

# Summary from activity 3.2: Workshops on sustainable paths for public transport

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## Abbreviations and Acronyms

ABCD	A procedure for strategic sustainability planning within the FSSD, including visioning (A), assessing current reality in relation to the vision (B), brainstorming solutions (C) and prioritizing solutions into concrete plans (D).
BTH	Blekinge Institute of Technology
EUSBSR	EU Strategy for the South Baltic Sea region
FSSD	The Framework for Strategic Sustainable Development
WP	Work Package within the project

## Summary

The EU Strategy for the South Baltic Sea region (EUSBSR) flagship project INTERCONNECT addresses the challenge of curbing the car-reliant mobility trend in the South Baltic area through user-adjusted and more sustainable public transport services for regional and cross-border travels.

The INTERCONNECT project includes five 'pilot areas' – administrative regions or service areas for regional public transport: Region Blekinge in Sweden, Guldborgssund in Denmark, Rostock in Germany, Pomorskie in Poland, Klaipeda in Lithuania, and Viimsi in Estonia.

This report is the final deliverable from activity 3.2 of the INTERCONNECT project. It sums up the 'raw data' or outcomes of stakeholder workshops in the pilot areas. This includes regional visionary statements to lay the ground for a vision of sustainable public transport in the South Baltic area. Preliminary paths (plans) for how to reach the visionary statements and the sustainability effects of the current and future public transport mobility patterns are also included. A draft of the common vision is intended to later be put together by the authors of this report based on the visionary statements gathered from the participating regions.

Even though initially planned for Spring 2018 the workshops in Rostock and Guldborgssund were cancelled. This was partly due to lack of local event resources to get stakeholders to each workshop, and partly due to competition from other similar events going on in the pilot areas. As a compensation for the missing workshops, the organizing team agreed with the local hosts from Rostock and Guldborgssund to attend other local events and fill out questionnaires to gather information similar to what could have been gathered if the initially intended INTERCONNECT workshops could have been performed. It was also decided to split the reporting of INTERCONNECT WP3.2 in two parts:

1. The experiences from Karlskrona, Gdynia and Klaipeda (the first report, July 2018)
2. The experiences from all five pilot areas including also Rostock and Guldborgssund (the second report, December 2018)



## 1 Introduction

### 1.1 Background

The EU Strategy for the South Baltic Sea region (EUSBSR) flagship project INTERCONNECT addresses the challenge of curbing the car-reliant mobility trend in the South Baltic area through user-adjusted and more sustainable public transport services for regional and cross-border travels. The current public transport system hardly meets customer expectations for easiness and attractiveness of regional and cross-border journeys, with a scarce range of integrated ticket options for multimodal rides, difficult access to one-spot passenger information and no clear benefits for users when choosing the public transport over car. As the user-adjusted and more sustainable public transport services for regional and cross-border travels have a large but untapped potential to stimulate socio-economic growth in the South Baltic area, the INTERCONNECT project will initiate cross-sectoral dialogue and work out an optimum multi-level governance framework for cooperation on public transport across the borders. Through involving a broad range of stakeholders in designing and testing the planning and management solutions that will be compatible in the cross-border context and replicable elsewhere, the project intends to increase the policy and community attention for public transport role in serving mobility needs in the South Baltic area. To support this, the INTERCONNECT project will apply a previously developed process model for stakeholder cooperation towards sustainability (see Figure 2). Thereby INTERCONNECT is expected to be able to draft both visions of sustainable public transport in each of the regions and suggestions on how to reach to them. Perhaps it will also be possible to draft common results for the entire EUSBSR and also to contribute to the development of the process model itself.

### 1.2 A strategic sustainability approach to frame the study

Society seeks to move the transport sector towards sustainability, but operational plans for how this shall be achieved, over and above reaching fossil fuel independence, are still missing. Planning for any societal system to develop towards sustainability includes many complicated tasks. To effectively deal with such considerations, there is a need for a framework with principles for sustainability that are universal for any sector as boundary conditions for redesign (i.e., covering all aspects of sustainability regardless of scale) and with guidelines for how any organization or sector can create economically feasible step-by-step transition plans to comply with the boundary conditions. Such a framework should also be capable of informing all kinds of concepts, methods, and tools to make them cohesively functional to support this kind of systematic approach to sustainability. The Framework for Strategic Sustainable Development - FSSD (Broman and Robèrt, 2017), is designed for such purposes and has been successfully tested and used in municipalities, businesses, and sectors, including projects with the ambition to design plans for sustainable development of transport (Alvemo et al., 2010; Borén, 2011; Ny et al., 2017). One prominent example of such multi-stakeholder cooperation was the GreenCharge effort that used the FSSD to investigate how electric vehicle systems could contribute to a faster transition to sustainable passenger transport in Southeast Sweden.<sup>1</sup>

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<sup>1</sup> For more details from the GreenCharge projects and other examples of this please go to [www.bth.se/sustaintrans](http://www.bth.se/sustaintrans)

The FSSD's sustainability principles are elaborated in a continuous scientific consensus process and designed to form a generic and still operational definition of sustainability to be useful for systematic planning and guidance of redesign of any system towards sustainability. The scientific consensus process aimed at developing such a definition started in Sweden in the early 1990s and has gone through several iterations of refinement since then. The latest development included refinement of social sustainability principles to the following definition of sustainability (Broman and Robèrt, 2017):

In a sustainable society, nature is not subject to systematically increasing ...

1. ... concentrations of substances extracted from the Earth's crust;
2. ... concentrations of substances produced by society;
3. ... degradation by physical means;

and people are not subject to structural obstacles to ...

4. ... health;
5. ... influence;
6. ... competence;
7. ... impartiality;
8. ... meaning-making.

Practical application of the FSSD is facilitated by the so-called ABCD procedure (Figure 1):

- A. In this step, participants discuss and learn about the FSSD and build a shared understanding of the big picture of the planning topic and envisioning how it could fit within the requirements of the Sustainability Principles
- B. The current reality is assessed in relation to the sustainability vision created in A to identify major challenges and strengths in relation to the vision within the sustainability principles.
- C. Informed by the results from A and B, participants brainstorm possible steps towards the vision, i.e., investments and measures that can serve as stepping-stones or final steps towards compliance with the sustainability-framed vision.
- D. Participants then prioritize among the brainstormed proposals from C, resulting in a step-wise strategic plan. Each step should
  - (i) provide a solid and flexible platform for forthcoming steps towards the sustainability vision in A, while striking a good balance between
  - (ii) pace towards the vision and
  - (iii) return on investment.

A further discussion of this way of illustrating the business case for sustainability has been conducted by several authors (Broman and Robèrt, 2017; Holmberg and Robèrt, 2000; Willard, 2012).

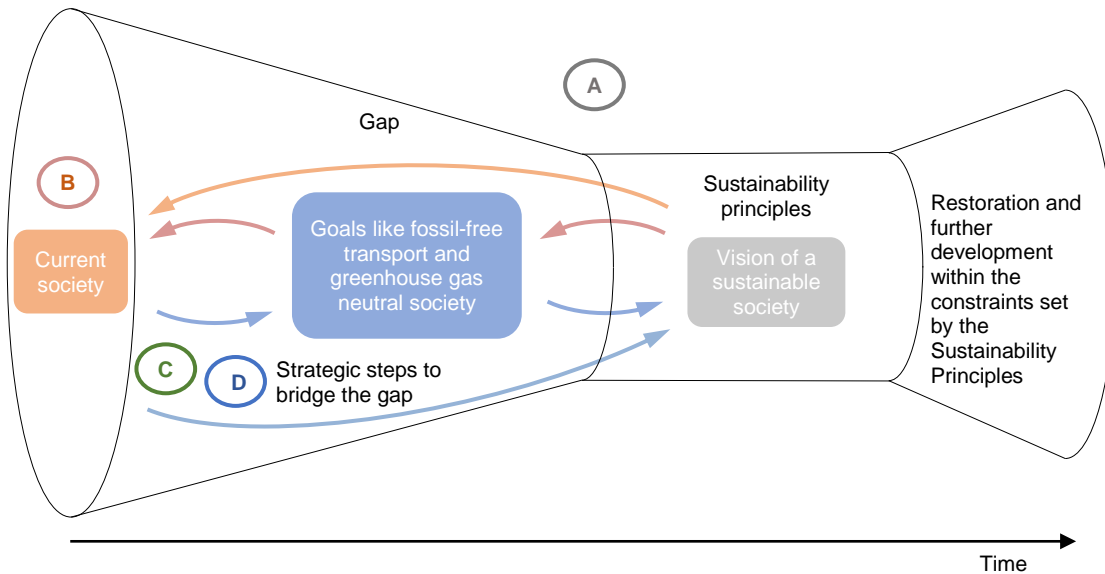


Figure 1: An illustration of the ABCD procedure, with a vision of a sustainable Swedish society with a focus on transport. Developments are positioned metaphorically in a 'funnel', representing declining potentials of the social and ecological systems to sustain civilization. The wall of the funnel leans inwards until society complies with the sustainability principles (SPs) and thus no longer systematically degrades social and ecological systems. When the vision is arrived at, Sweden does not contribute to unsustainability on any scale, anywhere in the world. Modified from (Robèrt et al., 2017)

### 1.3 A strategic process model for multi-stakeholder collaboration

In 2012, the Swedish pioneer project GreenCharge Southeast was designed as a cooperative action research approach that aimed to build a roadmap for a fossil-free transport system by 2030 with a focus on electric vehicles. Within the GreenCharge project, a new process model (Figure 2) for stakeholder collaboration was designed and applied in an action-research mode for the exploration of electric vehicles within a transport system that does not violate the sustainability principles (see 1.2) to test the functionality of the process model in support of its development. To deliver on the above- mentioned combination of objectives, the Framework for Strategic Sustainable Development (FSSD) and the ABCD procedure was embedded into the process model. The exploration of this process model also helped to identify four interdependent planning perspectives ('Resource base', 'Spatial', 'Technical' and 'Governance') for the study of the transport system that should be represented by the respective experts and stakeholders using the process model. Later on, in the GreenCharge roadmap, to facilitate modeling and simulation, the planning perspectives were connected to the subsystems "Energy and material Supply", "Vehicles and Infrastructure", "Users and markets", and "Politics and incentives". The first part of the process model is to (1) sketch a vision for sustainability. Thereafter, (2) people representing relevant specific disciplines and sectors are invited to have their say along the described planning perspectives in workshops. Strong decision-making power of leaders taking active part in the envisioning during (1) could increase the likelihood of effective multi-disciplinary cooperation in (2). During the modeling between experts, notes are compared under challenges (B), opportunities (C), and prioritizations (D) from the different planning perspectives to find opportunities for cross-sector and interdisciplinary cooperation and synergies. Thereby various proposals are scrutinized and prioritized from all perspectives. The experts can now provide a joint proposal of well-thought-out early steps (flexible and economic with regard to all planning



perspectives) of a systematic approach towards a sustainable transport system within a sustainable society. The process also lends itself well to (3) consult the general public by inviting citizens to share their points of view, for example, through organized citizen dialogues, while continuously displaying planning progress. Finally, (4) decisions about the proposed plan, and necessary economic and other resources for its execution, are made by the involved decision makers in the region. There is an overall flow from (1) to (4) in the process. However, from another application of this process<sup>2</sup>, it appears that the essential elements of the process model could happen through small informal meetings, feedback, cross-routes, and sub-processes occurring during this main flow, all by people *who understand the logical flow from (1) to (4)* as illustrated in Figure 2. Envisioning, creative learning, planning, budgeting, following-up, and improving occur in iterative learning loops between all engaged parties. The learning of systematic cross-sector development of this kind occurs during the process.

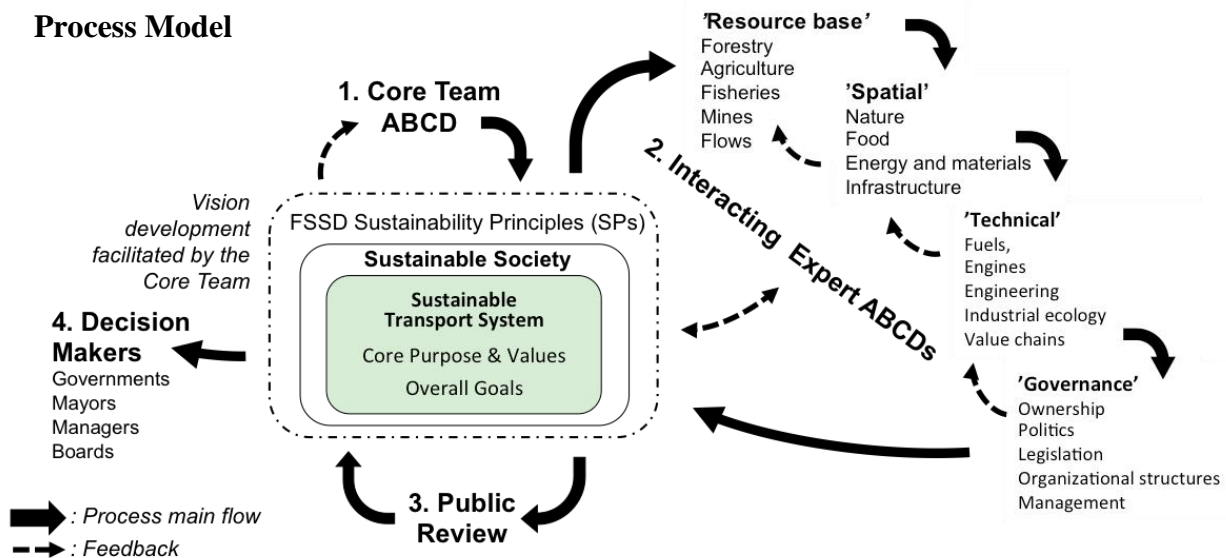


Figure 2: An illustration of an iterative process for sustainable transport planning. Based on an overall societal vision, framed by basic sustainability principles, experts from relevant sectors draw conclusions, applying the ABCD planning procedure of the FSSD. The resulting ideas regarding challenges, opportunities, and plans of prioritized actions in each sector are compared with those from the other sectors. This leads to modeled and coordinated solutions from numerous meetings within and across sectors; big and small, formal and informal, planned as well as spontaneous meetings. Thus, the figure denotes the logic of sector-interdependencies to inform effective cooperation across disciplines and sectors, but it does not suggest to always organize big formal meetings. Source: (Robèrt et al., 2017)

### 1.4 Aim and scope of this report

This report is the final deliverable from activity 3.2 of the INTERCONNECT project. It sums up 'raw data' or outcomes of stakeholder workshops in the partner areas. This includes regional visionary statements to lay the ground for a vision of sustainable public transport in the South Baltic area. Preliminary paths (plans) for how to reach the visionary statements and the sustainability effects of the current and future public transport mobility patterns are also included. A draft of the common vision is intended to later be put together by the authors of this report based on the visionary statements gathered from the participating regions.

<sup>2</sup> BTH currently runs a project called 'Sustainable Municipality and Regional Development' together with several key stakeholders.



## 2 Methods of this report

### 2.1 Workshops based on the multi-stakeholder collaboration process model

The INTERCONNECT project includes five ‘pilot areas’ – administrative regions or service areas for regional public transport: Region Blekinge in Sweden, Guldborgssund in Denmark, Rostock in Germany, Pomorskie in Poland, Klaipeda in Lithuania, and Viimsi in Estonia. The authors of this report weighed several options before organizing the workshops that should apply the process model (Figure 2). A seemingly logical option would be to have just one workshop with representatives from all the pilot areas and covering each of the planning perspectives. Still, this would probably have induced a lot of travelling and inconvenience for the participants. Another option would be to organize workshops in all pilot areas and thereby probably making it easier to attract more local public transport stakeholders. The latter option would still, though, induce a lot of travelling for the organizing team. On the other hand, the latter option was considered to make it easier to create well anchored regional visions for sustainable public transport and how to get there. In the end the INTERCONNECT project agreed to aim for option two with workshops in each of the pilot areas, except for Viimsi in Estonia.

The organizing team included the authors of this report, supported by Region Blekinge for planning. Three students from the program in Strategic Leadership towards Sustainability joined the team during realization and compilation of results. This provided input to the students empirical studies for their Master thesis with a focus on “Barriers and best practices to the use of public transportation” in the South Baltic Sea Region.

The workshops were planned to take place according to the following schedule:

- 13<sup>th</sup> February in Karlskrona, Region Blekinge
- 20<sup>th</sup> February in Rostock
- 22<sup>nd</sup> February in Gdynia, Pomorskie
- 6<sup>th</sup> March in Guldborgssund
- 8<sup>th</sup> March in Klaipeda

At a late stage, though, the workshops in Rostock and Guldborgssund were cancelled. This was partly due to lack of local event resources to get stakeholders to each workshop, and partly due to competition from other similar events going on in the pilot areas. As a compensation for the missing workshops, the organizing team agreed with the local hosts from Rostock and Guldborgssund to attend other local events and fill out questionnaires to gather information similar to what could have been gathered if the initially intended INTERCONNECT workshops could have been performed. It was also decided to split the reporting of INTERCONNECT WP3.2 in two parts:

1. The experiences from Karlskrona, Gdynia and Klaipeda (this report, due in June 2018)
2. The experiences from all five pilot areas including also Rostock and Guldborgssund (another report, due in September 2018)

### 2.1.1 General workshop design

It had been decided already at the planning stage of the INTERCONNECT project to build the workshops around the above-mentioned ABCD procedure of the FSSD (see 1.2) and the related strategic process model (see 1.3). In the ideal case each workshop would be able to take the participants through all four steps of the ABCD but given the limited time available the organizing team decided to focus on the first three steps. This was considered acceptable since the fourth prioritizing step (D) is something that individual stakeholders could do on their own and since this step will also be revisited later on in the INTERCONNECT project.

The practical facilitation of the selected ABC procedure was designed through a systematic review of the possible expectations with a method developed by Jordan (2014) (see appendix 1). Four main priorities for the workshop were identified: issue focus, expansion of scope of care, focus on possibilities, whole system/context awareness. After a thorough analysis, the Visioning Forum and a World Café facilitation techniques were selected to deal with the expectations.

Based on the design of the process model, the workshops were aimed to gather facts, opinions, and thoughts from regional public transport stakeholders. As suggested by the process model, the workshop discussions were planned to happen in small expert groups (4-6 participants), ideally matching the four planning perspectives of the process model (Figure 2). On top of this, the organizing team concluded that it would, in line with findings in previous research (Ny et al., 2017), be preferable to include the ‘business models’ and ‘passenger needs’ perspectives as well. Group discussions were also planned to be followed by plenary presentation of their results.

Each workshop had a focus on ‘signature issues’ that were of particular interest for the respective region and had been identified by the organizing team in advance through a dialogue with the local hosts.

In the initial design, the workshops were to be held in English, but after requests from other project partners, the organizing team decided to run the workshops in the respective local languages. The language barrier could otherwise hinder some participants to express themselves freely.

The workshops were planned by the organizing team in close cooperation with the local hosts in Karlskrona, Gdynia and Klaipeda. The local hosts also had the responsibility to find a suitable venue, identify stakeholders, e.g. the Regional Public Transport Authority, Public Transport Operators (buses, trains, ferries), Municipalities, the Transport Administration, and other organizations involved in Public Transport, and send out invitations in their local languages. They were also responsible for recruiting table leaders to the expert groups that could speak both English and the respective local language), as well as facilitate discussions.

The workshops had a general design with the following agenda:

1. Introduction to the seminar
2. Participants’ expectations for the seminar and their ‘burning issues’ of interest in relation to regional and cross-border public transport

3. Presentation putting public transport in a strategic sustainable development context
4. Step A. Co-creation of a vision of a regional and cross-border public transport system for 2040 that is well on track towards sustainability
5. Step B. Sketching the current reality of regional and cross-border public transport
6. Step C. Identifying possible solutions towards the vision
7. Summing up, closure of the workshop and coming steps

In sessions 4-6, guiding questions were asked to the participants at each table. For the vision session (4), the table leaders noted the answers, and then the table groups discussed and concluded upon vision statements for each table that were then presented to all workshop participants by the respective table leaders. The sessions on current reality (5) and solutions (6) included that each table had a certain perspective designated in advance with the guiding questions to support the discussion. The process was organized in a World Café format. The groups spent 10-15 minutes at one table and then went on to the next one, where the answers from the previous group(s) were presented, scrutinized, and then enriched by further thoughts. The table leaders then summarized and presented the results for all workshop participants after every session.

#### 2.1.2 Karlskrona

The workshop in Karlskrona was chosen to be the first out of three because it was the “home turf” for the organizing team, which provided the safest ground for testing the concept of the workshop. Most of the participants were comfortable in English, that was chosen as the common language, but expert groups with only Swedish speakers chose to talk in Swedish. The workshop was hosted at BTH jointly by Region Blekinge and the organizing team, meanwhile invitations and arrangements with VIP-speakers were done by Region Blekinge.

#### 2.1.3 Gdynia

In Gdynia, the workshop was hosted by InnoBaltica, and facilitated by the organizing team. The language was Polish during group discussions and presentations, and then consecutively interpreted into English. Speeches and facilitation in English were in the same way translated into Polish.

#### 2.1.4 Klaipeda

The workshop in Klaipeda was hosted by Klaipeda Public Transport Authority (KT) and facilitated by the organizing team. It was arranged in the same way as in Gdynia, but simultaneous translation in both directions between English and Lithuanian was provided to workshop participants via headphones.

### 2.2 How results were harvested from the workshops in Karlskrona, Gdynia and Klaipeda

The results from each round within sessions 2, 4, 5, and 6 at the workshops were documented on paper, and presented, by table leaders. The results were then transcribed and saved electronically.

### 2.3 How results was harvested from the ongoing mobility discussions in Rostock and Guldburgsund

A number of guiding questions, similar to the ones posed to the participants in the Klaipeda workshop, were sent to the project partners in Rostock and Guldburgsund that collected answers when participating in a series of workshops and workshops about future mobility during spring and summer 2018.

### 3 Results

#### 3.1 Signature issues

Each region’s signature issues were identified as described in section 2.1.1. As shown in **Fehler! Verweisquelle konnte nicht gefunden werden.**, all regions addressed the issue of behavioral aspects in order to have more people to shift from cars to public transport.

Table 1: Signature issues per Region

Signature issue	Blekinge	Guldborgssund	Klaipeda	Pomorskie	Rostock
Urban-rural linkages					X
Cross-border solutions	X			X	
Ticketing	X		X	X	
Information system			X	X	
Renewable Energy	X	X			
Infrastructure and technical facilities			X		
Behavioral aspects	X	X	X	X	X
Business models				X	
Organizational structures					
Management schemes				X	
Policy/Financial Incentives	X				

In addition, it was also identified that “Legal aspects for cross-border cooperation between organizers of transport and operators of ticketing platforms” was of concern in Pomorskie. In general, the gathering of the workshop participants’ expectations for the day and burning issues was in line with the pre-defined signature issues.

#### 3.2 Summary of results from workshops in Karlskrona, Gdynia and Klaipeda

##### 3.2.1 Karlskrona 13<sup>th</sup> February, 2018

There were 43 participants at the workshop in Karlskrona, including six from the organizing team and two additional table leaders. Based on that, and the signature issues (3.1 )the organizing team decided to have groups focusing on five perspectives (Resource bases, Spatial, Technical and business models, Passenger needs, and Governance). There was an overweight on participants from publicly funded organizations (e.g. Region Blekinge, the Municipalities, and the Swedish Transport Administration), but also a few participants from companies involved in public transport (e.g. CGI, Food tankers, and Stena Line). Representatives from InnoBaltica from Gdansk (Poland) and HIE-RO from Rostock (Germany) provided their perspectives as well.



Figure 3: Participants at the INTERCONNECT workshop in Karlskrona. Photo by Sven Borén.

### 3.2.1.1 Vision



The session in Karlskrona about co-creation of a vision of a regional and cross-border public transport system for 2040 that is well on track towards sustainability can be summarized as: Public transport is the most competitive way of travelling (safe, easy to go with for everyone and everywhere, convenient, available when needed, trustworthy, fast, flexible, and affordable) powered by sustainable energy, and integrated with other transport modes.

Figure 4: Co-creation in the visioning session during the INTERCONNECT workshop in Karlskrona. Photo by Sven Borén.

### 3.2.1.2 Current reality

This is the authors' abridged summary of the resulting notes from all groups on the current reality in Karlskrona (see appendix 2a for the complete workshop notes record).

Fossil fuels dominate the mobility sector, but public transport is powered mostly by renewable fuels (buses, boats) and electricity (trains). Challenging to fit in public transport in new built environment as planning is still car focused and using a lot of space for parking lots. There is a need for improved public transport regarding comfort, cleanliness, opportunities to be productive onboard, and pricing when combining different types of public transport. Jurisdictional aspect hinders collaboration between public transport operators. It is complicated to go abroad as it's hard to buy tickets as a foreigner: language barriers, many different systems and actors, different tariffs and currencies. Decision makers focus on short term goals, and don't dare to take necessary unpopular decisions. Negative sustainability consequences from emissions from burning fuels,



from use of scarce materials and heavy metals, and from use of productive surfaces for infrastructure.

### 3.2.1.3 Solutions



Figure 5: Group work presentation of solutions towards the vision at the INTERCONNECT workshop in Karlskrona. Photo by Sven Borén.

This is the authors' abridged summary of the resulting notes from all groups on key solutions towards the vision in Karlskrona (see appendix 2b for the complete workshop notes record).

Increase the share of renewable energy and recycled/abundant materials and phase out fossil fuels. Coordinate with all relevant actors before early planning and decision making. Give priority to develop infrastructure for public transport, walking and biking, and combine planning for built environment and public transport. Make it simple for the traveler to buy tickets – work out international (at least EU) standards and establish a common e-ticketing system to include all public transport operators and private initiatives (e.g. flights, ferries, car pools). Support the travelers to meet their need of being productive onboard and have a safe, comfortable, and fast trip that can compete with travelling by car. Better partnership/collaboration between public transport stakeholders to increase efficiency.

### 3.2.2 Gdynia 22<sup>nd</sup> February, 2018

There were 53 participants at the workshop in Gdynia, including eight from the organizing team (InnoBaltica in Gdynia and BTH) and seven additional table leaders from InnoBaltica and HIE-RO in Rostock. As there were almost 80 participants enrolled, the organizing team decided to extend the group work perspectives to seven and due to the difference in signature issues (**Fehler! Verweisquelle konnte nicht gefunden werden.**) adjust the focus slightly (Resources bases, Spatial, Technical 1 – ticketing, Technical 2 – vehicles and infrastructure, Passenger value 1 – Accessibility and affordability of Public Transport, Passenger value 2 - additional values of Public Transport, Governance and business models). The Passenger value 1 and Governance and business models were later combined for the current reality and solutions sessions since some participants left the workshop. There was an overweight on participants from publicly funded organizations (e.g. Region of Pomorskie, Municipalities, InnoBaltica, and the Polish Transport Administration, but also



a few participants from companies involved in public transport (e.g. QB-mobile, LG CNS, Indata Utilities SA, Asseco Data systems).



Figure 6: Participants at the INTERCONNECT workshop in Gdynia. Photo by Sven Borén.

### 3.2.2.1 Vision

The session in Gdynia about co-creation of a vision of a regional and cross-border public transport system for 2040 that is well on track towards sustainability can be summarized as:

All transport modes (air, biking/walking, boat, rail, road) shall be powered by alternative energy (i.e. fossil-free fuels and/or electric) and shall be integrated via physical shifting nodes with Park & Ride systems. Public transport shall be attractive, have an advantage in every aspect over individual transport, cheap, easy and pleasant to use via a simple passenger information system and have a universal carrier for tickets (e.g. mobile phone or ID card).



Figure 7: Presentation of vision group work during the INTERCONNECT workshop in Gdynia. Photo by Sven Borén.

### 3.2.2.2 Current reality

This is the authors' abridged summary of the resulting notes from all groups on the current reality in Gdynia (see appendix 3a for the complete workshop notes record).

Mostly non-renewable energy is used for mobility purposes. Public transport includes buses, trolleybuses, trams, and trains. Electricity for these is generated mostly from coal, some from nuclear, and a little from biomass and flow-based resources. Lack of effective spatial planning and coordination regarding land development within municipalities, where Tricity is planned differently than surrounding rural municipalities. Public transport is getting more and more available in Tricity but is poor in rural areas. Ticketing and customer services development is hindered by failures, poor data security, too complicated services, and lack of integrated information. It is cheaper to ride a car than the train, but price is not the most important factor. It is difficult to contract many organizers, and to bridge between buses and train, as well as between regional and national borders.



Figure 8: Trolleybus in Gdynia. Source: [https://commons.wikimedia.org/wiki/File:Trolejbus\\_Jelcz\\_120MT\\_PKT\\_Gdynia.jpg](https://commons.wikimedia.org/wiki/File:Trolejbus_Jelcz_120MT_PKT_Gdynia.jpg)

### 3.2.2.3 Solutions

This is the authors' abridged summary of the resulting notes from all groups on key solutions towards the vision in Gdynia (see appendix 3b for the complete workshop notes record).

Increase sustainable energy share and phase out fossil fuels and consider the life cycle perspective. Increase human powered transport (walking/biking) and electric (battery/fuel cells) road (and rail) transport and charging capabilities. Reduce the need for transport in general through effective spatial planning, by increasing work from home, through decentralization of basic services, and through increased broadband capacity. Common e-ticket solution for the whole region with the most favorable cost for mobility.





Figure 9: Group work during the INTERCONNECT workshop in Gdynia. Photo by Sven Borén.

### 3.2.3 Klaipeda 8<sup>th</sup> of March, 2018

There were 17 participants at the workshop in Klaipeda and seven people from the organizing team as well as four additional table leaders. Based on that, and the signature issues (**Fehler! Verweisquelle konnte nicht gefunden werden.**), the organizing team planned to have groups focusing on four perspectives (Resource bases, Technical and business models, Passenger value, and Governance and Spatial planning). Governance and Spatial planning were merged as the results from the previous workshops showed that they were closest related to each other. There were unfortunately not enough participants to have all four groups, so the resource base perspective was instead integrated in the others. To meet the preferences of the local host the target group was slightly changed in the Klaipeda case. Rather than inviting a wide range of stakeholders the focus was on publicly funded organizations (e.g. The Region of Vilnius and Klaipeda, the Municipalities, and the Klaipeda Transport Administration).



Figure 10: The organizing team and table leaders (without the MSLS thesis team) at the INTERCONNECT workshop in Klaipeda.

### 3.2.3.1 Vision

The session in Klaipeda on co-creation of a regional and cross-border public transport system for 2040 that is well on track towards sustainability can be summarized as:

Public transport in the entire region is integrated with all other modes of transport, and you can travel via one card/electronic payment system, maybe even also on a national level. Infrastructure for biking/walking is well developed and connected to public transport. All transport is environmentally friendly, e.g. powered by electricity from sustainable sources, and cars powered by fossil fuels are not allowed in Klaipeda. New transport solutions (e.g. helicopters and drones) are available as well. The region has a Metro system and tunnel to Neringa municipality, and good connections to others via rail, boat or air transport.

### 3.2.3.2 Current reality

This is the authors' abridged summary of the resulting notes from all groups on the current reality in Klaipeda (see appendix 4a for the complete workshop notes record).

Public transport in Klaipeda is managed by Klaipeda Public Transport (KKT). Bus operators are contracted by KKT or respective municipality. Tickets can be bought at kiosk, from drivers, KKT Mobility center, and internet. Lack of information for non-residents. Good public transport infrastructure in Klaipeda, but not in surrounding municipalities. Some problems in procurement and development of public transport.

### 3.2.3.3 Solutions

This is the authors' abridged summary of the resulting notes from all groups on key solutions towards the vision in Klaipeda (see appendix 4b for the complete workshop notes record).

Phase out fossil fuels and increase the share of vehicles powered by electricity that is produced in a sustainable way. Regional common e-ticket for all Public Transport at a low cost. Improve biking infrastructure and integration with Public Transport. Improve Public Transport regarding speed, infrastructure, priority in traffic, information to as well as security for passengers, onboard communication, reliable timetables, and integration with other transport modes.

## 3.3 Results from visioning processes in Rostock and Guldburgsund

The project partners in Rostock and Guldburgsund did not organize new unique workshops for this project since several similar workshops already were planned in the same time period. Instead, relevant information was gathered from these cities through separate questionnaires provided by the authors of this report (see appendix 5a and 5b for the complete questionnaire responses from Rostock and 6a and 6b for the corresponding responses from Guldburgsund).

A general impression is that if we look at countryside areas and cities as two special cases there seems to be quite unanimous picture across these two partner regions of the situation today vs needs for the future. The difficulties of organizing effective public transport in rural areas are brought up and one prominent solution suggested is to move towards demand responsive public transport in such areas.

## 4 Acknowledgments

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## Appendix 1. Overview of priorities among workshop expectations

Before the workshops, 24 different expectations from six categories (attentional support, relationships, attitudes/feelings, understanding, empowerment and creativity, and decision-making and coordination of action) were discussed. Based on the outcomes of the exercise, one could see that the four main priorities for the workshop were: issue focus, expansion of scope of care, focus on possibilities, whole system/context awareness. As recommended by Jordan (2014), the following methods were suggested for further discussion at the planning meeting: World Café, Future Workshop, Soft Systems, Open Space, Visioning Forum and Strategic Choice Approach. After a thorough analysis, the Visioning Forum and a World Café were selected.

## Appendix 2a. Workshop notes from Karlskrona – Current reality

### Detailed results from all groups on the current reality in Karlskrona:

The following general guiding questions were asked to all groups, but unfortunately not responded to in all groups as there were also further guiding questions asked (and responded to):

#### Resource base perspective:

- *What material and energy resources are the mobility system dependent on right now?*

Answers:

Fuels and electricity, asphalt, rubber (for tires), metals and other scarce resources, chemicals (for plastics, detergents solvents, etc), and water.

- *And what are their sustainability consequences?*

Answers:

Scarcity of materials and other resources, environmental impacts, negative effects on people's health primarily due to emissions and conflict materials.

#### Spatial planning perspective:

- *How does the current mobility system affect the physical environment? What requirements does the mobility system put on the physical environment (e.g. cities)?*

Answers:

Vehicles and infrastructure affect movements and interactions in the city. Cars take up much space (parking lots). Challenging to fit in public transport in new built environment - still car focused planning. A lot of transport by road due to lack of trust and convenience in public transport. Good trends, e.g. prioritize space for walking/biking instead of just for cars, but slow progress in Sweden.

- *And what are their sustainability consequences?*

Answers:

Productive surfaces used for infrastructure instead of producing food, materials, and energy. Physical barriers around roads and railways are needed for safety reasons (and since we want to keep timetables), which hinders interaction with nature (and between humans).

#### Technical and business model perspective:

- *What technical solutions in mobility are used right now? What business models are dominating today?*

Answers:

Fossil fuels dominate in mobility by sea, road, and air transport. Pay for one-off usage or monthly ticket. Different systems - not necessary compatible. Public/private ownership of public transport. Digital solutions, effective, plan and pay. Public transport roads and rail systems are designed for people that don't have a car. Trams are returning in big cities. Jurisdictional aspect hinders collaboration between public transport operators. Complicated to go abroad as it's hard to buy tickets as a foreigner, so many different systems, different tariffs - too many actors, language barriers. It's easier to get a flight ticket with multiple



trips than for buses and trains, different aim -> flights need to be filled, buses not -> maybe need to run it more result oriented -> are talking about market share.

- And what are their sustainability consequences?

Answers:

Use of many cars -> a lot of emissions and fossil fuels usage.

### **Passenger needs perspective:**

- What are the current needs of passengers?

Answers:

Public transport passengers want to gain time. High availability for everyone. Flexibility to travel as individuals or as a group/family. Clean and comfortable public transport. Space for luggage, privacy, and "comfort zone". Rather "door to door" than "station to station". Freedom -> independence. Competitive pricing when combining different indirect types of public transport (family). Combination with bikes (bring along or rental at public transport-stations). Safe travelling "door to door", as well as for other transport system users. Back-up system if public transport breaks down. Individual support (if needed to disabled people, elderly, kids, etc).

- And what are their sustainability consequences?

### **Governance perspective:**

- What are the critical considerations in mobility system governance for mayors, managers, boards?

Answers:

Taxes and rules/regulations effect behaviors. Previous "Path dependency" decisions are still affecting today's operations due to societal risks. Changes focus on biggest demand in public sector (votes). Public level sector funding viewpoints (no one looks at the whole picture) -> more work to get everything to work together -> political system does not paint a clear picture, no clear vision. Decision makers focus on short term goals, and don't dare to take necessary unpopular decisions. Lack of innovative actions/solutions. Cooperation between different organizations/municipalities. A car is a status symbol – public transport isn't.

- And what are their sustainability consequences?

Answers:

Short term decisions might be counter-productive for a sustainable development.

## Appendix 2b. Workshop notes from Karlskrona – Key solutions

**Detailed Results from all groups** on key solutions in Karlskrona towards the vision:

The following general guiding question were asked to all groups, but unfortunately not responded to in all groups as there were also further guiding questions asked (and responded to):

### **Resource base perspective:**

- *What material and energy resources will support the mobility system towards sustainable future?*

Answers:

Renewable fuels, such as sun, wind, water, wave, wood, biogas (manure, excessive heat), slaughter waste. Reused recycled materials, products parts. Use of abundant materials instead of scarce and limited resources (such as rubber).

- *And what will be their sustainability consequences?*

Answers:

Less CO2 with renewable fuels. Less mining and use of virgin materials.

### **Spatial planning perspective:**

- *How may the future of mobility system affect the physical environment?*

Answers:

One actor need to have the wider/systems perspective (e.g. regional level and municipality). Collaborate/coordinate all actors before early planning and decision making. Give some or more space for walking and biking and make roads/bike lanes/walking paths safe and into a nice experience. Mandatory with biking lanes/walking paths if new car roads need to be built. Create effective public transport solutions in communities. Stop planning and building in a way that favors the car! Making green areas instead of parking spots. Focus on what we want to do in the living area. Create hubs/shuttle busses/smart systems (parking)/car pool areas. Build cities/towns from a flow perspective (e.g. day care buses, drive through daycare, sports activities). Bring in public transport perspective only in the planning process. Think city planning - don't separate living area planning and transport planning. Make Blekinge into one community (regarding public transports or other areas "administrative").

- *And what are the wider sustainability consequences?*

### **Technical and business model perspective:**

- *What technical solutions in mobility are likely used in the future? What business models are increasing then? Common ticketing systems?*

Answers (to the general question):

Work out internal standards between systems. Financial transactions should be "hidden" from the user. It should be simple. It should be about the travel. The company should keep track of it - not the user. Car pools – accessible, affordable, and close to your home. Uber-like companies. Public procurement laws become more flexible. Fuel cells. The more you move the cheaper your ticket gets. Subscription model. Open information between all types of traffic, one ticket/card for all types of traffic and multiple operators, profit is divided after use.

**Passenger needs perspective:**

- *Why will people travel?*

Answers:

Distance to and from home. Leisure/holiday.

- *How can we significantly reduce the need to travel in the future?*

Answers:

Small centers with school/grocery, etc. go inside the grocery store. Digitalization (e-meetings and fast internet connections at work and at home) gives more option between "must" and "would like to". Grocery deliveries at home.

- *Why would passengers value public transport to a higher degree? What would attract them to use public transport?*

Answers:

Quality time on public transport instead of driving (book, nap, coffee, meeting, phone, etc.). Safety professional driver drives. Trains (to/from city center, no security controls). Mobility as a service is guaranteed with back-up services. More convenient and affordable public transport. Tax on non-sustainable transport that would reflect true societal costs of today and the future. Discount for groups/families. Education and promotion to change perception and behavior. Planning tool (when to go, where to go, and to what cost).

**Governance perspective:**

- *What would governance models for key transport system stakeholders look like?*

Answers:

Multilevel governance (public/private) (national/regional/municipality) -> planning -> cross-sectors (break silos). Harmonized tools and rules (also across borders) valid for long periods, and costs for all public transport modes. Fair terms for all business. Local level climate laws that are the same or tougher than national/EU laws/rules. Polluter pays principle for taxes.

- *What kind of incentives would be needed?*

Answers:

Incentives increased with accessibility, information and price. Support for innovative solutions and research for public transport development. Incentives (for both citizens and employers) increased along with accessibility, information and price, preferably in all EU countries.

- *What would need to happen to make a shift?*

Answers:

Fair terms for all business. Pressure from users or employees to build change. Increased use, convenience, attractiveness of public transport as well as availability. Better partnership/collaboration between public transport stakeholders to increase efficiency.

## Appendix 3a. Workshop notes from Gdynia – Current reality

### Detailed results from all groups on the current reality in Gdynia:

The following guiding questions regarding regional and cross-border mobility were asked (and responded to) within the seven groups:

#### Resource base perspective:

- *What material and energy resources are the mobility system dependent on right now and what are their consequences for sustainable development?*

Answers:

Energy: mostly non-renewable, little biomass and flow based, and nuclear. Metals, and plastics.

#### Spatial perspective:

- *What spatial requirements does the current mobility system have and how does this support or hinder the fulfillment of sustainability principles?*

Answers:

Lack of effective spatial planning and coordination regarding land development within municipalities, and transport not planned by city planners. Tri-city expands towards neighbouring municipalities/cities (Bydgoszcz, Szczecin, and Warsaw) and has to be planned differently than surrounding rural areas. Discrepancy between what's planned and the reality. Planning decisions are made for a too distant future.

#### Technical 1 – ticketing perspective:

- *What are the existing ticket systems (ticket type - mobile application, paper, card, etc.) and how does it support or hinder the fulfillment of sustainability principles?*

Answers:

Ticketing and customer services. Hinders: failures, poor data security, too complicated services, and lack of integrated information.

#### Technical 2 – vehicles perspective:

- *What are the existing vehicle systems and infrastructure, and how does that support or hinder the fulfillment of sustainability principles?*

Answers:

Regional and urban railways, Road and Trolley buses, Trams, and stations for these. Tristar - traffic management system. Planes and airports. Passenger ferries and harbors. Car sharing, Bikes in cities, Hybrid bicycles, Battery trolleybuses, Autonomous vehicles, Autonomous infrastructure management systems, Transport nodes, Bus lanes, Automatic ticket machines, Underground passages, Gas (CNG/Bio) charging stations, Bicycle parking stations, Vehicle coding stations, Cycling hoops, ITS traffic management system, Smart car parks, Diesel engines (EURO), Gas (CNG), Electric, Hybrid, and Biofuels.

#### Passenger value 1 – accessibility and affordability of public transport perspective:

- *What is the current state regarding accessibility and affordability in public transport? How does that support or hinder the fulfillment of sustainability principles?*

## Answers:

Accessibility in Tri-city is much better than in the region. Distance to nearest bus stop frequency not optimal for everyone. Information is not always available. Responsibilities are not always clearly divided. Passengers do not know where to send their complaints. Cheaper to ride a car than the train, but price is not most important factor. Public transport free of charge will not bring onboard more users. Free public transport for children and teenagers = great way to educate for the future. Public transport is getting more and more accessible for car users (e.g. park and ride).

**Passenger value 2 - additional values of public transport perspective:**

- *What are the current added values of public transport in comparison with car travelling, and how does that support or hinder the fulfillment of sustainability principles?*

## Answers:

Added values: Expenses, use of time, Time of travel, Individual entitlements are not needed, Greening (ecological), Security, The increasing quality of transport means. Hinders: The level of passenger information, Technological progress, Time of travel, Limited mobility, Limited comfort, Travel flexibility, Lack of comprehensive transport organization, Lack of public transport throughout the entire voivodeship.

**Governance and business model perspective:**

- *What are the critical considerations in mobility system governance for mayors, managers, boards? What business models in mobility are used right now? How does that support or hinder the fulfillment of sustainability principles?*

## Answers:

Difficulty in concluding contracts with many organizers, and in public procurement law. Variety of tariffs makes management difficult. Frequent changes of regulations cause uncertainty. The passenger devotes a lot of time for choosing and buying a ticket. The passenger pays attention to the price (tariff policy). No or insufficient partner relations between the organizer and carriers. There are various organizational and legal forms of various partners (companies, organizational units), and each organizer implements their own policy. Different system of concessions between railways and buses. Lack of transparency: tariff and legislative clutter makes international cooperation difficult or impossible. Lack of door-to-door solutions (operator's work). No system of shared tariffs. Lack of a platform for planning transport in a changing society (e.g. a platform combining data on transport organizations with demographic data on the incomes of the population). Lack of management of parking zones on the outskirts of cities, lack of information (e.g. signs beside the beltway). Problems of administrative boundaries in the organization of public transport. Problems which affect the carrier. There are tasks that are not directly assigned to one organizer. Conflicts of interests of cities and surrounding municipalities. Implementation of projects supporting the system (infrastructure - new investments) and Park & ride relieve the system in cities would support the fulfillment of sustainability principles.

## Appendix 3b. Workshop notes from Gdynia – Key solutions

**Detailed Results from all groups** on key solutions in Gdynia towards the vision:

The following general guiding question were asked to all groups, but unfortunately not responded to in all groups as there were also further guiding questions asked (and responded to):

### **Resource base perspective:**

- *What material and energy resources will support the mobility system towards the desirable future?*

Answers:

Energy from the sun and infrastructure. Recycling and energy recovery from waste. Improvements for energy efficiency. Ships. Improved environmental impact assessment and product life analysis. Limiting energy needs, but not social ones. Hydrogen fuels, (chemical) nuclear. Including Circular economy. Quality of materials: durability of the foundation surface, production costs, technological aging, security. Environmental criteria for selection of offers in public procurement. Energy recovery from braking. Organization of transport - optimization, planning. Scale effect - system / comprehensive.

### **Spatial perspective:**

- *How can spatial planning significantly reduce the need to travel in the future?*

Answers:

We will live in the gallery (as a slogan). Transport is a deliberate and desirable activity - one should not reduce the need to travel only to take care of the comfort of movement. Accompanying infrastructure at housing estates (former settlement unit). Proper planning is the key to everything. Planning (because it is not media) and hard infrastructure, i.e. construction. Work at home - in the west, for example, work at home one day a week. Securing basic services at your place of residence. Mobile school / internet school. We do not want to limit travel - we want to change the environment. Spreading the accumulation of travel over time. Do not plan roads (slogan). The subject is a resident and we plan for him/her, not for the need to implement projects.

### **Technical 1 – ticketing perspective:**

- *What is required for common ticketing systems?*

Answers:

Common system and organization platform. Shared card. Passenger / authority identification. Dynamic travel planner. Integration (carriers). Consistent and legible information.

### **Technical 2 – vehicles perspective:**

- *What likely vehicles and infrastructure systems would support the shift towards a desirable future?*

Answers:

Measures: Hyperloop, high-speed trains and water transport, autonomous vehicles, autonomous drones. Induction charged electric buses and taxis. Maglev (magnetic railway). Hydrogen-powered buses. Very fast charging stations. Fuels: human powered transport (e.g. Walking/Biking), photovoltaics (solar), hydrogen. Drive with energy recovery (recuperation). LPG, CNG, and LEG gases.

**Passenger value 1 – accessibility and affordability of public transport perspective:**

- How do you think accessibility and affordability in public transport could be ensured and what services will be needed?

Answers:

Increasing the price availability of tickets in the Pomeranian region. Introduction of a simple and transparent tariff, common for the entire region. Introduction of equal discounts for all means of transport and introduction of free journeys in public transport. Launching an electronic billing system based on the actual passenger travels and charging the most favorable charges (tariffs) for journeys. Physical availability of means of transport in the region. Bus "on demand". Introduction of solutions that will increase the popularity of public transport

**Passenger value 2 – additional values of public transport perspective:**

- What new measures could increase the passengers' perceived value of public transport, when compared with car travelling?

Answers:

Facilitating the purchase of a ticket. Integration. Transfer nodes. Bus lanes. Expansion of the rail system to the entire province. Park & ride system in the region, on the outskirts of cities. Efficient passenger information system and dynamic passenger information. Ongoing implementation of technical innovations. TAKT in the voivodship. Parking fees. Fees to enter the city.

**Governance and business model perspective:**

- What legal and management practices are needed for a transition towards a desirable future? What business models can support a transition towards a desirable future?

Answers:

Amendment to the Act on public transport. One organizer for the region (or one managing entity). A policy to discourage the use of the car individually. Unified fee and information system. Developing an agreement between local government units / organizers. Imposing standards by regulations. Parking policy. Co-financing of unprofitable routes. Setting priorities in the budget - more funds for transport. Integrated offer for collective transport as well as bicycles and parking lots (one service and one product). Better understanding of PTZ + one application for travel from A to B. Joint initiatives of carriers and their cooperation with local governments. How to plan transport in the future. Emphasis on streamlining planning. Consistent development of the public transport network. Introduction of joint tariffs in the voivodship. Introduction of 10-20-year operator contracts with a financing guarantee. Combining the transport offer with other public services (resident card, relief in land taxes). Simplification of discounts (no more than 2-3). Relief under certain conditions, e.g. for monthly tickets, for school children. Unification of benefits for the passenger in the whole area. Nodes developing their passenger services that provide information about the right bandwidth. Better planning - viaducts instead of lights. Management of the space of stops for the preservation of stops.



## Appendix 4a. Workshop notes from Klaipeda – Current reality

### Detailed results from all groups on the current reality in Klaipeda:

The following guiding questions regarding regional and cross-border mobility were asked (and responded to) within the three groups:

#### Technical and business models perspective:

- *What are the existing vehicle, infrastructure, and ticketing systems (ticket type: mobile app, paper, card, etc; information systems)? What business models in mobility are used right now? How does that support or hinder development towards environmental and social sustainability?*

Answers:

Good quality in Klaipeda where vehicles are younger than 15 years, but older vehicles in the region, operators are not keen to modernization. Unified design of public transport vehicles in Klaipeda. E-ticketing system provides flexibility - no EMV cards as payment method. Tickets can be bought at kiosk, from drivers, KKT Mobility center, and internet. Lack of some types of tickets – day ticket, week ticket, tourist tickets, family tickets. No signs / information in other languages: lack of information for non-residents. Variety of options provide freedom to choose and motivate to use. Comfortable to customers when no need to search information. Infrastructure is optimal, but not so good in suburbs. The system has good technical real-time information. Municipalities have contracts with 10-15 operators (partly not from Klaipeda) via tenders. All municipalities are paying compensations for discounted tickets. Klaipeda public transport (KKT) have a budget (tickets revenues) and pay to operator per 1 km. Some municipalities are trying to protect their own operators.

#### Passenger value perspective:

- *What is the current state regarding accessibility and affordability in public transport? What are the current added values of public transport in comparison with car travelling? How does that support or hinder development towards environmental and social sustainability?*

Answers:

More density -> better network and service, and vice versa. Promotion of mobility issues for bigger groups of residents. Not enough optimization in public transport system. Less costs, better lifestyle. Good transport service in city, sometimes too good, transport systems much worse in the region. Added values: Less costs, bigger speed in rush hours, and safer.

#### Governance and spatial planning perspective:

- *What are the critical considerations in mobility system governance for mayors, managers, boards? What spatial requirements does the current mobility system include? How does that support or hinder development towards environmental and social sustainability?*

Answers:

Infrastructure: KKT manages public transport in Klaipeda and other municipalities in the region, but not routing in other municipalities. Municipalities manages bus stops and traffic signs. Expectations on common systems, based on political decisions (for 5-10 years). Obstacles: no systems approach, egoistic approach, archaic approach, and protection of municipal operators. Legislation: operators contracts with municipalities, in Klaipeda contracts with KKT.

## Appendix 4b. Workshop notes from Klaipeda – Key Solutions

**Detailed Results from all groups** on key solutions in Klaipeda towards the vision:

The following general guiding question were asked to the three groups groups:

### **Technical and business models perspective:**

*- What likely vehicles, infrastructure systems, and business models would support the shift towards a desirable future, and what is required for common ticketing systems? How could that support or hinder development towards environmental and social sustainability, and what is likely the Return on Investment for that?*

Answers:

Fuel type – no fossil diesel. Regional ticket - easy to buy, easy to use, no matter which line or operator. Probably free ticket. More Uber type service, but with better regulation. Car sharing system (e.g. CityBee vehicles). Development of infrastructure. Physical customer centers and e-services. Support buying of e-cars. Fast public transport service. A national strategy should be established. Denser bicycle line network in region. Possibility to carry bicycle onboard public transport vehicles. Smart information onboard. Better and more practical stops. Street lights with motion sensors.

### **Passenger value perspective:**

*- How do you think accessibility and affordability in public transport could be ensured? What services will be needed? What new measures could increase the passengers' perceived value of public transport, when compared with car travelling? How could that support or hinder development towards environmental and social sustainability, and what is likely the Return on Investment for that?*

Answers:

Reliable timetables, and suitable lines. Free Wi-Fi, charging of phones, more smart screen on board with actual information (especially about interchanges). Clean vehicle, and low price. More information, tourism sector orientated information in hotels and tourism information centers. Special lines for tourists. Age of public transport fleet (more brand-new vehicles), Info packages for customers about eco figures – emission savings using public transport. Use/promote VIP persons using public transport. Reliable / well quality service, enough vehicle on rush hours (not overcrowded). Bigger public transport network density, better public transport infrastructure, heated shelters on stops, more security. More bus lines.

### **Governance and Spatial planning perspective:**

*- What legal and management practices are needed for a transition towards a desirable future? How can spatial planning significantly reduce the need to travel in the future? How could that support or hinder development towards environmental and social sustainability, and what is likely the Return on Investment for that?*

Answers:

Special traffic light for public transport (traffic priority). More control (police) of bus lines usage. Increase speed of public transport. Line map onboard and in apps. More accurate timetables. More express line buses on the same line, stopping at different stops. More online information about moving vehicles. Stops on demand. Smaller vehicles.

## Appendix 5a. Questionnaire notes from Rostock – Vision & Current reality

### Detailed results from all groups on the vision and current reality in Rostock:

The following answers to general questions were gathered from five key stakeholders (R1-R5):

#### A1. Visioning

*- How do you envision a sustainable future public transport system in the future? (imagine you live in the year 2040, what are the travel options used, how do you access them, etc?)*

Answers:

R1. Local transport free of charge, closely networked and closely cycletimes, fast public traffic.

R2. 2040 is a relatively long term perspective, but I think, that the public transport in Rostock will still heavily rely on the tram/ S-bahn which are electrified and well connected. Additionally, diesel and hybrid buses will be replaced by the electric ones. Mass public transport could be supplemented by the on-demand taxi services equipped with autonomous cars. Rostock currently doesn't have public bike rental service, this will most likely will be introduced soon.

R3. Reduced use of individual cars thanks to well-developed multimodal mobility options, including increased use of car-sharing. Good connectivity offered by public transport options based on demand e.g. more flexible approach than fixed timetables – more dynamic and digital system to manage demands in real time. By this means, reducing smog/greehouse and other harmful emissions will be a fact; additionally public transport would fully be based on green energy sources (e.g electric vehicles)

R4. There is a free public transport. Public transport runs in the main routes without fossil fuel. There are railways, trams, call taxis. Cycles. This is organized in large transport networks.

R5. Public transport will be served by lots of tram lines. (Because of best Energy-Usage). Only the rest will served by small electrobuses. You pay for tickets every month afterwards depending on how often you used public transport. Private traffic will be nearly only by bike.

#### Current Reality

##### B1. Resource base perspective:

*- What material and energy resources are the mobility system dependent on right now?*

Answers:

R1. Diesel, natural gas, electricity (From coal, nuclear power, wind, water, sun)

R2. I think all trends are showing that we are going towards full electrification. And electric energy can be generated and stored in many ways.

R3. Mostly based on fossil fuels, share of use of greener sources of energy is low.

R4. DIESEL FUEL; ELECTROENERGY u.a. energy saving vehicles.

R5. Like i said in A: Electricity because it is the most comfortable opportunity.

*And what does this resource use mean for the current public transport system's sustainability? (e.g. in terms of greenhouse gases, particles and other emissions; use of green surfaces; depletion of metals and other scarce resources; human health effects and other potential barriers on human need fulfilment)*

Answers:

R1. Actually our mobility is using too much ending ressouces (also if sun and wind is using for electricity)

R2. Rostock has very well developed tram network, hence it is partially electrified already. There is also a hydrogen fuel station in Rostock but I cannot tell if is used frequently. Electric transport directly generates

almost no greenhouse gases, indirectly – depending on the source of the energy and of course, if buses and cars will run on batteries, their production and later recycling has to be taken into consideration.

R3. High emission of greenhouse gases and other harmful substances → negative influence upon people's health and the environment

R4. Diesel fuels reduce the sustainability of public transport, but building roads that are becoming ever larger in size also destroys nature! Therefore, traffic to the land area must be organized with vehicles that operate with little space and low fuel.

R5. It will lower greenhouse gas emission and will be good for humans health because of no emissions

## **B2. Spatial planning perspective:**

*- How does the current urban form influence the mobility system? (e.g. How does current spatial planning influence the need to travel, road and infrastructure, parking areas, etc?)*

Answers:

R1. Separating of work and living is producing travelling. Growing of retail facilities and going away from living quarters to the suburban is producing traffic.

R2. Rostock is a mid-size city spreading around Warnow river which has its own challenges – left and right bank of the river are connected by two ferry lines and privately run tunnel. Otherwise inhabitants have to take a big detour around the U-shaped city. The city has outer highway ring, inner roads, train/s-bahn line and tram lines. 12 P+R places with a total capacity of around 3200 spots are available.

R3. Current spatial planning rather adapts to current urban form not vice versa, consequently the mobility system is often not flexible enough (e.g. visible in lack of enough number of bike lanes in city centre, not all parts of the city are equally well connected).

R4. People have to be transported from the satellite towns to the city center or to work. Central transport takes place via the S-Bahn, while the tram and bus in the satellite cities is organized as a feeder for the S-Bahn! Only in the city center is the tram the central transport vehicle. Actually, the parking fees are still too cheap and there are still too many parking spaces to inspire people for public transport. But there is also a lack of routes in areas that are not transport intensive! The cycle times are often too big.

R5. There will be less need for traveling because it is easier to send information instead of material or humans. Parking areas will sink, they are just needed outside the cities for Park and Ride.

*And what are their sustainability consequences?*

Answers:

R1. Higher production of greenhouse gases, nitrogen oxides, higher noise pollution etc.

R2. Due to the fact that the Warnow tunnel is privately own and the cost of entering the tunnel are very high, many inhabitants do not use it. This indirectly forces some to use public transport, rather than travel by car.

R3. There is a growing share of greener solutions, such as use of bikes, public transport instead of private cars, increasing number of electric cars but the emissions seem to be still high.

R4. –

R5. Hopefully there will be more green space in cities and less emissions.

## **B3. Solutions (Technical and business model) perspective:**

*- What kind of technical and business-model solutions are typically applied? (e.g. how is booking and ticketing solved, and what types of vehicles, fuels and infrastructure are used, etc)*

Answers:

R1. Local or regional ticketing system, high personal costs

R2. Verkehrsverbund Warnow, a transport authority and a union coordinates public transport in Rostock area. Tickets are available in vending machines (at bus stops or in the buses/trams), online or through mobile app. Trams are electric, buses are diesel, S-bahn is electric, ferries are electric and diesel.

R3. Ticketing system is rather flexible – options to buy tickets in dedicated shops, on the tram stops, in vehicles and via mobile apps. Timetables displayed on main stops.

R4. Public transport should be able to be booked by electronic means in the future, but also via a point of sale. The vehicles should evolve towards the electric vehicle. Large-scale taxis for about 10 people should belong to the typical fleet of a public transport company.

R5. Only a few private electric cars. Just trams and electric busses for lines with few demand. You pay for tickets every month afterwards depending on how often you used public transport.

- And what are their sustainability consequences?

Answers:

R1. -,

R2. -,

R3. -,

R4. -

R5. Good human health effect, less ghg-emission, more green surfaces. Metals and other rare resources will be needed, so there is need for intensive recycling for every machine.

#### **B4. Passenger needs perspective:**

- What are the current needs of passengers?

Answers:

R1. High frequency of cycle times, punctuality of public transport, high speed of public transport, clean public transport, high degree of networking of public transport, point to point traffic or change as little as possible

R2. Shorter travel times, lower prices, modern rolling stock.

R3. Passengers need a dense network of public transport (ideally trams due to lower emissions, higher number of people for ride-sharing and quick connections) that would lead them quickly and easily to transition hubs where they can switch to different directions (using trams/buses/e-bikes/bikes/local trains), they need reliable service and alternative transport options in case of accidents. Apart from infrastructure for public transport, there is a need to accommodate bike lanes better to reinforce this means of transport.

R4. Fast and easy to get to the destination. Cost-effective driving and barefree is essential for many people. Punctuality, order and safety are then immediately to be named.

R5. Short travel time. Close intervals

- And what are their sustainability consequences?

Answers:

R1. sinking of the production of greenhouse gases, nitrogen oxides; lower noise pollution etc.

R2. Modern, well organized and connected public transport means higher efficiency and less pollution.

R3. In cases public transport offers attractive alternative to using private cars, people often choose public transport over cars, which reduces harmful emissions. Reduced prices for tickets and other profits could additionally work as incentive. But proper infrastructure is a must.

R4. No stress!

R5. high usage of electricity

### **B5. Governance perspective:**

- *What are the critical considerations in mobility system governance for mayors, managers, boards?*

Answers:

R1. –

R2. public transport quite heavily relies on state subsidies, that money could be used somewhere else in the public sector.

R3. Existing spatial planning not matching current developments, lack of funds, too low awareness

R4. Finances (especially subsidies); Which infrastructure we adopted; How to win the population for projects. Very often, citizens want a tram, but not through my garden. More and more residential areas need to be built that are car-free!

R5. How much money they want to invest for an sustainable traffic system.

- *And what are their sustainability consequences?*

Answers:

R1. –

R2. Cancelling subsidies can lead lower public transport quality and price hikes. Public might resort to individual/car transport. This would cause higher congestion in the city and therefore higher pollution.

R3. Changes towards more sustainable transport take too long

R4. –

R5. Good human health effect, less ghg-emission, more green surfaces. Metals and other rare resources will be needed, so there is need for intensive recycling for every machine.



## Appendix 5b. Questionnaire notes from Rostock – Key solutions

**Detailed Results from all groups** on key solutions in Rostock towards the vision:

The following answers to general questions were gathered from five key stakeholders (R1-R5):

### **C1. Resource base perspective:**

*- What material and energy resources will support the mobility system towards the sustainable future?*

Answers:

R1. –

R2. The demand for electricity will increase tremendously in the nearest future.

R3. Renewable energy sources

R4. Electric energy; If there is enough public transport, then you should always use parking for bicycles use of the Warnow for watercraft in public transport; Cycles; Material that does not have metal as a basis and can last for a long time, but can then be disposed of properly.

R5. Electricity and if possible H<sub>2</sub> for Busses

*- And what will this resource use mean for the future public transport system's sustainability? (e.g. in terms of greenhouse gases, particles and other emissions; use of green surfaces; depletion of metals and other scarce resources; human health effects and other potential barriers on human need fulfilment)*

Answers:

R1. -

R2. German government decided to shut down nuclear power plants recently, therefore majority of the electrical energy is produced in the coal power-plants and wind. My personal opinion is, that coal should have been phased out in favour of more renewable energy sources and nuclear.

R3. -,

R4. –

R5. More efficiency and less emissions

### **C2. Spatial planning perspective:**

*- How will the urban form influence the mobility system as it moves towards the desirable future? (e.g. How can spatial planning significantly reduce the need to travel in the future? What kind of parking would be needed (is it still cars or maybe bikes or alternative transport)?)*

Answers:

R1. Bring together living and working, also living and shopping; no more shopping malls outside of the cities; settle down all daily and periodical needs inside the quarters in short distances to the flats and houses

R2. Rostock appears to have limited possibly of horizontal development (by area), therefore I think that the city will develop more vertically.

R3. There will always be the need to travel – for work, for school, for pleasure etc. the point is to predict and include mobility trends and needs into spatial planning to enhance mobility systems in cities and direct people towards greener solutions. For bigger cities, park & ride options make sense as long as they are accompanied by transport hubs with convenient access to various modes of transport.

R4. If you have enough public transport, then parking should be kept more and more for bicycles, electric vehicles and other energy-saving vehicles.

R5. Private car parking only outside of the core cities. Much Bike Parking and some Parking space for Public transport.

- And what will be the sustainability consequences?

Answers:

R1. sinking of the production of greenhouse gases, nitrogen oxides; lower noise pollution etc., a better local social climate, less time for travel needs and more time for personal needs, lower space utilization for traffic

R2. –

R3. Only positive impact upon sustainability

R4. –

R5. Less emissions. More green surface inside cities.

### **C3. Solutions (Technical and business model) perspective:**

- What kind of technical solutions/business models will the transport users use to meet their needs in the move towards desirable future? (e.g. They could use new common ticketing systems that could include access to library, museums, etc)

Answers:

R1. People always will use that kind of traffic system that is the most comfortable at all, the fastest, the cheapest, the safest. It always depends on the special personal situation, which transport model is used. Also it is the kind of interaction of comfort, speed, price and security what kind of traffic system is chosen. My personal favourite system for local travelling (under 10km travel distance) is going by own bike on broad clean bikeways, which are on the existing streets, not separate. Larger local distances or smaller local distances if there is bad weather I'd like to take tram systems or driverless bus systems with a high frequency of cycle times. For travelling on long distances I prefer train system. If travelling with family and/or with a lot of luggage, there must be a just in time transport service. Today it's much too complicate. To reach destinations without train stops I prefer driverless personal bus systems. For the whole public traffic only one ticket/card/app !

R2. Common ticketing is already in place in Rostock and my personal experience is that it, together with e-ticketing and other online services, makes public transport more attractive.

R3. Real-time tracking, responsive to demand public transport

R4. Bicycle; Shuttle bus, front door - railway station bus stop;

R5. Traffic taxes. Everyone Pay – everyone can use. Alternative: The vehicles check everytime you enter or leave. At the End of every month you pay depending on how often you used public transport. But you have to pay just a little amount. The most will be payed by taxes.

- And what will be the wider sustainability consequences if those solutions/business models are used?

Answers:

R1. sinking of the production of greenhouse gases, nitrogen oxides; lower noise pollution etc., more time for personal needs, lower space utilization for traffic

R2. –,

R3. –,

R4. –

R5. Less paper waste. You don't need ticket machines anymore – less material cost

**C4. Passenger needs perspective:**

*- What are the likely needs of passengers while the mobility system moves towards the desirable future? (e.g. Why will people travel? How can we significantly reduce the need to travel in the future? Why would passengers appreciate more value to public transport? What would attract them to use Public Transport?)*

Answers:

R1. People always wish that traffic system are comfortable, fast, cheap, safe. Point to point travels traffic or change during travel as little as possible.

R2. I can imagine, that automation of certain processes/jobs will result in more people working from their homes for example – so less commutes. On the other hand, population growth will even that out.

R3. There will always be the need to travel – for work, for school, for pleasure etc. People will choose public transport over e.g. private cars if it is convenient, flexible and cheap. Friendliness towards environment probably comes last, this is subject to larger awareness campaigns + cars are more convenient for families with kids in kindergarden/school times.

R4. But you also have to mobilize for goals. Cycling and pedestrian traffic should remain the goal. For this, every road user needs his place. It must be cheaper and easier to travel by public transport than with the MIV. Events, education and other things have to be organized in such a way that man prefers to travel by public transport.

R5. They will appreciate the public transport if they already paid for it with taxes. And of course the quality will increase dramatically because of the traffic tax.

*- And what will be the likely sustainability consequences if these needs are fulfilled?*

Answers:

R1. -,

R2. -,

R3. -,

R4. –

R5. Less own vehicles – less emission, less material costs

**C5. Governance perspective:**

*- What are the likely critical considerations in mobility system governance for mayors, managers, boards as the mobility system moves toward sthe desirable future?*

*(e.g. What would desirable governance models for key transport system stakeholders look like? What kind of incentives would be needed? What would need to happen to make a shift in a sustainable direction?)*

Answers:

R1. It always depends on the money, if the political and economical system will stay as it is. Every decision depends on how much money it will cost. If we manage to decouple the public transport system from other economic decisions (there is so much money (tax income or similar) to finance a public transport free of charge), we can install best kind of mobility offers as we have. I know it's a dream

R2. Local governments should use all their power to support making public transport the most attractive option for transport.

R3. –

R4. Companies must consciously choose public transport locations. The community must maintain locations that then have a good public transport infrastructure. The companies have to move to the people and they

have to autonomously plan energy-saving feeder traffic. This must be a decisive criterion when assigning a location.

R5. To make this happen you need to share visions of futuristic transport system to get the majority of the people. If most people think there is a need to change the system, it can be implemented democratically.

*- And what will be their likely sustainability consequences?*

Answers:

R1. More emission free public transport = less emission individual traffic.

R2. –,

R3. –,

R4. –

R5. A changed system would reduce ghg emissions, you have more green areas, less noise

## Appendix 6a. Questionnaire notes from Guldburgsund – Vision & Current reality

### Detailed results from all groups on the vision and current reality in Guldburgsund:

The following answers to general questions were gathered from five key stakeholders (G1-G5):

#### A1. Visioning

- *How do you envision a sustainable future public transport system in the future? (imagine you live in the year 2040, what are the travel options used, how do you access them, etc?)*

Answers:

G1. In general: Electrical busses and trains. In towns: electrical city trams and bicycles. In rural areas:

Flexible cheap electrical taxis – online, on-demand, and car sharing.

G2. We live in an agricultural area and that means no big cities, small villages and farms around the area and less people living in the area in the villages. Therefore private transport will still be needed and also a more flexible bus transporting system / i.e. instead of regularly busses you may call for at specific flexible transport to your village. And sharing cars will be a topic in the future.

G3. In 2040, the public transport system is to far larger extent based on faster, flexible and greener solutions. Between larger regional cities, the travel time is around 1 hour. In smaller cities, network of small autonomous vehicles /mini-busses should occur. In less densely populated areas there is a need for new user-friendly and smart service to suit passenger's need - and ideally to replace the current bus service. There will be transport modes such as car-sharing concepts (designated places), autonomous vehicles (driverless) and e-bike service.

G4. Electric cars and trains with transport hubs. Possibly H2-driven vehicles too.

G5. As able to serve very individual needs with minimum waiting time and high safety. Difficult to envisage how different types of selfdriving vehicles and sharing economy will interact towards a disrupted future public transport.

#### Current Reality

##### B1. Resource base perspective:

- *What material and energy resources are the mobility system dependent on right now?*

Answers:

G1. Materials: metal, composites, glass. Energy: Diesel, electricity (mainly from wind)

G2. Diesel

G3. Predominantly oil / fossil fuel

G4. Oil, diesel(petrol), electricity

G5. Depends where you are – in DK a mix of diesel, gasoline, methane, electricity and a little hydrogen – but the picture is changing, yet government has not given any desired direction.

- *And what does this resource use mean for the current public transport system's sustainability? (e.g. in terms of greenhouse gases, particles and other emissions; use of green surfaces; depletion of metals and other scarce resources; human health effects and other potential barriers on human need fulfilment)*

Answers:



G1. Diesel produces CO2 etc. Materials can be recycled, but currently only a small proportion is recycled. Most public transport modes are noisy. The future public transport systems will be less noisy, have more recycling and give less emissions.

G2. Pollution

G3. It has a large impact on our environment and global warming, and an increase in health problem issues.

G4. High GHG emissions, poor health, env pollution, fracking oil, etc

G5. I would guess that this question is already answered by national scientists and with more exact data than i can provide.

## **B2. Spatial planning perspective:**

- *How does the current urban form influence the mobility system? (e.g. How does current spatial planning influence the need to travel, road and infrastructure, parking areas, etc?)*

Answers:

G1. Current economical and spatial planning means centralising and movements from rural areas to small towns and from small towns to large cities. This is very unsustainable for the human need fulfilment.

G2. Shopping centres are concentrated in the towns – spatial planning means often concentrating activities in the towns

G3. Living in a less densely populated area, there is a high need for possessing your own means of transport (car) which consequently also challenge public parking spaces in the main towns (cities) of the area.

G4. OK in cities but rural areas away from towns are poorly serviced.

G5. I would think is already a theme that has been researched with more valid output than I can provide – if not it is a very relevant theme for a holistic approach and systemic analysis

- *And what are their sustainability consequences?*

Answers:

G1. The consequences are less transports needs and less time spent on travels – except for the situation regarding commuters.

G2. More traffic – more pollution

G3. Many families have the need of more than one car. It has large environmental impact, increase in pollution etc.

G4. More people in cars, resource scarcity.

G5. If better planning of urban and rural areas and their interdependency can be done a consequence should be less transport and better sustainability. But as long as a half hour flight from eg. CPH to Aalborg is cheaper than 5 hours train the sustainable solution will loose: some conclude that a CO2 emission tax is a must to be able to move towards sustainable transport.

## **B3. Solutions (Technical and business model) perspective:**

- *What kind of technical and business-model solutions are typically applied? (e.g. how is booking and ticketing solved, and what types of vehicles, fuels and infrastructure are used, etc)*

Answers:

G1. I do not understand the question.

G2. Busses and trains. Booking and ticketing are on-line as well as in the busses and in the railway stations.

G3. The public transport consists primarily of larger vehicles (busses) with the span of 30 min-1 hour in the most densely areas during rush hours to infrequent time schedule at other times. Alternatively, is a certain flex transport offer (from door-to-door). People can either purchase tickets at stations and busses, but also travel via online ticket solutions or pay directly if they use flexible transport.

G4. No human contact, all plastic or mobil pay. Still petrol, diesel and oil.

G5. I guess state of art short sighted cheapest choise – and I think this is how it should be; but other models aiming for other types of benefits like better service and smaller environmental footprint should also be applied to learn how to act in future

- *And what are their sustainability consequences?*

Answers:

G1. I do not understand the question

G2. I do not understand the question

G3. A higher degree of public transport will increase pollution and affect human health

G4. Negative on all accounts.

G5. Only when a municipality on behalf of public accept a higher transition transport price sustainability can be adressed.

#### **B4. Passenger needs perspective:**

- *What are the current needs of passengers?*

Answers:

G1. Passengers need to go to school, go to work, go to shopping, go to sport etc. and they need to go to visits friends and families and go on holiday.

G2. Flexibility and short travel tours, as well as low prices for the passenger

G3. A high need for flexible and regular solutions, easy and close accessibility from home to point of departure.

G4. Free movement – independence. Egoism – no collective identity. Difficult in rural areas due to lack of public transport infrastructure.

G5. Quick, safe, easy – no waiting and little willingness to choose more expensive but more sustainable solutions

- *And what are their sustainability consequences?*

Answers:

G1. The more people travel the more resources are used and the more emissions are produced.

G2. The people living outside the towns need to have their own vehichle/car – more pollution

G3. The more vehicles the more pollution.

G4. Negative.

G5. Slow transition

#### **B5. Governance perspective:**

- *What are the critical considerations in mobility system governance for mayors, managers, boards?*

Answers:

G1. The critical considerations of a mayor include: (1) citizens' easy access to work places, (2) general satisfying transport options to the citizens, (3) the transport sector is an important business opportunity,

(4) traffic congestions in towns should be avoided, (5) traffic noise, traffic accidents and pollution due to traffic should be avoided, (6) public transport is expensive and most often a net-expenditure for the local authorities, (7) public transport systems very are complicated with an array of (sometimes conflicting) needs and demands, different (large) transport suppliers / companies that do not easily communicate with each other and finally public transport normally requires large initial investments.

G2. The economy for the municipality

G3. The economic considerations are of high priority, and consequently the priority of flexible and sustainable transport may vary.

G4. Economic considerations first.

G5. To dare decide implementing higher expense more sustainable solutions -

*And what are their sustainability consequences?*

Answers:

G1. Pollution and greenhouse gasses etc. are part of the considerations. These issues are prioritised when there are technical and economical solutions.

G2. ?

G3. May have an environmental impact,

G4. Negative.

G5. If daring to decide implementing higher expense more sustainable solutions – more sustainability

## Appendix 6b. Questionnaire notes from Guldburgsund – Key solutions

**Detailed Results from all groups** on key solutions in Guldburgsund towards the vision:  
The following answers to general questions were gathered from five key stakeholders (G1-G5):

### C1. Resource base perspective:

- *What material and energy resources will support the mobility system towards the sustainable future?*

Answers:

G1. Metal and Bio-composites. Electric energy based on wind.

G2. Electricity – sun – hydrogen and a new resource that we don't know yet 😊

G3. A shift towards electric and hydrogen driven vehicles.

G4. Electricity from wind, air compression, hydrogen, ?

G5. Reused and more biobased material. Electricity, hydrogen, biogas

- *And what will this resource use mean for the future public transport system's sustainability? (e.g. in terms of greenhouse gases, particles and other emissions; use of green surfaces; depletion of metals and other scarce resources; human health effects and other potential barriers on human need fulfilment)*

Answers:

G1. It will be more sustainable than the current systems.

G2. Less pollution for all

G3. It will have less environmental challenges with environmental friendly vehicles and ideally, more people might start travel together (and not alone)

G4. Reduced GHG emissions.

G5. More sustainable

### C2. Spatial planning perspective:

- *How will the urban form influence the mobility system as it moves towards the desirable future? (e.g. How can spatial planning significantly reduce the need to travel in the future? What kind of parking would be needed (is it still cars or maybe bikes or alternative transport)?)*

Answers:

G1. More joint sharing private car systems including parking space in relation to mobility points. More on-line work-places and e-communication will reduce commuters very comprehensive need for transport.

G2. Possibility for loading electricity for cars and bikes in many places. The need to travel will still exist.

G3. Ideally, more people will own either electric cars or bikes (instead of fossil cars) – and in this perspective, there would be a greater need for more electric power stations for cars and bikes. On the contrary, if the infrastructure is improved with autonomous mini vehicles or more people are car-sharing, the need for private cars is reduced.

G4. More trains and more trams and less cars in towns. Cargo trains instead of trucks and local hubs with electricity.

G5. I would think is already a theme that has been researched with more valid output than I can provide – if not it is a very relevant theme for a holistic approach and systemic analysis

- *And what will be the sustainability consequences?*

Answers:

- G1. It will be more sustainable than the current systems.
- G2. Less pollution
- G3. Reduction in traffic, less Co2
- G4. Positive for environment
- G5. -

### **C3. Solutions (Technical and business model) perspective:**

- *What kind of technical solutions/business models will the transport users use to meet their needs in the move towards desirable future? (e.g. They could use new common ticketing systems that could include access to library, museums, etc)*

Answers:

- G1. They will use the internet and on-line system for travel planning, and may include add-ons.
- G2. Driving together – share the use of cars. Flexible system where you can call for at transport in stead of using buses out in the country area.
- G3. –
- G4. Not a priority for me. But may encourage use of public transport in included.
- G5. A ticketing system that is simple, works for all transport types, is transparent (you only pay for what you need) and does not track all you moves. Cost savings compared to private transport

- *And what will be the wider sustainability consequences if those solutions/business models are used?*

Answers:

- G1. It will be more sustainable than the current systems.
- G2. Less cars/busses in the streets – less pollution, better health, positive impact on climate changes
- G3. –
- G4. Positive for environment
- G5. More likely to use public transport

### **C4. Passenger needs perspective:**

- *What are the likely needs of passengers while the mobility system moves towards the desirable future? (e.g. Why will people travel? How can we significantly reduce the need to travel in the future? Why would passengers appreciate more value to public transport? What would attract them to use Public Transport?)*

Answers:

- G1. Difficult to predict.
- G2. Virtual meetings and therefore less travel, but travelling will never stop – we need to meet people! Public transport must meet the needs for flexibility and cost
- G3. Some groups of people might need to travel less due to technical development, such as business meetings might likely be in facilitated in virtual reality. Other groups need transport as a daily mean for

work purpose or personal mobility. If public transport becomes cheaper, more flexible and faster, the incentives to shift from private vehicles to public transport is likely to increase.

G4. They would like free public transport. They will still need to get to work, to go shopping. But shopping could get decentralised with more local shops

G5. Probably increasing travel for social reasons, hopefully less for pending to job. Quick, easy, comfortable, cheap – and sustainable.

- *And what will be the likely sustainability consequences if these needs are fulfilled?*

Answers:

G1. It will be more sustainable than the current systems.

G2. Less traffic – less pollution

G3. Naturally, with less people using private transport, less pollution.

G4. Don't know in the medium term. Maybe change of awareness.

G5. More public transport – sustainability more in the hands of public transport operators.

### **C5. Governance perspective:**

- *What are the likely critical considerations in mobility system governance for mayors, managers, boards as the mobility system moves toward sthe desirable future? (e.g. What would desirable governance models for key transport system stakeholders look like? What kind of incentives would be needed? What would need to happen to make a shift in a sustainable direction?)*

Answers:

G1. Mayors will have the same critical considerations as before, and the first priority will be citizens' easy access to jobs places.

G2. Cheaper electricity cars so it is a possibility for more people to buy. The elec. vehicles must be developed so they can drive stronger and longer and places to load elec. must be developed

G3. There are rather large economic considerations implied in terms of introducing/establishing new mobility systems. Therefore, there is a need for economic incentives from a national perspective/cohesion to facilitate new mobility systems in local/regional areas

G4. Reduced taxes, etc, for green transport infrastructure or pay-by-use comensation to companies.

G5. A CO2 emission cost could be a game changer

- *And what will be their likely sustainability consequences?*

Answers:

G1. It will be more sustainable than the current systems.

G2. Slowing down climate changes – less pollution – human health is better. New products, development of the industry, more and other kinds of sales companies – new and other kind of jobs in the future

G3. if new mobility systems are introduced, it will have strong incentives for people to go by public transport or by using other environmental-friendly solutions.

G4. Positive

G5. More green transport