team red | Almstadtstr. 7 | 10119 Berlin | Fon (030) 138 986 – 35 | Fax – 36 | info@team-red.net | www.team-red.net

REPORT

COBIUM: CARGO BIKES IN URBAN MOBILITY

EX-ANTE EVALUATION STUDY

(INCL. THE DATA COLLECTION SURVEY)

CARGO BIKES in urban mobility
Interreg South Baltic
EUROPEAN UNION
European Regional Development Fund

COMPILED BY

team red Deutschland GmbH
Susanne Elfferding, Doctor of Engineering (Waseda University)
Stephanie Keßler

Institution BeSt-Zeven
Dr. Ruth Bördlein

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team red Deutschland GmbH – Almstadtstr. 7 – 10119 Berlin
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ABSTRACT

The project CoBiUM will test potential areas for the use of cargo bikes. The cities of Gdynia, Greifswald, Slupsk and Växjö are pilot areas, the Danish partner did not decide yet in which municipalities cargo bikes will be the tested.

The decision concerning the areas of use should base on sound information. Thus a stocktaking of the current situation in the pilot cities has been conducted. A quantitative standardised questionnaire and a guideline for qualitative interviews with local experts – conducted by the project partners – delivered the information.

The five cities are medium-sized regarding their population, but different concerning their public experience and awareness of the use of cargo bikes as well as concerning the traffic infrastructure:

Gdynia is a city, where bicycles are not seen as daily means of transport now. The bicycle infrastructure still needs a lot of investment. Carbon free traffic is mainly public transport by trolley buses.

Greifswald is a compact city with bicycles as daily means of transport for many people. Nevertheless, the bicycle infrastructure needs improvement and the use of cargo bikes may be a good means to help to reduce emissions by traffic.

Slagelse is a Danish municipality with three cities – Slagelse, Korsoer and Skaelskoer – where the majority of the municipality's population (70 percent) lives. People are moving from the rural parts to the cities. The average age of the population is rising. The economic situation is good.

Slupsk is a shrinking city with typical problems of motorized traffic. The city, however, is interested to support innovative transport solution, e.g. cargo bikes. Investment in the infrastructure is necessary.

Växjö is determined to be a carbon free city in 2030. As motorized traffic is responsible for a big share of carbon emissions now, a substitution of cars by bikes, also cargo bikes, is important. The infrastructure is already in good condition.

This stocktaking study and preparation for pre-pilot testing already showed that the range of possible cargo bike use is much broader than expected before. The different points of departure in the pilot cities will enable the project partners to collect experience in a broad variety of operational areas.

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1. INTRODUCTION

First the background of this report will be mentioned and then the purpose and aims are presented.

1.1. BACKGROUND OF THIS REPORT

Cars are the dominating means of transport in nearly all big cities and the caused problems are well-known and have been discussed in literature and media hundred of times. The problem situation is very similar in cities throughout the South Baltic area: increasing number of cars, limited space in often historic city centres, poor air quality (particulate matter) and high noise emissions resulting in low quality of living in cities.

Thus, CoBiUM deals with cargo bikes as transport alternative in urban mobility. The idea and hope is to reduce the problems caused by car traffic.

CoBiUM is a project in the South Baltic programme area, started in February 2018 and is running for three years.

Lead partner is the city of Växjö, Sweden. There are six project partners and six associated partners.

The approach to local solutions may be different as every city has its own mobility pattern and cultural background influencing people's behaviour. Furthermore this project does not focus on big cities but middle sized ones.

In so-called pilot cities cargo bikes will be used to test practically the areas of application, to identify the advantages as well as the barriers to the use of cargo bikes. Furthermore cargo bikes as transport alternative shall be promoted, the knowledge shall be disseminated to the public and to decision-makers.

Among the five pilot cities are five partners or associated partners:

- The City of Växjö, Sweden (lead partner)
- The City of Greifswald, Germany
- The City of Gdynia, Poland
- The City of Słupsk, Poland
- The Municipality of Slagelse, Denmark, proposed by the project partner Dansk Cykeltourisme

You can find more information at the official webpage of the project:
http://energikontorsydost.se/en/cobium

1.2. AIMS OF THIS REPORT

This report – the Ex-Ante-Analysis – is dedicated to the "Baseline Report" which is the deliverable-3.1 of CoBiUM work package-3.

Whereas the desk research of activity-3.1 looks at national and international studies on the use of cargo bikes, this report encompasses the results of activity-3.3 ("ex ante evaluation") and focuses on the pilot cities. These results are based on the survey (data collection = activity-3.2; concerning methodology see chapter 2).

The aim of this ex-ante evaluation is

- to complement the national and international perspective with local perspectives,

- to have a comparable description of the different pilot cities and information about the expectations related to the project, and
- to base the decisions concerning the test areas for the pilot cargo bikes on sound information.

In the beginning of this report a short general overview of the pilot cities will be given. The main part will concentrate on the challenges of sustainable urban mobility, especially cycling and the various expectations towards the use of cargo bikes.

2. METHODOLOGY AND PROCESS OF EX-ANTE ANALYSIS

The ex-ante analysis of the pilot cities consists of two parts of data collection:

The first part was a quantitative survey with questions about general data on the different participating cities, the situation of traffic, transport and mobility in the pilot cities as well as aspects of cycling in the respective cities. The questionnaire can be found as Appendix 1.

Complementary to the standardized survey the second part of the ex-ante analysis was a qualitative survey: Local experts were asked to assess different aspects of the overall cycling and logistics situation and local conditions of cargo bike use.

An interview guideline listed questions as structuring framework of the qualitative description of the local situation. The complete interview guideline can be found as Appendix 2.

The partners were asked to answer both parts of the survey. The topics of the survey were discussed during the project meeting in Berlin in March 2018. Questionnaire and interview guidelines were sent out to the partners in June.

We received answers to the quantitative and qualitative parts from Gdynia, Greifswald, Slupsk and Växjo in in the period from July to October 2018.

An associate partner, the Danish municipality Slagelse, joined the project in November 2018. The new partners contributed information about their municipality and the report was amended in December.

We asked the partners, to name the functions of the answering persons of the qualitative survey. A list can be found as Appendix 3.

The answers should be compared cautiously, but nevertheless deliver a good impression of the scope of living and mobility conditions and expectations towards the testing of cargo bikes in the participating cities. The different chapters of the report are based on the answers given by the project partners in the two parts of the survey and additional desktop research if required.

These gathered data have been adjusted by further online available information.

3. General Description of Pilot Cities

In this chapter the pilot cities' general characteristics are described. This rough outline is not intended as a comparison, but should be seen as a description of the variety of different backgrounds for the pilot testing.

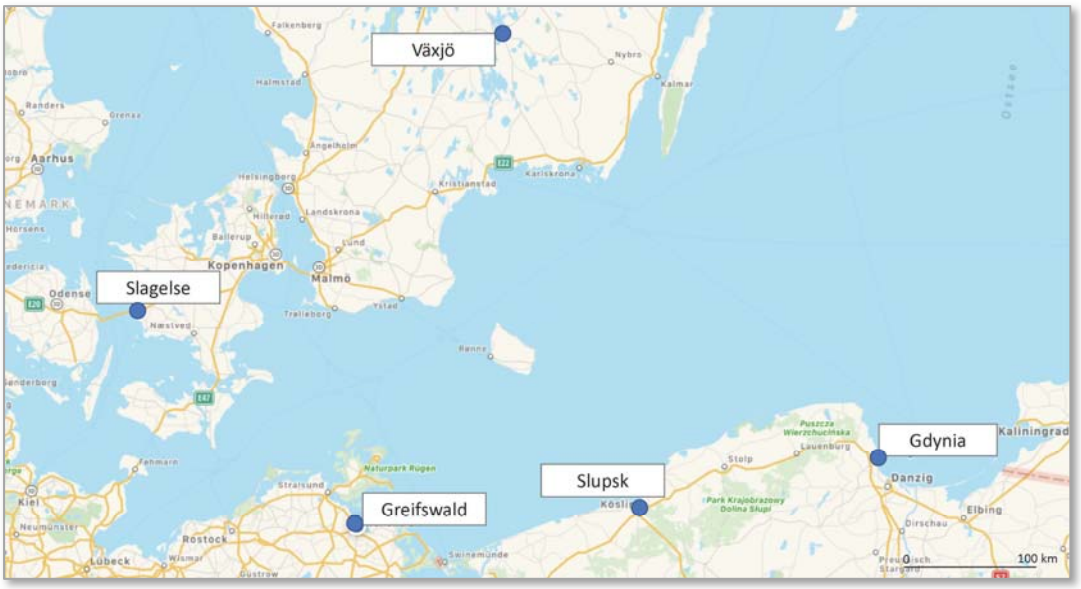

Figure 1: Location of the five pilot Cities

Some figures given in the questionnaires are presented in tables and graphs. Some data, however, cannot be compared, as they are collected differently in the three respective countries. Some questionnaires contained a great amount of data but this compilation will – after some general information – focus on information only, which can be considered significant for cycling and especially the use of cargo bikes.

Information from the qualitative parts of the survey is included, whenever they add useful information to the plain figures.

3.1. Population: Development and Age Structure

Of the five pilot cities, one – Gdynia - is part of a larger metropolitan region, whereas the other three are middle-sized centers situated within sparsely populated rural areas. This is a factor, which may be quite important for the potential of cargo bike use with respect to the demand as well as to possible forms of organization. Whereas the demand in the three local centers has to be generated within the own population without great potential in the "hinterland", offers in Gdynia have to be seen as element of a mobility concept of a metropolitan region of 1,5 million inhabitants.

As noted, the five pilot cities vary in size, as can be seen in table 1, with Greifswald as the smallest and Gdynia as biggest pilot city.

Växjö has experienced a notable growth of population in the last 17 years, Greifswald, Slagelse and Gdynia are slightly growing (the former two) and declining (the latter), only Slupsk is facing constant decline.

	2000	2005	2010	2015	2017	Size in sqkm	Persons per sqkm
Gdynia	253.387	252.791	249.461	247.478	246.306	135,1	1830
Greifswald	60.437	59.818	60.441	59.910	61.448	50,7	1211
Slagelse			77.442	77.293	78.828	568	139
Słupsk	100.386	98.695	96.655	92.496	91.465	43,2	2131
Växjö	73.901	77.363	83.005	88.108	91.060	1914	48

Table 1: Pilot cities – Population: development, contemporary population and population density (Source: data from project partners)

Striking is the difference in population density between the Polish and German cities on one side and the Swedish and Danish communities on the other side. This reflects the difference in administrative structures in the different countries. Denmark's and Sweden's administrative structures are characterized by large and strong local-level municipalities. Växjö is as well the name of a "kommun" (with 1.914,3 sqkm) as well as the name of the central settlement of this "kommun". The central settlement covers only a small part (about 36 sqkm) of the "kommun", but nearly two thirds of the population live there.

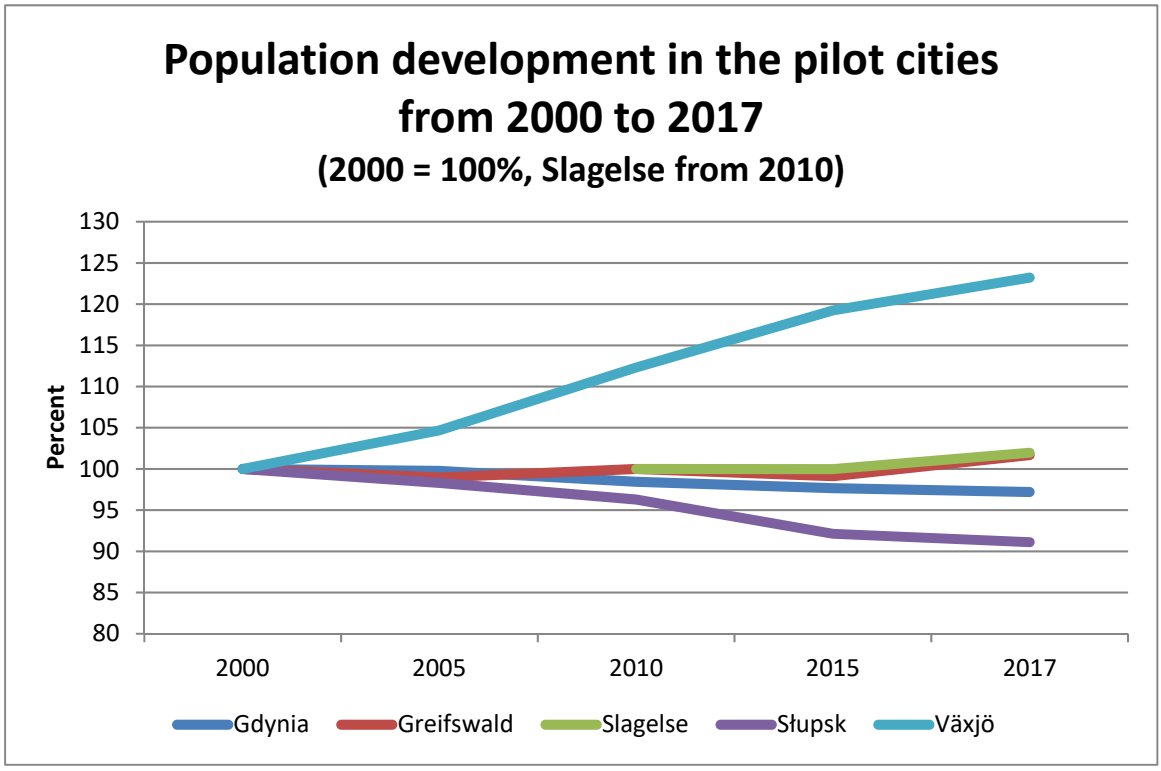

Figure 2: Population development in the pilot cities from 2000 to 2017 (Source: data from project partners)

	0 to 14 years		15 to 65 years		65 years and more		Total population 2017
	Total	in percent	Total	in percent	Total	in percent	
Gdynia	33774	13,7	161265	65,5	51267	20,8	246306
Greifswald	7173	12,4	38446	66,7	12007	20,8	57626
Slagelse	12374	16,7	45042	60,8	16694	22,5	78828
Słupsk	12293	13,4	64129	70,1	15043	16,4	91465
Växjö (2016)	16432	18,4	56355	63,0	16713	18,7	89500

Table 2: Age Structure in the pilot cities (Source: data from project partners)

The age structure of a population may – amongst other factors - be important for local mobility behaviour and situation.

Looking at the age structure of the pilot cities (tab. 2), we can see, that Slagelse, Gdynia and Greifswald are the „oldest" cities, with one fifth of the population older than 65 years, whereas Växjö has the highest share of young population. Slupsk has the highest share of population in working age (70%), Slagelse's population in working age is lowest with 60%.

Unfortunately a more detailed structuration is not possible, as threshold values in the national statistics differ.

With Greifswald and Växjö, there are two university cities among the pilot communities. With more than 20.000 (Växjö) resp. 11.000 (Greifswald) students, the population is characterised by a huge share of young people in the age from 20 to 30 years of age. Institutions of higher education can also be found in Gdynia and Słupsk, but the number of students are lower (8000 and 4000 students respectively).

Children and young people can be considered as important group for the implementation of forms of sustainable mobility as the individual mobility behaviour is not fixed yet and can be influenced by innovative offers. Younger children are influenced by their parents' mobility behaviour on the one hand, but can also be important as multiplicators of environmentally friendly forms of mobility when they are introduced to these forms during their time in the education system.

Youngsters during their studies or entry into professional life are also an important target group, as they are typically more open towards new ideas and innovation than people in an advanced age with routinized mobility behaviour. Therefore a young population and notable shares of population in higher education may be considered as advantageous for the implementation of innovative forms of mobility.

3.2. ECONOMIC BACKGROUND

Looking at the economic background, the partners in Gdynia, Greifswald, Slagelse and Växjö characterize their respective local economy as a growing economy, whereas Słupsk has seen a declining economy in the last years.

The leading sectors in the five cities are compiled in Tab. 3.

	Leading sectors	Biggest employer
Gdynia	IT; shipping	Thomson Reuters (Financial and risk business)
Greifswald	Science and higher education, public services (health), shipbuilding, manufacturing, logistics and services	University of Greifswald, University hospital; City of Greifswald/administration
Slagelse	Public Service, healthcare, agriculture	
Słupsk	industry and construction, industrial processing, wholesale and retail trade, vehicle repair, transport and storage, financial and insurance services	Gasoline stations, footwear and fashion sale, plastic products (production and distribution)

Växjö	public sector: Health and social care; social services; higher education commerce	Växjö municipality, Linne universitetet

Table 3: Leading economic sectors in the pilot cities (Source: data from project partners)

Whereas the economy in Gdynia, Greifswald, Slagelse and Växjö is dominated by the service industry – in Gdynia advanced business services, in Greifswald, Slagelse and Växjö mainly public services, especially higher education and research – in Słupsk small and medium sized manufacturing businesses are also important.

Table 4 shows data on the **employment situation** in the five cities. Data on employment and unemployment shall be interpreted rather cautiously. This is due to the fact, that especially unemployment rates are „political data" and their collection varies between countries and over time. The given data show, that the two Polish cities have lower unemployment rates than the Swedish and German cities respectively. Gdynia's and Słupsk's rates are near the national average, whereas the difference to national averages is noticeable in Växjö (Swedish average is 6,2%) and abundantly clear in Greifswald (German average: 3,4%).

With respect to the local mobility situation the **commuter balance** is of great interest: Three cities have a positive commuter balance, receiving more incoming commuters than having outgoing commuting traffic. Unfortunately there is no data available on the means of traffic used by commuters. Slagelse and Słupsk have a negative commuter balance.

	Employment	Percentage unemployed	incoming commuters*	outgoing commuters	commuter balance
Gdynia		2,9	18.427	14.635	3.792
Greifswald**	27.453	8,3	12.273	6.094	6.179
Slagelse	36.331		11.168	13.537	-2.369
Słupsk	26.639	4,0	4.715	6.878	-2.163
Växjö	47.163	8,1	9.901	6.581	3.320
** Polish cities: Numbers for 2011*					
*** Greifswald: employment and unemployment rate: 2017, Commuter data: 2014*					

Table 4: Employment, unemployment and commuters in the pilot cities (Source: data from project partners)

3.3. PILOT CITIES IN A NUTSHELL

Summaries of the general characterization are taken from the descriptions in the qualitative parts:

Gdynia's economy is modernizing and growing whereas the population is stagnating. New technical and social developments as the Internet and mobile phones are ubiquitous. The city of Gdynia recently has developed the city center as well as new settlements in the western part of the city, taking care of ecological aspects and the needs of new means of transport. Planning is open for new ideas. But problems as congestion, dysfunctional road junctions and lacking cycling infrastructure remain.

Mainly due to the university **Greifswald** is a young and vital city. Based on the study Zukunftsatlas 2007 by Prognos the city of Greifswald was identified as an up-and-coming region with rising chances for future development. The prediction was quite right. The demographic development as well as economic situation is positive. Greifswald as a modern hanseatic city attracts tourists as well, especially during summer time. Most houses are refurbished, but the slow, but noticeable growth of the population asks for new housing development.

Slagelse is a Danish municipality with three cities – Slagelse, Korsoer and Skaelskoer – where the majority of the municipality's population (70 percent) lives. People are moving from the rural parts to the cities. The average age of the population is rising. The economic situation is good, but public service is under pressure.

Słupsk has seen major demographic changes. As seen before, the number of inhabitants has been declining in the last two decades. This is an effect of labour migration abroad, suburbanisation and the decreasing number of births as effect of changing population structure. The city experiences low economic dynamics, resulting in low number of new business enterprises, a low level of affluence of local population and decreasing number of inhabitants and the reduction of consumption potential.

The establishment of institutions of higher education (University, Swedish Police Education) has triggered the ongoing increase of **Växjö's** population by 1500 new inhabitants per year. New residential and business areas have been developed and there is a lack of space and high demand on land. This expansion was complemented by environmental work.

This short overview characterizes five distinctly different cities, each facing a specific economic and social situation, which confronts the local authorities with diverse problems. Questions of local traffic and mobility are amongst these problems. The next section will focus this topic.

4. PILOT CITIES: MOBILITY SITUATION AND BACKGROUND FOR CARGO BIKE TESTING

In this chapter, we try to outline the mobility situation in the pilot cities, the traffic related environmental situation and the political and cultural framework in which the broader testing of cargo bikes will take place. Information from the quantitive and qualitative parts, respectively, are part of this summary.

Table 5 shows information about **motorisation** in the pilot cities. As expected, the ratio of passenger vehicles per 1000 inhabitants is lower in the cities which either have a high share of student population as Greifswald or as Växjö are inhabited as well by a lot of students as by (families with) children compared to the other two cities (see Table 2). As Gdynia and Słupsk have stronger commercial and industrial branches in their economy, it is not surprising that heavy goods vehicles are also more important in these cities. This is partly responsible for the higher general motorisation (motor vehicles per 1000 inhabitants) in the two Polish cities. The Danish pilot municipality, which has a large share of rural areas, reports the highest number of passenger vehicles per 1000 inhabitants.

	registered passenger vehicles	heavy goods vehicles (including buses)	motor bikes, motor cycles and various other vehicles	passenger vehicles per 1000 inhabitants	motor vehicles per 1000 inhabitants
Gdynia	151.251	22.610	13.172	614	759
Greifswald*	23.619	1.657	1.469	384	439
Slagelse	67.665	n.a.	n.a.	868	n.a.
Słupsk	47.935	8.848	8.709	524	716
Växjö	43.828	4.664	2.264	480	556
** data for 01.01.2018, Kraftfahrt-Bundesamt*					

Table 5: Motor vehicles: Numbers and densities

The motorisation rate (passenger cars vehicles per 1000 inhabitants) in Växjö does not differ from the national average (Sweden 2016: 477) whereas Greifswald's motorisation is notably below the German average of 555 passenger vehicles per 1000 inhabitants. Of the Polish cities Gdynias motorisation rate lies well above Polish average of 571, whereas Słupsk's inhabitants are notably less motorized. Slagelse's value lies high above the Danish average of 429. (Data for national averages from EUROSTAT; https://ec.europa.eu/eurostat/statistics-explained/index.php/Passenger_cars_in_the_EU).

All cities report environmental problems. Whereas Gdynia, Greifswald and Växjö mainly concentrate on environmental problems caused by traffic, Słupsk's list includes also other problematic developments.

Traffic related problems are mainly the aspects of noise and air pollution caused by congestion. (Too much) Motorized traffic - especially in city centres and during rush hours - is named by all respondents. The better use of public space instead of traffic and parking and the destruction of open/green space by settlement developments are also mentioned.

	Major environmental problems – highlighting traffic related problems
Gdynia	• Pollution: air quality • Noise • Destroying green areas • Lack of knowledge regarding environmental issues
Greifswald	• (Temporary) congestion causes pollution • Noise pollution at rush hours • Inadaequate use of public space (>> traffic, parking)
Slagelse	• Noise pollution • Congestion
Słupsk	• *Physical and chemical degradation of soil* • *The quality of underground waters* • *The sources of underground waters transfiguration* • *The flood risk* • Climate risks • The quality of the athmospheric air/pollution
Växjö	• Pollution • Noise (congestion, public transport buses) • Congestion during rush hours • Insecure intersections • *Bad water quality in the nearby lakes*

Table 6: Major environmental problems (Source: data from project partners)

Motorized traffic is the dominant means of transport in Gdynia, Slagelse, Słupsk and Växjö. Although no travel survey has been conducted in Słupsk, answers in the qualitative part support that assessment.

The modal shares in the other three cities are presented in Table 7. We see rather different patterns of mobility mapped by the surveys in Gdynia, Greifswald, Slagelse and Växjö. We see high shares of motorized traffic in Gdynia and Växjö. But the importance of public transport is much bigger in Gdynia and Slagelse than in Växjö.

	Gdynia	Greifswald	Slagelse	Słupsk	Växjo
year of survey	2015	2014	-	no survey	2012
motorized traffic (in percent)	51,5	34	41,8		60
public transport (in percent)	35,6	4	22,6		7
bicycle (in percent)	1,6	39	4,5		20
walking	10,9	22	-		13
other	0,4	1	-		
average length of journey	--	2,3 km	-		11 km
average duration of journey	-	16 min	-		24 min
average number of daily journeys	-	3,5	-		1,6

Table 7: Modal Split data: Means of transport used for everyday mobility by inhabitants (Source: data from project partners)

Cycling only has marginal relevance in Gdynia and it's share is not very high in Slagelse municipality. Växjö has a notable share of cycling. The highest share of cycling can be found in Greifswald. Environmentally friendly means of transport (cycling, walking and public transport) make for two thirds of daily mobility. The survey of 2014 confirmed the results of 2009, which showed an even higher share of cycling. The share of about 40 percent of daily journeys conducted by bike is one of the highest in Germany and is the result of a mixture of facts as high share of student population, compact settlement structure, rather unattractive public transport and a flat surface. The compact

settlement structure is reflected by the fact, that the average length of journey is only 2,3 Kilometers. Travels of this (average) lenght can easily conducted by walking or bike, whereas travels of 11 Kilometers in Växjö require other means of transport.

The share of public transport is high in the biggest city, Gdynia, but rather low in the cities with greater importance of cycling and walking.

The reported choice of transportation for daily travels is one indicator of the local mobility situation and culture. Qualitative characterizations of the local mobility situation complement quantitative data. The assessments of the five cities are a summary of the different expert voices, using original text passages whenever possible. An overview of common aspects can be found in Table 8 at the end of this section.

4.1. SITUATION IN GDYNIA

In Gdynia cars are the dominant means of transport with more than 50% share in modal split. According to one respondent better public transport is possible, but it is managed not well.

Various conflicts are reported: Generally speaking cyclists are not welcome on roads. Despite a ban, it is more common to see cyclist on a sidewalk than on a road to avoid conflicts between car drivers and cyclists. Other conflicts are between cyclists and bus drivers, car drivers and pedestrians and between different car drivers.

The political mainstream on the future of traffic and mobility in the city is about the further development of public transport with trolleys and urban railway, but also about the development of bike paths to fill the gaps in the existing network.

SUMP, a concept for sustainable mobility, has been ratified by City Council in 2016. It was well prepared, based on public consultations and meeting with many different interested stakeholders. Some actions have been undertaking within SUMP, but there are many which are still in 'waiting room' with long-term vision of implementation.

As the parking situation in the inner city is problematic, the city tries to regulate the number of available parking spaces through paid parking zones and promoting public transport. The effect is moderate. There is also investment in underground parking spaces in the city center. There is a focus on parking spaces in changing hubs in districts, but it takes a long time from plans to implementation.

Environmentally friendly mobility is a topic in public discourse. Gdynia's eco-mobility is mainly based on trolleybuses. The existing trolley network works very well and the city invests in the infrastructure. The network without wired infrastructure will be extended and new vehicles with alternative battery with possibility of energy recuperation from braking will be bought.

Cycling – which is at the moment not very important - is getting more popular through introducing new bicycle paths and soon there will be a bike sharing system. An electric scooter sharing system is also available. Public campaigns support topics as e-cars, cycling and public transport.

4.2. SITUATION IN GREIFSWALD

By size the city of Greifswald offers ideal conditions for short-range mobility like walking and cycling ("Nahmobilität"). There is no car necessary to cover the distances for most everyday transactions. However the full potential especially for cycling is by far not tapped. Whereas bicycle culture is enhancing throughout most Western European and German cities, Greifswald is less trending within this movement that is called Verkehrswende (traffic evolution). The reported high share of cyclists is

unfortunately not complemented by strong political will and pressure to invest in bicycle infrastructure.

But still impetus is making itself felt. For example Stadtradeln (a yearly event and contest about reducing the use of cars in everyday life) draws more and more participants every year. An own bike festival evolved in 2016 and in 2018 the German Championship for Bike Messengers was taking place in Greifswald.

Nevertheless, different conflicting situations are mentioned: Accidents and dangerous situations between motorized traffic on the one side and crossing pedestrians and cyclists on the other side, especially on main roads and junctions happen quite often. Cars turning right from main roads are in danger not to see cyclists who continue their journey on the main road.

Conflicts are also caused by the common use of sidewalks by cyclists and pedestrians, especially when cyclists use the wrong side of the street (most dangerous with missing lighting in winter).

Besides the traffic related conflicts, another problem is about the parking situation. Like in every other city the properties especially in the city center have no or just little capacity for parking space, so that streets and public ground counterbalance this lack of private parking space. Using public parking lots for cars is quite cheap in Greifswald. But still not enough parking space is hold available, so that car owners can park their car right in front of their homes. So cars get parked in places that are not meant for car parking. Alternatives are in walkable reach at the edge of the city center, but it seems that people still expect finding a parking lot close by. Many people still enjoy the comfort of having a car even if it is not needed that much.

Commercial control over parking space in great parts of the inner city is political consensus. But one of the proposed measures of the local Climate Action Plan – the increase of parking fees to encourage the use of environmentally friendly means of transport – is still discussed controversially, if at all.

In general most political representatives in Greifswald are reluctant concerning policies on traffic and transportation, although concepts for sustainable mobility, e.g. the Radverkehrsplan and the mentioned Climate Action Plan with proposed measures are available and have been adopted by the city council. The “Diagonalquerung”, a traffic project that simplifies and facilitates traffic flow specifically for bicycles at the biggest crossroad of the city, is a showcase for this reservation on mobility concepts: It was postponed in 2014 by the city council although from a technical and financial view the consulting and administrative stakeholders were in favour of this project.

4.3. SITUATION IN SLAGELSE

The dominant means of transport in Slagelse are cars. Especially in the three urban areas people also use their bike for the daily travel to work or school. The political mainstream on the future of traffic and mobility in the city is to make it easy to drive cars.

4.4. SITUATION IN SŁUPSK

In Słupsk cars are dominating means of transport.

The most noticable is the conflict between users of cars and bicycles. Car drivers do not want to share the road space with cyclists, and sometimes they are even aggressive towards them. There is no mutual tolerance. Cyclists are afraid to enter the streets and in case of lack of bicycle infrastructure prefer to move on the sidewalks. In Słupsk the drivers of passenger cars are the leaders and it is practicly them who "dictate the conditions" of street traffic.

Słupsk would like to direct the current dominance of cars to public, bicycle and pedestrian transport. Administration tries to introduce solutions that reduce the attractiveness of the car as the main means of transport in the city. It is implemented by expanding the paid parking zone, reducing the number of parking spaces and introducing changes in the organization of traffic.

Using the car as the main means of transport and having one or several cars is – as one respondend puts it – "treated in out country as a determinant of economic status and well-being." As a result, the number of vehicles in Poland and Słupsk exceeds the actual demand for them. It causes a secondary deficit of parking spaces. Inhabitants expect the city to increase the number of parking spaces and build new car parks. It is difficult for them to understand that urban space, including streets, should be friendly to people, not just cars, and that their needs in this area can not be fully satisfied. Despite the restrictions being introduced, the road infrastructure in Słupsk still encourages the use of cars by offering an attractive parking offer. Changes in this area require vigorous, gradual and consistent actions.

The implementation of solutions focused on environmentally friendly mobility is one of the elements of the city's policy. Eco-friendly buses, privileges for electric vehicles, extension of bicycle paths or organizing bicycle campaigns are elements that are to gradually change the mentality of the inhabitants of our city. However, the respondents believe that the scale of these activities should be much more powerful and more focused on social dialogue.

4.5. SITUATION IN VÄXJÖ

In Växjö private cars are the dominant means of transport, as reflected by the results of the travel survey (see table 7).

There are – according to one respondent – not many conflicts between users of different means of traffic. Other respondents report conflicts between cars and bicycles (i.e. flexible lanes) as well as between private cars and public transport (separate bus lanes) or between different cyclists ("different cyclists have different needs"). There are some intersections, where several modes of transports are involved where this shared use causes insecurity.

Nevertheless the political mainstream supports ambitious concepts, as the city has decided to become a fossil free city already in 2030. The city has decreased the emission of CO2 with 58% since 1993. 90% of the emission is from traffic. So traffic causes some problems and the city likes to get more people to change transport habits and use public transport and bicycle to develop a city that will work for all modes of transports, not only cars.

Cars will perspectively be banned from the city center. There is broad understanding that the share of sustainable transport, public transport and bicycle should be increased.

The public discourse on the parking situation is described as difficult. For commuters and visitors it is difficult to find parking lots in the central area. According to the residents there is not enough parking space in the central area. This is called "an infected discourse with lots of angry residents, which makes the politicians very careful when it comes to take brave decisions".

Some people think it is too expensive to park and some wish a digital map to find vacant places. The city will adopt a new parking strategy next year with possibility to reduce the number of parking places if mobility measure is done.

Looking at the public discourse on environmentally friendly mobility, respondents state, that In general, most people have a positive attitude to environmentally friendly mobility. There is a lot of discussion about e-mobility and other issues of mobility.

But the positive mindset "doesn't mean that they will park their car and start biking, walking or use public transport". This gap between attitude and behavior is also mentioned by another respondent: "People in Växjö think it is important to be environmental friendly, but they are too lazy to realize that it actually means that they themselves have to change."

4.6. COMMON FEATURES AND STAKEHOLDERS

The overview in table 8 shows that some common features and discourses can be found in all cities.

Dominant means of traffic	cars
Conflicts between users of different means of traffic	cars and bicycles is named by all partners, other conflicts are mentioned (public transport – individual transport)
Political mainstream on the future of traffic and mobility	more or less ambitious towards more sustainable forms of transport, concepts have been adopted, but implementation is quite difficult and slowly
Public discourse on parking situation	parking discourse is difficult in most cities: - mostly about inner city (>> accessibility, merchants) - cost of parking - parking for residents, visitors, commuters
Public discourse on environmentally friendly mobility	different focus in the cities, but most aspects are named by all: - political ambitions vary - relationship political decision makers – administration not without problems/frictions - implementation of adopted concepts takes time and faces obstacles - gap between public attitudes and behaviour

Table 8: Common features of the mobility situation in the pilot cities

Political and planning concepts for the support of environmentally friendly forms of transport and mobility have been developed in all cities. The problem is implementation. General public interest and support for topics of environmentally friendly forms of mobility is reported from all cities. But a gap between attitudes and individual behaviour can also be observed in all five cities, as well in the discourse about parking as in the personal behaviour of the majority of the population. A lot of people are reluctant to change from motorized mobility to other means of transport.

Table 9 shows the list of mentioned stakeholders in the different cities. The list contains stakeholders irrespective of the position taken in the discussion of local traffic and mobility. The different roles taken by the stakeholders can be found in the description of the local situation.

	Gdynia	Greifswald	Slagelse	Slupsk	Växjö
Politics	City Concil and president	political parties/ city council	political parties	Councilors/elected representatives	Political parties
Public administration (various departments)	Public transport authority; Roads and green areas management (cycling officer, accessibility	some departments of local administration	public administration		Municipality Region Kronoberg (region) Public transport organization

	officer, mobility management unit, ITS unit, traffic planning unit)				
Local economy	transport business, Miejsca dostaw, rowery cargo, Hossa - developers, kontenery	local economy/ public communal companies: local supplier, parking company			Companies in the city center and outside the city center
NGOs	‚Rowerowa Gdynia', ‚Miasto Wspolne'	ADFC		NGO's promoting bicycle use	NGOs
Media	Trojmiasto.pl –	Local press		Journalists	Local newspaper

Table 9: List of the named stakeholders by the different cities.

4.6.1. GDYNIA

In Gdynia, the Mayor and the City Council are named as positive supporters of sustainable forms of mobility. But as the city faces local elections in October 2018 different ideas on the traffic situation - from widening roads to building cycling infrastructure and supporting public transport – are discussed. Gdynia Municipality is engaged in building cycling infrastructure and introducing free public transport for children and school students.

Small entrepreneurs and some restaurants are interested in a renting scheme for cargo bikes. A NGO - Rowerowa Gdynia Association [Cycling Gdynia] - supports the local administration in the consulting process for new cycling infrastructure. It also engages in organizing local cycling events, thus promoting bicycle use in Gdynia.

4.6.2. GREIFSWALD

The local mobility situation and sustainable mobility are not much a topic in the city.

Political parties are reserved when it comes to questions of mobility – they set topics that are in their eyes more related to a greater audience like regional development, housing and tourism. It seems that to most politicians it is too controversial to discuss mobility issues. They probably forget to take in consideration that mobility also affects the living environment to a great extent.

The city administration tries to set a more progressive impulse on mobility, but the support of the elected representatives is necessary for comprehensive concepts. So they are linked to the priorities of political parties. Some concepts promoted by different departments of the administration have been adopted of the city council with majority, but implementation is rather slow, as financial means for specific measures are not granted.

The local economy is also not longing out for the full potential of environment friendly mobility concepts. They are bound to the idea of mobility based on cars. They could promote and support mobility concepts that include walking and biking even more – for a better attraction for both customers and employees.

Organizations that focus mobility questions could be more present. There are automobile clubs but they do not shape political discussions much. There is a cyclist association (ADFC) with an active local group, but that does only catch the public attention every once in a while.

Public opinion is highly influenced by the local press, which is basically one newspaper. The local newspaper in Greifswald is usually reaching out for controversial topics. Therefore some discussions get presented unilaterally, even if they are not that conflicting. In digital media local topics do not get spread wider than regional.

The local public utilities company has an innovative part in the future mobility situation. While it might be harder to introduce new ways of mobility in such a small town like Greifswald the Stadtwerke dares to draw more attention to car sharing, electric or gas driven mobility and public transport.

4.6.3. SLAGELSE

The main stakeholders in the development of local mobility are public administration and political parties. Main problems concerning mobility in the urban areas of the municipality are parking and traffic jams. In the rural areas the mobility situation is falling in quality, as public transport is reduced. In combination with the ageing population this will be a challenge in the future.

4.6.4. SŁUPSK

The Mayor of Słupsk is an active propagator of the idea of sustainable mobility. Local administration is open to all initiatives related to the promotion or implementation of pro-cycling policy. The mayor is ready to take on challenges and even controversial decisions. However, the habits and beliefs of the inhabitants, shaped over many years, often do not allow for a radical policy focused on change. The more so because due to the limited budget, the results of some projects have to wait for years.

Councilors as the representatives of the local inhabitants are the main stakeholders in the development of the local mobility situation. They are concerned about roads for cars and sometimes about pavements. They dislike NGOs wich are dealing with bikes situation, because of their sharp tongue. Bicycle NGOs in Słupsk are very active in criticizing the local situation, but often they do not have ideas how to improve bicycle infrastructure in Słupsk. They have very high demands and want Słupsk to be Copenhagen right now. Journalists in general are concerned about cars – e.g. more parking lots for cars, more roads for cars - but there are only a few which are "bicycle-friendly".

4.6.5. VÄXJÖ

In Växjö political parties and elected representatives have ambitious goals. Växjö's target is to be Fossil Fuel Free in the year 2030. But one respondent notes: „They talk about it but still support a lot of economic priorities that benefit cars." Politicians do not dare to take the necessary steps towards environmentally friendly mobility in order not to make people upset.

Public administration – which has to fulfill the Fossil Fuel Free target - is described as struggling to put environmentally friendly mobility on the political agenda and to get politicians to make proper priorities in the budget. But it is hard to work for the promotion of sustainable transport when its not prioritized and always has to stand against other important things.

The local companies have different interests, the local economy in the city center is concerned about the access for motorized traffic to the city center. Shop and property owners are the ones that are most worried about the lack of parking space in the city.

Local NGOs usually do not have a focus on sustainable transport with all its' different dimensions. Some support the idea of having more room for bikes in the city. But they are considered not that strong when it comes to development of the mobility situation.

As in other cities there is one newspaper dominating the local press situation. And this newspaper is more interested in citizens that complain about local traffic problems, which is very easy, than in questions of sustainable mobility.

4.6.6. COMMON ASPECTS

Interesting enough, some common aspects are named by all or most respondents. Despite different administrative structures, behaviour and positions of some stakeholders show common traits:

- Sustainable mobility concepts are often launched by the local administration or by departments of the administration. Concepts are mostly related to climate issues (Carbon free city, Climate Action Plan).
- Political support for theses concepts can be found, often with broad majorities.
- Problems occur, when it comes to the implementation of concepts. Political representatives are rather hesitant when they are asked to come to clear decisions on measures, which may interfere with motorized traffic or prioritize the use of other means of transport (e.g. by raising parking fees or building bicycle infrastructure). Reluctance to financing of innovative measures is named as an obstacle to further development of sustainable mobility.
- Sustainable mobility is focus of only a few NGOs, mainly cyclists' organizations.
- Local media are more interested in problems (e.g. traffic jams, parking problems) and conflicts (e.g. between car drivers and cyclists) than in positive mobility solutions.

5. CYCLING SITUATION – COUNTABLES AND UNCOUNTABLES

After looking at the local discussion on mobility questions in general, this part focuses the cycling situation, which is an important precondition to cargo bike use.

Table 9 encompasses the data from the pilot cities and may be seen as a snapshot of different local situations, as data cannot be compared in a meaningful way. Although it is not the focus of the project, the wish for reliable and comparable statistical data on different aspects of bicycle mobility may be one of the results.

	Gdynia	Greifswald	Slagelse	Słupsk	Växjo
Total length of roads in the city	413,5 km	209		155	51,2 m/ inhabitant
Share of roads in municipal responsibility	97%	89%		100%	9%
Local spending on road management (construction and maintenance) in the last five years	n.a.	n.a.		48,4 mio €	8481 SEK/ inhabitant
Bike sharing system availability (short description below)	from November 2018	available	not available	not available	not available
Lenght of cycle tracks (separate tracks alongside roads)	57,6 km	app. 65 km	90,1 km	22,9 km	182 km
Lenght of bike lanes (on road lanes marked with paint)	1,8 km	7 km	21,2 km	1,17 km	5
Number and length of bike boulevards (low speed street optimized for bike traffic, local low speed motor traffic allowed)	2,6 km	2 bike boulevards	10,3 km	50 km local low speed motor traffic	0
Availability of public bike parking facilities	807 U-shaped bicycle stands in city + 690 in public schools	available		appr. 175 bike stands, plans 2018: 700	1000
Local spending for cycling infrastructure in last five years				n.a.	5 Mio Euro
estimated number of cargo bikes	1	10	75 (est.)	1	35
Share of e-cargo bikes	100%	?	?	0%	1%
number of local cargo bike sellers	0		4	0	5

Table 10: Lenght of roads, cycling infrastructure and cargo bikes (Source: data from project partners)

5.1. GENERAL CYCLING SITUATION

The qualitative interviews also focused the cycling situation. We asked for

- a general evaluation of the cycling infrastructure,
- public attitudes and behaviour towards cycling,
- official concepts and planning documents and
- possible political support.

5.1.1. GDYNIA

Cycling infrastructure in Gdynia is partly not prepared for commuters, but for people who use a bike as entertainment and hobby. There are about 60 km of bike paths in the city, with more in the woods of Tricity Landscape Park. Bike paths are in good condition, but the network is not complete and there are dead ends that guide cyclists to sidewalks. There are districts, which cannot be accessed directly and safely.

As the cycling routes do not form a complete network, most of the people riding bikes are using sidewalks because they are afraid of car traffic and feel safer there.

There are bicycle standards, SUMP and the concept of a bicycle network is being developed. There are many technical designs of new bike paths, most of them created in last few years. Planning is up to date and waits for implementation.

Political support is strong. The Cycling officer is at the same time the mayor's plenipotentiary on cycling development. Nowadays Gdynia's authorities are very much going with the trend of promoting cycling and increasing it's share in modal split. Gdynia is the one of the pilot cities, which has undergone BYPAD (Bicycle Policy Audit, http://www.bypad.org/cms_site.phtml?id=552&sprache=en).
It underwent the certification procedure in 2013.

5.1.2. GREIFSWALD

Cycling is – as modal split data show - very common in Greifswald. Many people are routinely going by bicycle for everyday journeys. A recent study says that 93% of the students use bikes for their daily travel to University.

This contrasts with the results in the Fahrradklimatest (a biyearly nationwide study on "bicycling climate") when participants in 2016 rated the overall cycling situation in Greifswald with a 3.3 out of 6 as worst value. This rating below average shows that improvement is necessary. The infrastructure for bikers got rated with average. It seems that infrastructure is not a relevant argument for people to use their bike – biking in Greifswald is popular even though the infrastructure is not that inviting to do so.

There is a close meshed net of cycle routes in the city, comprising cycle tracks, bike lanes, bike boulevards and traffic-calmed areas. The state of repair and the situation at some important intersections can be described as poor.

Bike Parking is another problem. Bike parking was not on the agenda the recent decades, so "wild parking" on sideways is common and accepted – also at the cost of the general public. The city administration focused that problem for a while now but does not dare to model modern solutions for it that we can see in other cities.

Keywords for necessary improvement in the biking infrastructure are a bike (parking) station, better connections to surrounding villages and safe everyday cycling tracks.

The Baltic Sea Cycle Route and the Iron Curtain Trail (two multi-country long-distance cycling routes of the EuroVelo network) are running through Greifswald. So also many tourists reach the city by bike, especially during summer and improvement of cycling infrastructure has a touristic (e.g. economic) effect as well.

5.1.3. SLAGELSE

Although the political mainstream is characterized as car-friendly, the municipality has adopted a cycle track plan and is implementing it. Every year new cycle tracks are build.

5.1.4. SŁUPSK

In general cycling infrastructure is on a good level. The biggest challenge is the lack of cohesion in bicycle infrastructure, especially in the city center with its narrow streets. This is changing, but improvement proceeds very slowly. Practically every new investment in roads brings new infrastructure for bikes. Public opinion is very positive about bicycle changing on streets, but they are not aware of that cyclist are full-fledged participants in the street traffic and they can strive to improve the conditions for cyclists.

The superior planning document, including in the field of bicycle mobility is the "Strategy for the Development of the City of Słupsk for the years 2017-2022", where the goal is to rationalize transport needs and increase mobility while reducing transport. It also assumes the development of public transport and bicycle infrastructure, so that they will constitute a convenient, attractive and, above all, accessible alternative for car travel. Another document, which is called “Technical standards for bicycle infrastrukture in Słupsk” determines main rules for realisation of bicycle infrastructure. Assumptions contained in this document are gradually applied in the implementation of infrastructure investments in the city - with varying results. Financial limitations often cause that investments are carried out in stages and in different locations, which sometimes results in lack of continuity and gaps in the bicycle infrastructure.

5.1.5. VÄXJÖ

„It is ok to cycle in Växjö“ – the bike infrastructure is advanced but there is potential for improvement in terms of surfaces, lighting, safe bicycle crossings, road guidance etc. It is not yet top quality as in the Netherlands and Denmark, but not so far away from that.

But planning is often not carefully prepared and different lanes are not interconnected. In the city center there is a conflict between pedestrians and cyclists.

There are good ambitions and strategic work ongoing: Cycling is involved earlier in the planning of new buildings and areas and often there are cycle stands close to bus stops to enable easy intermodal travel.

Because of different owners and responsible organizations the maintenance of the cycle lanes, especially in wintertime, is insufficient.

There is a strong public opinion about bicycling. The cyclists have lots of opinions about the cycling infrastructure. Car drivers also have a lot of opinions about cyclists and the municipalities’ work with bicycles.

Some of public opinion is quite satisfied with the infrastructur and some other is not and like to improve the infrastructure.

Sustainable transport is included in the planning documents. There is a cycling strategy and a new cycling plan will be decided during autumn 2018. But they are not always implemented consequently.

Politicians talk and support the increase of the number of cyclists, but are in general not brave enough when it comes to budget priorities.

Politicians seem to have a big interest in sustainable transport and cycling but when it comes to decision-making they are afraid to make decisions that could annoy the inhabitants.

5.2. BIKE SHARING SYSTEMS

At the moment a Bike sharing system can only be found in Greifswald. The bike sharing system „UsedomRad“ was originally founded in the touristic region of the island Usedom aiming at tourists. It has expanded to touristically interesting points on the West Pomeranian mainland and has established five pick up points in Greifswald (Train station, central Market Square, maritime fishermen's village Wieck, Greifswald Youth Hostel and Shopping Center Domcenter) which are operated during the tourist season. The bicycles can be accessed by a smart phone app.

Gdynia will be part of a Metropolitan Bike Sharing system in the „Tricity“ area. 30 percent of the system will be starting from November 2018, the complete system is expected to be available from March 2019. It will comprise 4100 electric bikes for whole metropolitan area, which encompasses 14 cities and communities. 1100 bikes are planned for the city of Gdynia. The system will be organized by the German enterprise Nextbike, which has started to operate bike-sharing systems in more than 100 cities worldwide (https://www.nextbike.de/en/). It will be a free-floating system, with no fixed pick up points. There is no information about charging stations yet. The access will be possible by smart phone app or on-board computer on bike.

6. PILOT TESTING OF CARGO BIKES

The final section of the survey deals with the pilot testing of cargo bikes. The first question asked about the motivation for the pilot testing: *What are the main problems, which should be addressed by the pilot testing?*

In **Gdynia** the main motivation is to raise awareness of the possibilities of (cargo) bike use. One respondent described in a general way the necessity to make people familiar with safe cycling:

By cargo bikes we should show how to cycle in a safe way – many people don't know how to cycle on two-way roads. Cyclists are also not aware how to do safe behave on many local roads among cars.

The possibility to increase knowledge by a wide range of potential users of cargo bikes is also mentioned.

Greifswald: To step up from a niche product to a functional and helpful everyday companion cargo bikes need visibility in the public and promotion to show what can be done with cargo bikes.

People should see different kind of cargo bikes in various occasions and in several fields of application. And it should be possible to get invited to test ride a cargo bike in order to overcome the concerns and doubts that many people link to cargo bikes (e.g. hard to ride, not safe, too slow).

After all: Addressing problems in a cargo bike project includes addressing problems that apply to biking in general, like a safe parking situation or sharing the road with other vehicles. Only if people feel safe going by bike in their everyday life there will be the chance to invite people using a cargo bike as well.

Pilot testing should also highlight the specific requirements of cargo bikes as assembly space at intersections, necessary width and curve radii and safe parking facilities for high-quality cargo bikes.

In **Slagelse** pilot testing aims to tackle the major problems with parking and traffic jams in the urban areas. In the rural parts solutions to cope with the lack of public transport are sought. The transport of goods is one possible field of use. The use as taxi for elderly people and children is considered another possible application.

In the community housing association a cargo bike may be used for the transport of goods and/or equipment.

General support by organizations and the general public of the use of cargo bikes is expected. Although the taxi company may see the transport of persons by "cargo" bikes as competition to it's business, the respondents do not expect serious protest.

In **Słupsk** different questions were named. Some were about organizational issues as organization of sharing systems, bikes' insurance and the responsibility for the bikes (charging, damages). Also the aspect of the personal requirements to ride a cargo bikes are named. Safe storage and parking of cargo bikes is another matter of concern.

Traffic-related problems as pollution, noise and congestion are **Växjö**'s motivation to test cargo bike use. The use of cargo bikes can help to reduce heavy traffic in the city center. The testing can help to reduce the reservation among the inhabitants of Växjö. To convice people to use a cargo bike sharing system is not easy, because they look heavy, they seem hard to use, hard to return and hard to park. It might not be as easy as promoting a "normal" electrical bike/pedelec.

The use may be easier, when organizational questions can be solved:

- How can the person get to the cycle pick-up place? Is there a need for parking spaces nearby?
- Can the cargo bikes be placed in several areas for better accessibility?

Before testing, it is important to think about what type of cargo that is going to be transported and there is the idea to try to use cargo bikes to start a common distribution of certain goods/waste in the city center.

Summing up the answers from the different pilot cities, we see a broad range from the basic motivation to create visibility of cargo bikes and their possibilities to quite detailed questions of organization and infrastructural requirements.

7. POSSIBLE PARTNERS AND SUPPORTERS

Not surprisingly, possible partners for the pilot testing are considered as main supporters: cycling officers, local businesses, neighbourhood centers, allotment holders, and public service institutions as kindergartens and libraries are named.

	Possible partners	Intended fields of use
Gdynia	Local businesses in the city center municipal units neighbourhood centres	local deliveries minor road maintenance and interventions. transport of goods, children, deliveries
Greifswald	private use: multi-generation houses, neighbourhoods Commercial use: inner city merchants, delivery services, public service institutions: - kindergarten - university departments - public administration: Radwegwart - mobile information desk/promotion/ education	sharing system for personal use transport of children and goods minor road and cycle track maintenance
Slagelse	- local councils in rural areas and villages - community housing association - Kindergartens	Transport of persons: elderly people, children Transport of goods, equipment
Slupsk	library theaters users of allotment gardens users of sport and recreation Center Center of Tourist Information	transport of children, shopping, fruits, vegetables; promotion of cultural institutions; mobile public library; point of mobile tourist information; recreation
Växjö	Bicycle dealers Kindergartens	transport of children work vehicle for certain businesses

Table 11: Possible partners and fields of use

Looking to the future, possible users are identified as residents and individuals looking for new forms of organizing their personal mobility.

This may be people considering to sell (one of) their (two) cars and/or replace that one with a cargobike or individuals who use their bike for everyday mobility but are forced to take the car when

they have to transport lots of things. In families with small children cargo bikes can be used for transport to the kindergarten.

Also motorized commuters looking for alternative ways to travel to work and generally “climate and health conscious people” are noted as possible supporters and potential further users of cargo bikes.

Asking for the obstacles for successful cargo bike use, following aspects are listed:

- lack of or poor existing infrastructure (e.g. parking facilities, bike lanes)
- lack of easy-to-handle booking systems (in case of sharing schemes)
- price of cargo bikes
- operating cost
- storage
- insurance
- lack of information about the project (pilot testing) and the possibilities of cargo bikes
- lack of ability or confidence to ride a cargo bike
- difficulty to change to a new transport routine
- social pressure to own a car
- long distances to travel
- strong relief in the city

This list shows that the increase of the use of cargo bikes is influenced by a variety of factors on different dimensions and with different responsibilities:

- The situation of cycling infrastructure is a factor that can be influenced by public authorities on the local level, often depending on funding from regional or national governments.
- The price of cargo bikes is high compared to a “normal” bicycle, but low compared to a car. As with most consumer goods the price is likely to fall when the good is made in larger quantities, as historical examples show. So, further diffusion of cargo bike use will likely make cargo bikes affordable for more people. Nevertheless, the currently high price calls for safe storage facilities and provisions for damage (insurance). The former is part of the responsibility of the local municipality, the latter is integral part of a sharing system.
- Sharing systems can be organized in very different ways: as public service by administrations, as private initiatives, as commercial enterprise or as a mixture of public and private elements. The sharing system has to consider prices and operating cost, questions of accessibility and storage as well as provisions for damages (insurance) and maintenance. And it has to be user-friendly.
- Users can only be convinced to use cargo bikes if they know about the possibility and if they are confident, the use of a bike is easy and safe. Potential users must get an opportunity to experience health and climate friendly mobility in order to change their travel habits.
- Travel habits in modern societies are deeply influenced by car ownership as a means of social distinction. Motorized traffic allowed greater distances between the locations of daily life (e.g. living – work – schools – shopping). These long distances are now an obstacle for non-motorized forms of travel, as the revision of locational decisions takes time.

Summing up, the mentioned obstacles should be overcome by the pilot testing.

8. EXPECTED AIMS OF THE PILOT TESTING

Finally, we asked for the possible aims, which can be reached by pilot testing.

In **Gdynia** dissemination of the pilots and the project are expected to raise awareness and spread the news of cargo bikes and the different possibilities of the use. Cargo bikes should show a bike as a means of transport, not only as sports equipment. Commercial opportunities for entrepreneurs will be demonstrated.

The increase of the number of cargo bike users is intended, as people acquire ability and confidence in riding cargo bikes. By their example, cargo bike use in the city centre, where infrastructure is available and the terrain is mosty flat will be promoted. The experience of the pilot testers will also help to choose the best routes to travel.

In **Greifswald**, the expected aims are the following: Cargo bikes should be more visible in the public. Especially cases of commercial use can point out where and how cargo bikes can be helpful and a smart solution. Providing possibilities for various user groups to test different kinds of cargo bikes for their purposes could raise the attention to the project and to cargo bikes in general.

The use of cargo bikes hopefully results in a decrease of motorized traffic and shows that new forms of mobility can be environmentally friendly as well as healthy and cheerful.

Three aims of pilot testing are named by the respondent from **Slagelse**:

- Can cargo bikes help to solve parking problems in the cities of the municipality?
- Can cargo bikes make life easier in rural areas and villages?
- Will the use by the community housing association facilitate the life of its members?

The expectations in **Słupsk** are also mainly about raising awareness for environmental issues in transport. Cargo bikes are seen as one component of sustainable transport in the city and their visible use in the pilot-testing phase promotes environmentally friendly mobility. As practical result an adequate model of moving around by the citizens is aimed at.

Växjö intends to convince more people to replace their cars (or at least more travels by car) by bicycle rides. By testing cargo bikes people will be made interested in the permanent use and may perhaps even be convinced to buy their own cargo bike or make pressure for the use of cargo bikes in their organizations. More bike use will make the city more of a bicycle friendly city with a stronger bike culture. This will on the one hand reduce car-related problems as noise, pollution, congestion and parking issues. On the other hand it may also support politicians to take smarter and better economic decisions.

The expectations towards pilot testing can be summed up in the following keywords:

Successful pilot testing will eventually result in – as one respondent put it – “happy users that will work as ambassadors”.

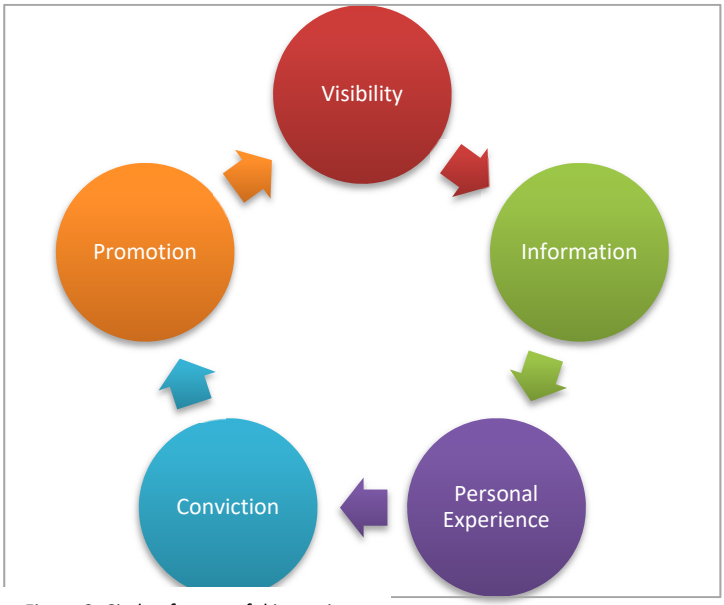

Figure 3: Circle of successful innvations

9. AREAS OF CARGO BIKE USE

This part of the Ex Ante Evaluation has a closer look at possible fields of cargo bike use, because the pilot testing aims to test a broad variety of uses. First possible areas of operation are described and their feasibility is discussed briefly.

9.1. POSSIBLE FIELDS OF USE OF CARGO BIKES

The CoBiUM project application distinguished three main operation areas for cargo bike use:

- private use
- municipal services and
- business logistics.

But our survey in the pilot cities, talks with possible local pilot partners and looking at the experiences in bigger towns show that the scope of operations areas should be described in broader terms.

In the survey the pilot cities named possible users (see table 10 in chpt. 7). We see a focus on private use (1.1.), a broad range of possible applications in different public institutions (1.2.) and commercial applications (1.3), which are not only aiming at business logistics.

In the following we will take a closer look on these three general fields of use. After a closer description an assessment of the potentials of use is made, also looking for and the potential reduction of carbon emissions.

Pilot testing in the different cities aims to cover a broad range of applications in order to get a differentiated picture of the questions to be considered before implementing the use of cargo bikes and to identify problems occurring during the operation.

9.1.1. PRIVATE USE

Private use of cargo bikes describes forms of transport by individuals for the organization of their own and their families' personal lives.

Such private use of cargo bikes may be attractive for three different occasions:

Transport of small children

The transport of small children in daily life is still one of the most well known applications of cargo bikes. Examples from the Netherlands and Denmark often show happy young parents with similarly happy children on their way the city or on outings.

Families that decide to use a cargo bike as regular means of transport for their daily trips are usually already bicycle friendly. The purchase of a cargo bike for the time when the youngsters are small is the logical consequence. Sharing or renting a bike is no realistic alternative, as the cargo bike is needed regularly.

As the decision for cargo bike use is part of the general life style, carbon emission is avoided, but the saving potential can hardly be estimated.

Likewise, it is also hard to estimate the effect on the future mobility behavior of the children although it is likely that their acquaintance with fossil free mobility from early age will be positive.

Transport of adults, e.g. handicapped or elderly people

Private demand for cargo bike use may also result from the wish to include elderly or handicapped relatives or friends into one's bicycle-based activities.

The purchase of an adequate bike may be the right decision when the handicapped person lives in the family. When common bike outings are occurring occasionally, the price of specialized bikes is too high.

In this case, initiatives as "Cycling without age" (see below) are good solutions.

Transport of goods

No cargo bike is needed for daily shopping. Larger purchases as furniture or larger electrical appliances have to be delivered directly to the household by lorry/delivery van.

But now and then there is the necessity for the transport of middle-sized, medium-heavy cargo, e.g. big packs of nappies, crates of beer or bottled water or a new vacuum cleaner.

For these recurrent or rare occasions sharing or rental systems for cargo bikes are possible solutions.

To make a system attractive for private users beyond the group of "hard core" bike users it has to be easy to use (accessibility, use of bikes, booking, payment, return of bikes). Substitution of motorized trips is possible.

Meanwhile there are a lot of non-profit Commons Cargo Bike Initiatives in Europe (see http://dein-lastenrad.de/index.php?title=Bestehende_Initiativen_freier_Lastenr%C3%A4der).

9.1.2. PUBLIC SERVICES

Cargo bike use is possible in a broad range of public services. Public services are services rendered in the public interest. It can be provided directly through the public sector or by other institutions. Agencies providing public services latter may be totally or partly funded by public funds. The following structuring is overlapping, some examples fit to different areas of use.

Municipal Services

Municipal services are an important part of public services and encompass a broad range of possible cargo bike applications.

Substitution of motorized trips may occur, when the cargo bikes replace cars. To optimize possible savings effects comprehensive analyses of municipal demand for transportation is required. Vehicle fleet management is a complex process that may open possibilities to support carbon free mobility. Implementation of new concepts depends on an overall willingness in politics and administration to question and possibly change long-time procedures. Participation of the staff concerned in the development of new concepts is a decisive precondition to ensure a successful change.

The range of application of cargo bikes in municipal services is broad:

- **Maintenance**

  There are several different fields in which technical equipment, infrastructure or public locations have to be maintained, for instance

  - facility management: if the municipal administration is distributed over various locations, cargo bikes may be used to support the facility management staff;
  - mall control and maintenance activitities;

- Control and maintenance activities throughout the municipality may also be conducted with the help of cargo bikes instead of motorized vehicles. Especially cycle paths control and inspections in pedestrian zones or public green areas can be conducted less disturbing. (https://osthessen-news.de/n11598417/stadtreinigung-setzt-fuer-innenstadt-jetzt-akku-betriebenes-lastenrad-ein.html)
- cycle paths (https://www.muelheim-ruhr.de/cms/ich_entlaste_staedte1.html)
- pavement
- public green/cemetaries
- playgrounds

- **Mail distribution**

  Incoming mail (parcels, larger deliveries) may be distributed between disperse locations of the municipal administration. Internal transport may also be organized by cargo bike and substitute former motorized trips.

- **Library**

  Cargo bikes can be used by (public) libraries to distribute media from the head quarters with its central depot to local branches or to external users (e.g. in schools, hospitals, nursery homes). If this service has been provided by car before, a substitution of motorized traffic is achieved. The municipal library in Frankfurt am Main started to operate a „BiblioBike“ for deliveries to kindergartens in 2016 (https://www.velostrom.de/lastenrad-und-literatur-bibliobike-der-stadtbuecherei-frankfurt-am-main/)

- **Tourist information**

  Tourist information may integrate a cargo bike as mobile promotion unit into their regular promotion activities. So has the city of Potsdam decided to reduce their fixed locations to two bureaus in the city and recently started to operate a mobile unit. (http://www.maz-online.de/Lokales/Potsdam/Lastenrad-ersetzt-Tourist-Info-am-Luisenplatz)

The following public services may also be organized by the municipality. As such, they would be by definition be municipal services. But as there is a variety of institutions of the Third Sector[1] are engaged in these services they are not labeled „municipal services“ here.

Education

The different levels of education an their facilities offer different options for the use of cargo bikes.

- **Kindergartens**

  The enlargement of radii for outings and activities in the wider surroundings of the city is the advantage of the use of cargo bikes in kindergartens. Small excursions are made much

[1] The ‘third sector’ is an umbrella term that covers a range of different organisations with different structures and purposes, belonging neither to the public sector (i.e., the state) nor to the private sector (profit-making private enterprise). (...) The term describes organisations which share the same fundamental elements:

- **Non-governmental**: although they often work with or alongside government agencies, and may receive government funding or commissions, third sector organisations are independent from the government.
- **Non-profit**: third sector organisations raise funds and generate financial surpluses in order to invest in social, environmental, or cultural objectives. They do not seek to make profits as an end in its own right.
- **Values-driven**: third sector organisations pursue specific goals which are often aligned with particular social and political perspectives. They may be associated with or work with political parties, but a political party is not a third sector organisation.

http://toolkit.northernbridge.ac.uk/engagingwithpolicymakers/engagingwiththethirdsector/whatisthethirdsectorandwhatdoesitdo/

easier: instead of organizing cars or adapting to the (often limited) possibilities of public transport, a cargo bike allows more flexibility.

- **Schools**

  At schools the question of inclusion of handicapped pupils may arise. Outings with enlarged radii are possible when the school has access to specialized bikes, which are designed to transport handicapped persons. Excursions by bicycle also support the development of environmentally friendly mobility routines.

- **Higher education institutions**

  Larger campuses or disperse location of departments are typical for higher education institutions. The following activities are necessary and conventional motorized traffic may be substituted by fossil free mobility.

  - Facility management
  - Transport by central agencies (data centre)
  - Mail delivery (internal/external, incoming and outgoing)

Community centers/senior citizens' residences

A charming concept was developed by the initiative „Cycling without age", which was started in 2012 in Copenhagen (https://cyclingwithoutage.org/). Cargo bikes have been constructed which allow the transport of one or two persons (trishaws). The idea is to take elderly people with limited mobility out for a bike ride, to include them in everyday live and to get younger people in contact with the elderly. To implement this idea, support can be found on the movement's homepage. A joint effort of different institutions is needed to establish this activity successfully.

Looking at the possible use of cargo bikes by schools, kindergartens and senior citizens residences it seems to be important to organize co-operation. Specialized cargo bikes are expensive. To use them effectively, several institutions should be involved. Organizing co-operation needs good preparation and clarification of responsibilities but should result in a maximum of beneficiaries.

9.1.3. COMMERCIAL USE

Possibilities of commercial use of cargo bikes in middle-sized cities are described below. Meanwhile, cargo bike producers offer a wide range of different models, suitable for the transport of different types of equipment. Nevertheless, small businesses located in medium-sized cities often have big areas of operation not limited to the core city and its surroundings. The mix of short and longer distances may be an objective obstacle to cargo bike use. This limiting factor should be kept in mind.

Cargo bike rental services

Bicycle rental services are a typical branch of bike sellers, especially in tourist regions. As described above, there is a demand for episodic private cargo bike use. Especially in cities with young/student population a carbon free alternative for medium-sized cargo transport has potential. For bike sellers it may be an option to engage with other actors in the city in a joint Commons Cargo Bike Initiative (e.g. as location). The other possibility can be the establishment of a more traditional rental as one branch of the business. Which alternative is more attractive depends on several factors (e.g. assessment of demand, structure of demand, local cooperating culture and experience, personal characteristics).

Housing companies

Housing companies with large housing stock operate their own facility management. Facility managers are usually equipped with cars containing material for minor repairs. A substitution of the cars by cargo bikes may lead to CO2-savings.

Transport of equipment for tradesmen and mobile services

There is a broad variety of businesses run as so called SMEs (small and medium-sized enterprises). Those with good potential for the use of cargo bikes are mentioned in the following.

- **Craftsmen, repair services, facility management, beauty services, hairdressers**

  Small businesses engaged in repairs or facility management may transport their equipment to the premises of their customers with cargo bikes. If this is a realistic option depends on the question of the spatial distribution of customers mentioned above.
  https://www.natursteinonline.de/zeitschrift/neuigkeiten/detail/dienstfahrzeug_mit_zwei_raedern.html

- **Health care services**

  Mobile health care services are a suitable institution to help elderly people to remain in their accustomed surroundings. Regular visits of service staff is organized with cars at the moment. A substitution with cargo bikes helps to reduce the time needed to search for parking space.

- **Mobile merchants: coffee, snacks, ice-cream**

  Special cargo bikes are equipped as mobile shops for snacks, ice-cream and so on, coffee-bikes can be considered as mobile bars. Mobile catering adds to a vivid urban atmosphere and adds to a location's amenity. City managers should be interested in supporting mobile merchants. Mobile merchants depend on friendly weather without rain and high pedestrian frequencies to run a commercially successful business.

- **Transport of goods**

  Two questions of good's transport relevant for possible cargo bike use can be distinguished:

  - **B2B: city logistics --> "last mile"**

    As goods' deliveries to shops are responsible for unintended use of pedestrian zones by bulky cars/transporters/delivery vans, the question of a environmentally friendly organization of "the last mile" is broadly discussed. The substitution of motor vehicles with cargo bikes is considered a good solution for densely populated city centers. A re-organization of city-logistics needs distribution centers in the periphery, where deliveries are reloaded from bigger lorries to cargo bikes.

    Whether such a model is a) necessary and b) commercially successful for medium sized cities depends on various factors. These include the problems caused by inner cities deliveries, the willingness of logistic services to co-operate, the willingness of inner city merchants to co-operate, the willingness of investors to finance distribution centers and the possibilities to finance cargo bikes. All these factors have to be assessed critically by municipal administration and inner city merchants, respectively.

  - **B2C: delivery services --> retailers**

    As online trade and shopping facilities at the periphery are threats to inner city merchants, measure should be taken to organize inner city trade in a more attractive way. A delivery service for customers may be an interesting solution. Merchandise bought in a shop (or via a local online shopping platform) is delivered to the customers free of charge. Cargo bikes can be used for deliveries within the

city and in the direct surroundings. This model depends on the co-operation of inner city merchants and the effective organization of deliveries. A restriction for cargo bike use is – as mentioned with small service businesses – the expected mix of short and long distances.

9.1.4. SHORT STRUCTURED DRAFT SUMMARY OF AREAS OF USE FOR CARGO BIKES

The previous discussed potential areas of use for cargo bikes are shown in table 11. This is neither a final summary nor a complete description of the actual situation in the pilot cities. There are hopefully many more areas of use the project will identify in its life time.

The mentioned areas of use are overlapping regarding their wording and classification in the structure. Several cargo bike uses can be realized by different responsibilities.

This table just intends to deliver a basis for the discussion concerning the pilot bikes in the pilot cities.

area of use		***Examples***	
private use	transport of	small children	
		handicapped/elderly people	
		goods	big package of foodstuff, household utensils, do-it-yourself equipment
public services	municipal services	maintenance	public greens, playgrounds, cemetaries
		mail distribution	
		library	
		tourist information	
	education	kindergardens	excursions, field trips incl. handicapped children
		schools	
		higher education facilities, computing centres	mail delivery, facility management
	community centers/senior citizens residences		
commercial use	rental services		
	housing companies		
	tradesmen; mobile services	craftsmen, repair services, facility management	
		health care services	
		mobile merchants	coffee, snacks, ice-cream, ..
	services for transport of goods	B2B	"last mile"
		B2C	delivery services from retailers

Table 12: Overview about areas of use of cargo bikes

9.2. OUTLOOK: PRACTICAL CHALLENGES

This chapter sets sights on important aspects, which have to be settled before offering cargo bikes to potential users within this project. These aspects are relevant for the process of organizing and implementing pilot testing.

Before pilot testing some practical problems have to be considered:

- Pilot testing will lead to information about the advantages and disadvantages of different models and configurations of cargo bikes. Different fields of use require **different bikes** and considerations. But the choice of the bikes for the pilot testing depends on assumptions and informed proposals. Thus potential users in different areas of use should be interviewed concerning their activities before buying the cargo bike.
- The **safe location** of the bikes has to be cleared up in advance. As they are huge and heavy, weatherproof storage at ground level is required.
- How can the **transport** of the cargo bikes be organized? Some bikes will probably have varying locations of operation and need transport. Keep sized and weight in mind.
- For process evaluation a tracking device will be used in order to analyze intensity and duration of use. This tracking device will record data, which will not be interpreted relative to specific persons. Nevertheless, the question of **data protection** exists.
- Evaluation of the implementation process will also lead to information about **additional equipment costs** related with cargo bike use:
    - cost of the bike itself
    - additional costs:
        - reliable theft protection (the entire bike, the wheels, the bicycle saddle, etc.)
        - weather protection
        - tracking device (for instance a mobile phone)
        - mobile phone attachment
- **Insurances**: There are several types of insurance you have to consider whether it is covered by the responsible organisation or by the users. Check in particular the responsibility of
    - theft insurance
    - third-party liability
    - damages at the own bike.

10. SHORT CONLUSION AND OUTLOOK

The project CoBiUM will test potential areas for the use of cargo bikes. The cities of Gdynia, Greifswald, Slupsk and Växjö are pilot areas; the Danish partner did not decide yet in which municipalities cargo bikes will be tested.

This study shows the results of the quantitative and qualitative survey among the partners in five pilot cities. Common is that all pilot cities are medium-sized regarding the population.

But many other gathered information confirm the differences, which are relevant for the use of pilot cargo bikes. These differences will enable the project to test a broad variety of areas for the use of cargo bikes. Based on the gathered experience the final recommendations at the end of the project can become very helpful for other cities and potential users of cargo bikes.

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Appendix 1 – Questionnaire for the quantitative survey

Pilot cities – ex ante analysis – quantitative information

The aim of this survey is

a) to document the situation in every pilot city at the beginning of the project,
b) to have a comparable description of the pilot cities and
c) to be able to assess the change at the end of the project.

You are kindly requested to insert the answers in the box below the question, please. Sometimes the box is completely empty, sometimes you will find keywords to respond to.

GENERAL INFORMATION
1. Name of the City
2. Size: Population and size
Please provide us with a table showing number of inhabitants for each year since 2000. **Size in square kilometers:** **Population density:**
3. Structure of population 2017 and social situation
Please provide us with a table showing number of population by age and sex for every age cohort. **If available: social indicators:** • **average size of households:** • **percentage of home owners:** **percentage of recipients of welfare benefits:**

Continuation of Appendix 1 – Questionnaire for the quantitative survey

4. Economic situation

Please describe the structure of local economy.

- **number of people employed in the community:**
-
- **leading sector/s:**
-
- **biggest employer/s:**
- **growing – stagnating – declining econonomy:**
- **Percentage of unemployed:**
- **Number of incoming commuters:**
- **Number of outgoing commuters:**

5. Social infrastructure

- **Number of school and education facilities, each with number of pupils/students/ participants:**
- **Hospitals and rehabilitation facilities, each with number of beds:**
- **Senior citizens residences, with total number of inhabitants:**

B – CHARACTERISTICS OF THE CITIES' TRANSPORT AND TRAFFIC SYSTEM

Number of registered vehicles

passenger vehicles:

heavy goods vehicles:

motor bikes:

Passenger vehicles per 1000 inhabitants:

Continuation of Appendix 1 – Questionnaire for the quantitative survey

Public parking:
Number of public parking lots: (absolute number or per 1000 inhabitants): **please indicate the share of commercially controlled parking lots:**
Modal split data: Means of transport used for everyday mobility by inhabitants (please note year of survey):
Transport chosen for daily mobility (shares calculated for daily journeys): **Percentage motorized traffic:** **Percentage public transport:** **Percentage bicycle:** **Percentage walking:** **Average length of journey:** **Average duration of journey:** **Average number of daily journeys:**
Length of roads in the city
• **Total length of roads:** • **Share of roads in municipal responsibility:** • **Local spending on road management (construction and maintenance) in the last five years:**
Cycling infrastructure:
Bike sharing system: **Available/not available:** **If available: please add short description:** • **Number of bikes?** • **Organized by?** • **Pick up points or free floating?** • **Access by smart phone app?**

Continuation of Appendix 1 – Questionnaire for the quantitative survey
Length of cycle tracks (separate tracks alongside roads):
Length of bike lanes (on road lanes marked with paint):
Number and length of Bike boulevards (low speed street optimized for bike traffic, local low speed motor traffic allowed):
Availability of public bike parking facilities:
Local spending for cycling infrastructure in last five years (in Euro, absolute or per capita):
Cargo bikes
Total number of cargo bikes: (estimation) **- share of e-cargo bikes:** **Number of local sellers of cargo bikes:**

Appendix 2:
Interview guideline for qualitative part of the survey

Pilot cities – Ex ante analysis:

Qualitative part: Guideline for expert interviews

Complementary to the standardized quantitative survey some questions concerning the ex-ante situation and local conditions of cargo bike use should be assessed by experts.

The following questions are recommended as structuring framework of a qualitative description of the local situation.

Some of the questions may seem to be redundant relative to the quantitative survey, but are necesssary to validate quantitative data.

The partners in the pilot cities are the main experts whose opinion should be filled in in this qualitative survey. But additional expert interviews are welcome.

Please note also different opinions - as the aim is a comprehensive analysis.

Please deliver a list showing the experts whose opinion is involved here (in particular the job/function).

Topics to be addressed – please give answers in keywords and short descriptions:

Topic A - Please give some major characteristics of the cities' development in the last 10 to 20 years:

Topic B – Please sketch briefly major environmental problems of your city/region:

Are traffic related aspects (pollution, noise, congestion...) among the problems?

-

Continuation of Appendix 2:

Interview guideline for qualitative part of the survey

Topic C - Please describe the main characteristics of the local mobility situation and culture:

- Dominant means of traffic?
- Conflicts between users of different means of traffic?
- Political mainstream on the future of traffic and mobility in the city?
- Public discourse on parking situation?
- Public discourse on environmentally friendly mobility?

Topic D – Who are the main stakeholders in the development of the local mobility situation? What are their main concerns/aims?

- Political parties
- Public administration
- Local economy
- NGO's
- Local media
- ????

Topic E – Please describe the cycling situation in your city in keywords:

- General evaluation of cycling infrastructure
- Public opinion
- Planning documents/official concepts
    - Existence
    - Relevance
- Political support

Topic F - What are the main problems which should be addressed by the pilot testing?

Continuation of Appendix 2:

Interview guideline for qualitative part of the survey

Topic G - What are the expectations towards the pilot testing:

- who are possible partners?
- please describe the intended fields of use
- who are possible supporters of the use of cargo bikes?
- what are possible obstacles for the use of cargo bikes/for the successful implementation of the pilot testing?

Topic H - Please sum up the expected aims of the pilot testing:

1 –

2 –

3 –

....

Appendix 3: List of Respondents by cities

Gdynia:

Pawel Kimel
City of Gdynia; Roads and Green Management, European Projects and Mobility Management Unit;

Dorota Gajda-Kutowińska,
City of Gdynia; Roads and Green Management, European Projects and Mobility Management Unit;
internal expert in CoBIUM project

Agata Lewandowska
City of Gdynia; Roads and Green Management, European Projects and Mobility Management Unit;
owner of private cargo bike, uses it almost everyday to transport kids to kindergarten and school

Greifswald:

Gerhard Imhorst
former local traffic planner, Member of ADFC (German Bicycle Club)

Salome Krug
student, cargo bike expert of Greifswald branch of ADFC

Slagelse:

Finn Vedel Pedersen
Udviklingskonsulent
Stab for Ledelse Udvikling og HR
Organisation og Udvikling

Slupsk:

Kamila Pytlik,
Podinspektor, Wydział Zarządzania Funduszami

Växjö:

Per-Åker Andersson
Energikontor Sydost, Hållbar Mobilitet i Gröna Kronoberg

Jenny Bäckström
Energikontor Sydost, Hållbar Mobilitet i Gröna Kronoberg

Projektledare CoBIUM
TRAFIKENHETEN, Tekniska förvaltningen, Växjö kommun