
I think it’s simple. PT moves around the larger streets, the neighbourhood streets don’t have PT options. Mobility points on the other help you get to those larger streets by providing car and bike-sharing options at your door step.
**A6: Rostock interview**

Interview with Lisa Wiechmann, expert from Rostock, regarding the mobility point proposal in Rostock

Date: 20.11.2018  
Time: 3:30pm - 4:00pm  
Place: Team Red office, Almstadtstrasse 7, Berlin  
Interviewer: Renita Pais  
Interviewee: Lisa Wiechmann

Renita Pais: Can you tell me about your position or affiliation with the city of Rostock? And what is your role in the CMM project?

Lisa Wiechmann: So, my name is Lisa Wiechmann, and I’m the local project coordinator in the city of Rostock for the project CMM, which is an EU project. And i just started working in the municipality in the staff unit mobility management in the purpose of this project.

**What is your role in the CMM project?**
My task is to implement all planned activities in the city of Rostock. These are MPs, but even for mobility management it is my job to coordinate the actors and the activities?

**In relation to your city, do you work only for the CMM or do you undertake other projects too?**  
No I am only working for the CMM.

**Coming to mobility points, could you define what a mobility point is according to you in the context of Rostock city?**
I would define mobility points as a small hub where you can connect at least two transport modes. In the case of Rostock this will be car-sharing and cargo bike-sharing additionally we also want to provide cycle racks and these will all be in connection with a public transport stop.

**Can you tell me about the strategy you'll have designed for the CMM mobility point in Rostock?**
So within CMM we want to implement up to 3 pilot mobility points. The idea is to have one or two car-sharing cars located at the mobility point and to provide a bicycle racks for bike and ride system and also one or two cargo bikes. And these different mobility offers should be visualized by a stele which is very visible in the city and should have a nice design. So this is the idea now. And these three pilot mobility points should also be pilot for the entire City to have a city wide network after the project as well. The location of these 3 mobility points is quite close to each other because the pilot area where we have to implement all our measures is about 1.5 km square. So it's quite a narrow area I must say and the mobility points may have a distance of around 800 or 900 m from each other.

**How big would you say is the scale of each mobility point? Are you going to be providing additional services like toilets drinking water provision etc.? Or just transport options?**
This depends on the space we have right now we are in the location planning phase and we already found three locations but basically we will Focus mainly on the mobility offers and if we have space we would also like to integrate bike repair service and air pump and also like a parcel station or DHL.

**How did you arrive to the strategy? What factors did you consider while designing this proposal?**
The first idea of the general aim of Rostock city is to make certain mobility offers like car-sharing more visible and this was the basic idea to put it into the public space and another is to also integrate an extra service like the cargo bike-sharing service which does not exist yet. This was the strategy. Also as a city we have a huge number of bikes per 1000 inhabitants I think it is about 900 bikes per 1000 inhabitants that is why we don't necessarily need a public bike-sharing system at the mobility point but we want to concentrate on cargo bikes because they really have the potential to replace the private car if you have to go to the supermarket or such trips

**Were you inspired by mobility point examples from other cities in Europe or elsewhere?**
Yeah, we were very much inspired by the city of Bremen in the beginning. They are front runners in this field but we also checked what good practices exist not only in Germany but elsewhere in Europe. Dresden has a good concept too which inspired our concept.

**What user group are you targeting?**
User group is the citizens living in the near neighborhoods. We don’t target commuters, but just all age groups. There population in this neighborhood is very young. All are students or young couples. They are very open minded about mobility.
What are the possible barriers you could face in the implementation of these mobility points? (in terms of finance, legal barriers)
The most important barrier we face is a legal one related to car-sharing. Our aim is to integrate also car-sharing into the mobility point and to provide public parking spaces to car-sharing operators (against a rental fee). Currently, this is legally not possible, as our federal state (Mecklenburg-Vorpommern) does not have a car-sharing-law (as it is existing on national level already). This leads to the situation that our municipal traffic department is not willing to provide public parking spaces to CS-operators as there is no legal certainty, from their point of view. They ignore that many other German cities proceed in that way even though they also don’t have a CS-law at federal state level yet. If we cannot find a solution before the end of this year, we cannot integrate CS into our Mobility Points. This barrier could force us to choose locations for the mobility points that are not public. And this can be a disadvantage in terms of visibility, usage etc.

What role do you think will the media play in the success of these mobility points?
I think the media are an important tool to promote the mobility points. Frequent information about the mobility points, their aim and functionalities should be distributed via the media. With the help of the media we can guarantee acceptance for the mobility points and their offers. But it is important to guarantee a positive image in the media and to respond to eventual criticism in a constructive way. In case the mobility points are very criticized in the media, this could also lead to a failure of the project.

What immediate change do you expect in the pilot area once the mobility point in inaugurated?
We immediately hope to increase the amount of users of car-sharing so that the car-sharing operators can say that due to MP we have 100 new users. We don't have concrete targets yet, but will realize it shortly. It may also be difficult to calculate but we would like to see the number of cars that are replaced by car-sharing. It maybe be difficult to evaluate this during the course of the project. Another idea behind this is what we saw in other cities, that car-sharing cars replaced about 8-15 cars and people change from having or owning a car to using car. They could say i don’t need a car and will just use the car-sharing car near my home. Also reducing the parking stress in many areas

What objective are you trying to meet?
The overall objective is also to reduce CO2 emissions and increase the number or encourage cargo bike users. And to increase the visibility of car-sharing

Despite having 5 modes of public transport, the modal share of public transport is relatively low? Do you think this would change after the implementation of mobility points?
To be very honest, I do not think so, PT is quite expensive in Rostock and also the city is large and separated by the river and sometimes journeys are made longer by PT because of this. Only one of the possible MP is implemented at a public transport hub with several bus and tram lines, night bus, and also e charging stations there. The others are in walking distance of about 400m to the train and tram stations and the third is quite away.

After the implementation of this point, what indicators would you use to measure the success of your mobility point?
So as i said in the beginning the number of car-sharing users would be the most important one. Also to evaluate the usage of MP, we could see somehow the number of trips originated at the MP point and to where. Mostly a comparison of numbers before the MP implementation and after

We know that the pilot area has certain characteristics different from other neighbourhoods in terms of population, infrastructure etc., but do you think you could replicate these MPs to other neighborhoods?
Yeah, and this is also the objective. Now we test this in one dense area of the city centre but there are a lot of different locations that would fit this criteria. And we are still debating on having a dense mobility point network only within the dense city centre or at various other points of interest.

After the MP implementation and the end of the CMM project, what do you think is the next step for Rostock in terms of multimodality?
It would be to extend the network of mobility points and build more of these in other locations. Another measure would also be to open mobility platforms that would help you to build your multimodal trips including car, bike and cargo bike-sharing and not just the city public transport and also to inform citizens about the various mobility offers.
A TALE OF THREE CITIES: 
Strengthening multimodality in Rostock, Vilnius & Pskov through Mobility points

A7: Vilnius Interview 
Interview with Kristina Gauce, expert from Vilnius, regarding the mobility point proposal in Rostock

Date: 28.11.2018  
Time: 11am - 12 noon  
Place: Skype interview  
Interviewer: Renita Pais  
Interviewee: Kristina Gauce

Renita Pais: Can you tell me about your position or affiliation with the city of Vilnius? And what is your role in the CMM project?
Kristina Gauce: Well i have no position in the city. I am an external expert for this project and for other urban projects where mobility related expertise is needed. I was working for the Vilnius sustainable mobility plan for the city and I have other smaller scale mobility projects. In the CMM I provide mobility expertise for the concept of the mobility point and also for SUMP preparation for the pilot area, communication with stakeholders and communities.

In relation to your city, how would you define mobility points?
It would be pilot program not only in Vilnius, but in Lithuania. And in my understanding it cannot be defined only as a park and ride. In Vilnius, multimodality is not a very liked thing, as people really try to avoid changing transport vehicles. So in Vilnius, it would be a scheme to test if people are ready to change modes from personal vehicles to public vehicles or between different public vehicles. Variety is important; to have more than one option to choose and this will be different from all the other initiatives taken so far. Bicycle storage for users to store their personal bikes and from switching from personal bikes to public transport modes which is very new and crucial for Vilnius, and at the same time the possibility to leave your car, charge it and then take another mode. This variety of trying different modes instead of going by car is very important. Giving people alternatives to going by car and giving them alternatives to public transport as well which is not the most convenient mode of transport in the pilot area because public transport does not have priority. Having all these elements as alternate to the private car is very important, more important that just parking the car and taking a bus like in other park and ride systems in Vilnius.

Can you tell me about the strategy you’ll have designed for the CMM mobility point in Vilnius?
The site was selected on the basis of land availability. To locate if there were any municipal land available near big streets, because to build parking lots and mobility points on private lands it is very expensive. Second was the proximity of public transport. The mobility point is not in a very detail stage yet. (Kristina holds up an image of the mobility point proposal) The site we have unfortunately looks like a huge parking lot with a lot of parking spaces with about 80-90 spaces for regular cars, green belts, charging stations for electric cars, and ebikes, bicycle racks, about 10 sharing lots for cars, bikes and also separate shelter for storage of bikes and other luggage. Also at the mobility point we have a designated area for people with special needs, probably even some vehicles which would help people with physical disabilities which are being discussed now. Also a delivery room for goods is being debated because in the close area, there are already delivery points where people can pick up their goods, small parcels. Real time information boards, vending machines and a toilet will also be provided. These things are all conceptually approved, but not designed yet. Initially the municipality was only planning a regular park and ride, so every extra element is being questioned.

What public transport modes would be servicing this area?
Busses, fast busses with only few stops have good capacity and good frequency. The area is served well by public transport but, the public transport flow is high and this mobility point may attract many users, and we could face more problems. First being the capacity of the existing public transport is almost full and may not be able to account for the extra passengers and second is that there is no priority for public transport all the way to the city centre. And they are stuck in traffic with cars. So even if they have good and frequent public transport in peak hours it is not good. The mobility point would maybe reduce at the most 80 cars, but the flow of traffic is in 1000. Even if the mobility point is full used to its capacity, and people want to switch to public transport, they are stuck in the same traffic flow. This mobility point would definitely help to reduce some amount of traffic and would also help to create awareness among the people, but i am not sure it would really solve the problem. It would raise awareness and probably save 40-50 trips made by cars but it wouldn't solve the main problem.

Are they any schemes to increase the public transport fleet size, frequency etc.? 
We are discussing this in the pilot area SUMP. The frequency of the busses is good, but we are trying to increase the capacity and the number of buses, or even adding extra stops along the way. But the most important issue is to provide priority to public transport. And if it is possible to take one lane from car traffic and assign it to public
transport, to increase its priority and hence increasing its attractiveness, but that again will again increase the number of users and capacity being full again making it unattractive. We are discussing this in the SUMP.

**What is a big driver in implementing mobility points in Vilnius?**

Driver and also barrier at the same time in the case of Vilnius is having political support, once you have it is easier to achieve targets, as one enemy is eliminated. But at the same time it is a barrier, because we have political support to build mobility points but we do not have the support for the extra services that could be a success driver. The chosen area for the mobility point is a big advantage and it good, relatively close to city centre and also close to the border of Vilnius. We have support from few different teams, international support from INTERREG, political and municipal and local expert support, support from biking organizations, pedestrians and public transport operators. The most important stakeholders are already onboard and it could be a success factor in the planning, decision making and implementation.

**How much support do you have from media, NGOs etc.. ?**

We haven't started campaigning with social media yet, but it could be used as a tool for spreading awareness. It will be our next step to work with communities using social media we also have contact with NGOs. But however NGOs were against anything that is like a park and ride, i am personally also not a big fan of park and ride facilities, and this mobility point having many features similar to a park and ride, also gained some criticism.

**Are you providing any incentives for the users parking their car in this lot and then using the services in the mobility point?**

In the beginning it will function as a regular park and ride, where the drivers pay for the parking ticket and then they can get public transport ticket for the whole day, which is even cheaper than buying two public transport tickets. The discount is very high. And these park and ride lots are much cheaper than parking in other areas in the city centre. In comparison you could say it is almost free. This scheme is already working and so for a while this scheme will just be adapted. However we are discussing other incentives too, where users can park their cars for free, or if not for free then they can leave the car and use car or bike-sharing at a cheaper rate too. It is being discussed. Because of the various options present at this site, we are considering new schemes of providing incentives in addition to the regular model which is already successful.

**How popular is car and bike-sharing in Vilnius?**

Both are very popular, car-sharing especially. Bike-sharing is popular too but i do not think it has developed that conveniently to all citizens. It's working very well in the city centre for short trips, but in terms of modal split, shared cars are more popular. We have 2 car-sharing companies with about a 1000 cars and they are doing well. We hope with the mobility point, bike-sharing will gain more popularity and increase its modal share. However this mobility point is only a small part of the puzzle and we have to improve and solve the infrastructure issues, safety issues and pollution issues, and at the same time providing them bicycle storage and shared bike system then as a whole it all works well. By just building a mobility point in the middle of an area with poor bicycle infrastructure, it would not help much. We are doing that now. We are designing bicycle path to touch this mobility point and also discussing extra points for shared bikes on the way to the city centre, so that the public has more options in terms of location to leave their bike and use the public transport.

**What user group are you targeting?**

Two groups of users first are those who are transiting through this area on their way to the city centre. Normally these are residents from less dense area, but the site of the mobility points is in a dense area and is multifunctional because we have schools, hospitals, residential areas etc., all in couples of meters. There are fancy districts with private houses, and are not served by public transport well especially for those who are travelling from those areas to the city centre by their car. Second target group is the neighborhood around this mobility point that could use this bike storage for their own bikes, and use this as a possibility to avoid buying a second car in the household. If you have these shared modes in a few meters from your home, shared bikes cars and charging stations, you wouldn't feel the need of buying another car.

**What immediate change do you expect in the pilot area once the mobility point in implemented?**

The main change would be the increase of awareness among the users spreading the good practice. In term of neighbourhood, I believe that many families will put off the decision of buying another car and that would be a big victory, as it is very usual for families in Vilnius to own at least two cars. Lowering the motorization level, changing the modal split and raising awareness are the expected and more desired results.

**After the implementation of this point, what indicators would you use to measure the success of your mobility point?**

We are yet to come up with a monitoring plan, but in my opinion, qualitative indicators are important. To ask the users, do you use this mobility point? Why don't you? Do you feel happy? Do you feel safe? Are you satisfied? And other would be transport oriented to just observe the physical number of users, asking where and how to they move to the area after leaving the mobility point.
Does Vilnius plan on implementing more mobility points in the future?
Yes, if this mobility point is successful, we plan to implement more points in strategic locations forming a network. Park and rides alone are not as successful and popular due to many reasons, basically because of the location, being too close to the city centre, they are not park and ride anymore, they become park and go, or they are too far from public transport stops, or they were in the middle of nowhere, or there were area of free parking close to these lots. So if this mobility point is successful and brings results in multimodality, we have in mind locations to multiply this concept. Our first goal however is to increase awareness and walkability and improve the present condition of our transport system, biking infrastructure, so they are competitive to the car, and then to connect them into these mobility hubs. Mobility points are not the primary goal of the city. It is a secondary goal after the improvement of the Vilnius transport system.
A8: Pskov interview
Interview with Kristina Kobyz, expert from Pskov, regarding the potentials and conditions required for future implementation of mobility points in Pskov

Date: 26.11.2018
Time: 8:00am - 8:40am
Place: Skype conversation
Interviewer: Renita Pais
Interviewee: Kristina Kobyz

Renita Pais: Can you tell me about your position or affiliation with the city of Pskov? And what is your role in the CMM project?
Kristina Kobyz: I am the head of the cross border and tourism department in the city administration of Pskov and I am also the coordinator in Pskov for the project CMM.

What are the reasons for Pskov not implementing a mobility point in the duration of the CMM project? What are the main barriers and how is the city working towards counteracting these barriers?
We are a startup city in the CMM project and we are not going to build mobility points, because we do not have the budget for it in the project and our activities are mainly to carry out campaigns to promote sustainable transport, multimodality and mobility management, capacity building and to learn from other cities. We are developing bike routes and thinking about better transport situations in the city. It is our wish to reach multimodality in the status. We do not have E-cars, car-sharing or bike-sharing but we are going to organize bike-sharing in April of next year. We are already negotiating with investors because we have in the city some bike points where you can rent bikes, but it is not a bike-sharing system. We are organizing monthly focus group meetings involving all stakeholders, policemen, school children, teachers, government organizations all who actively support biking use. Also tourism companies who are interesting in making the city more multimodal for tourists to enjoy better.

What are the most important requirements for the implementation of these mobility points in Pskov? (Physical infrastructural, public awareness, government support)
Well the main thing would be the location. Where to implement the mobility points, in the centre near the railway station or in the outer areas. And also what services should be shared there, because as I said earlier we are lacking in alternate modes up to date with modern technology. There is no point in building something now and in two years it will be outdated. Research has to be done on what the people need in that area, what is needed there, what should be put there.

Currently there are many definitions of a mobility points. In your opinion what are the main elements of a mobility point relevant to Pskov?
It must be where you can change modes of transport, rent or share bikes, parcel lockers and also charging stations for bikes and other gadgets. It should also be comfortable for the people. But most important we need to see what the people want. If we implement mobility points, we would talk to investors and the citizens.

What do you think would function as drivers in implementing mobility points in the future?
I think with the awareness that people already have about the problems that come with using private cars, a mobility point will be useful. If we provide them with the possibility of changing to other modes, they will definitely take it. Many citizens of Pskov are already aware of the benefits of car and bike-sharing as they have used it in other bigger Russian cities. Some people think it is only for big cities and are pessimistic for the implementation of these systems in Pskov, But it is has over 200,000 inhabitants, and it is not a small city. According to Russian standards, it is a small city province, but in comparison to other European cities, that are implementing these systems, and are benefitting from them, Pskov is of similar size. Behavioral changes are difficult but are also very important for the success of these strategies. For stakeholders, decision makers, citizens be to ready to try and look at it from another perspective. In the last one year I have also seen growing number of colleagues and support from them in the implementation of various such projects. We have support from the authorities in improving bike roads, adding bike stands, allocating more space to pedestrians, adding more digital information boards to give real time information. At present we only have 3 such digital boards. Our new governor is also supporting this CMM project and the main architect of the region of Pskov, who is a member of the working groups, also thinks that adding these infrastructural details is very important for the city. There is good understanding between regional government, city municipality and bike organizations. We have monthly discussions; we are also building new roads, bike roads and providing bike stands with federal money as part of another project.

Which cities from the CMM or any other cities in the region you think you could draw inspiration from?
I will be visiting Bremen in a few months as part of the CMM project, and I think it is similar to Pskov in terms of temperature and weather. I think Riga is a good example when it comes to bikes, biking lanes and establishing clean and car free centre. We can also look at our neighbours, Tartu, Riga, Vilnius and Germany.
Which user groups could to be targeted and what are the reasons behind it?
I think we would target, younger people who are more flexible, more mobile and open to change because it is the younger generations, and young startups who come with proposals of bike-sharing. Young families too, and middle aged people who would use these services due to inability of buying their own car or bike.

What main mobility related problem would you want to address with mobility points?
Pskov is situated 700 kms from Moscow and 300 kms from St. Petersburg, and people require speed trains to come to our city because we have lots to do. We have long history, many monuments, monasteries, churches, lot to do for sightseeing. And we want to develop our city to reach out big goal of being sustainable. The city is divided into the old city centre and the new area with new residential buildings. So all the traffic moves towards the centre in the morning for work and then end of the day we all travel back to the new areas. Something needs to be done for this traffic, because there is a big inflow of cars to the centre in the morning. Public busses do not have a separate bus lines, if they do, then the traffic can flow faster. In some areas, the street is very narrow, but i have seen from the other CMM cities that it is possible by providing one lane for buses, another for cars and another for bikes. In the Rush hours there are a lot of cars and busses through the main areas and the traffic is very bad. And because of that parking is also a problem. We also want to make Pskov a more connected city, we have busses, we have cars and bikes but they aren't connected yet. With mobility points this could be achieved.