

Developing infrastructure for electric passenger-cars in the corridor between Southern Scandinavia and Germany

Guasco, Clement; Jespersen, Per Homann; Lohse, Sandrina; Endres, Jean Paulo

Publication date:
2012

Document Version
Early version, also known as pre-print

Citation for published version (APA):
Guasco, C., Jespersen, P. H., Lohse, S., & Endres, J. P. (2012, Feb). Developing infrastructure for electric passenger-cars in the corridor between Southern Scandinavia and Germany.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

Take down policy

If you believe that this document breaches copyright please contact rucforsk@ruc.dk providing details, and we will remove access to the work immediately and investigate your claim.



Workshop Protocol

“Developing infrastructure for electric passenger-cars in the corridor between Southern Scandinavia and Germany”

Responsible Partner

Roskilde University

Author

Clement Guasco, Sandrina Lohse, Per Homann Jespersen, Jean Endres

This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND
ECOMOBILITY
Output Description

Germany, Sweden and Denmark all have developed plans for the implementation of e-mobility on national levels. The degree of progress varies, but in practice, e-mobility projects are often limited to cities and isolated from one another. Cross-border collaboration can thus help to share best-practices through the collaboration of all actors and ensure a more homogeneous development of e-mobility solutions within the corridor, both on technological and planning aspects. This workshop gathered actors from all three countries in a triple helix perspective including public authorities, businesses and academic institutions. A strategy for the development of infrastructure for electric passenger-cars in the corridor was formed using the “Future Creating” methodology. The workshop was part of the SCANDRIA Action Programme and pointed towards ways for e-mobility in the region. The workshop also provided an opportunity for cross-border networking and knowledge sharing.

Methodological Approach

The workshop gathered participants from the three countries involved in the corridor: Denmark, Germany and Sweden. Besides representing the three involved countries the participants also came from three different backgrounds: Public sector, Industry and Academia, forming therefore a “triple helix” approach.

The workshop day has been a blend of presentations and group discussions making use of the technique called “Future Workshop” developed by Jungk and Muellert, which will be further explained on section 5.

The presentations served to make the participants up to date regarding electromobility in the speakers’ areas of expertise and to stimulate the participants reflexions and insights for the following group discussions.

During the general discussions (critique and utopian phase respectively), the main questions that should be addressed were:

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



- What are the obstacles to a comprehensive e-mobility system in 2020?
- How would you like an e-mobility system in 2020?

On the 3 workgroups that were formed, each should deal with one of the following issues and draw a timeline with corresponding actions:

- Group 1: Consumer attraction and the role of Public transport
- Group 2: Regulation and participation of car-manufacturers
- Group 3: the potential of e-mobility in Tourism

Finally, each group presented the results of their discussions, followed by questions and suggestions from the remaining participants.

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



**ØRESUND
ECOMOBILITY
Workshop Protocol**

Øresund EcoMobility workshop

“Developing infrastructure for electric passenger-cars in the corridor between South Scandinavia and Germany”



This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND
ECOMOBILITY
Index

1.	Introduction	6
2.	Program	7
3.	Participants	8
4.	Presentations	9
4.1	Presentation by Per Homann Jespersen – Roskilde University	9
4.2	Presentation by Christian Erik Kampmann, Copenhagen Business School	9
4.3	Presentation from Thomas Meissner, Berliner Agentur für Elektromobilität.....	11
4.4	Presentation by Prof. Udo Onnen-Weber, Wismar University	14
5.	The Workshop	17
5.1	Background and Methodology	17
5.2	The Critique phase – sharing critiques, frustrations and irritations	18
5.3	The Utopian phase – Expressing hopes, dreams and wishes.	19
5.4	The Realisation phase – “The roadmap workshop”	21
5.4.1	Group 1: Consumer attraction and the role of Public transport	21
5.4.2	Group 2: Regulation and participation of car-manufacturers.....	23
5.4.3	Group 3: The role of tourism in promoting E-mobility.....	25
6.	Outlook	26
7.	Annex - Group work posters	28
7.1	Group 1 (Question 1+2):	29
7.2	Group 2 (Question 3+4):	30
7.3	Group 3 (Question 5):	31

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND
ECOMOBILITY
1. Introduction

Both Denmark and the state of Berlin have ambitious strategies for promoting electrical passenger cars.

In Denmark, electrical cars are exempted of purchase tax at least until 2015. Denmark is thus ready and willing to act as ‘guinea pig’ for a nationwide rapid introduction of electrical vehicles, also supported by Danish R&D programmes. Several actors compete on the Danish market with different concepts, e.g. Better Place in alliance with the Danish energy supplier DONG and Renault; ChooseEV, and Clear Charge (a subsidiary of the German energy provider RWE).

On the German side, Berlin-Potsdam is one of the eight e-mobility model regions in Germany and there are already more operational e-mobility projects there than in any other German city. As the capital of one of the strongest national economies in the world, Berlin enjoys international attention, is a proven test lab for technical innovations and has a unique concentration of university and non-university institutions within transport and mobility research. The aim of the German federal government is to put one million electric vehicles on the roads by 2020.

Connecting those e-mobility systems would be a very large improvement for users of both systems. It would allow for sharing of best practices and ultimately allow electrical cars from Berlin to go to Denmark and vice versa. This connection might also be enhanced by including the tourist areas along the German Baltic coast and southern Sweden into the programme, by providing these areas with an infrastructure for charging/battery exchange and by including electrical rental cars into the programme.

The purpose of the workshop was to develop initiatives and actions that, in a short time perspective (2012-2020), can contribute to the vision of a connected e-mobility system in the Baltic Sea area. It will work as a catalyst for future project-partnerships to implement the initiatives and actions formulated during the workshop. Invited to the conference were representatives from companies, public authorities and knowledge institutions across Germany, Denmark and Sweden, who had an interest in and knowledge of e-mobility.



This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERÅK



ØRESUND
ECOMOBILITY
2. Program

Place: Islandbrygge culture house, Denmark

Date: 26st of January 2012

9:30 Registration

Presentations

10:00 Per Homann Jespersen, Roskilde University (Denmark),
responsible for SCANDRIA strategic corridor approach

Introduction to the workshop

10:10 Christian Erik Kampmann, Copenhagen Business School
(Denmark)

Business strategies for EV infrastructure development.

10:30

Thomas Meissner, Berliner Agentur für Elektromobilität eMO c/o
TSB Innovationsagentur Berlin GmbH (Germany)

**Strategic approach of the German capital region to implement
electric mobility**

10:50

Prof. Udo Onnen-Weber, Wismar University (Germany)

**Development of lost spaces with electric light vehicles.
Potentials of electro-mobility in touristic oriented rural
areas.**

11:10

Coffee break

Plenary session I

11:30

Critical and Utopian phases: obstacles and visions

13:00

Lunch Break

Group Workshop: Realisation phase

13:30

Realisation phase: Elaborating strategies

Plenary session II

15:00

Plenary session – How will we develop an e-mobility corridor

15:30

Wrap up

This project is co-funded by



EUROPEISKA
UNIONEN
Europeliska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND
ECOMOBILITY
3. Participants

Lastname	First Name	Organisation/Institution
Andersen	Jens	Peugeot
Bach Andersen	Peter	DTU Elektro
Bruntt Jensen	Marianne	DTU Electrical Engineering
Bundgård Lauridsen	Mads	ChoosEV
Dullum	Nils	CleanCharge
Endres	Jean	Roskilde University
Frees	Niels	Trafikstyrelsen
Glud	Martin	Green About
Goltermann	Phillip	CEO, Drees & Sommer GmbH Hamburg
Guasco	Clement	Roskilde University
Homann Jespersen	Per	Roskilde University
Jakobsen	Marianne	Roskilde University
Jørgensen Møller	Per	Dansk Elbilkomite
Kampmann	Christian Erik	CBS
Kiel	Jakob	CBS
König	Jesper	Lunds University
Lohse	Lea	DTU
Lohse	Sandrina	Roskilde University
Marud	Leise	CAT Science/CAT link
Meissner	Thomas	Berliner Agentur für Elektromobilität eMO c/o TSB Innovationsagentur Berlin GmbH
Nielsen	Peter	DREES & SOMMER NORDIC A/S
Onnen-Weber	Udo	Hochschule Wismar
Poulsen	Anna Sofie	Greenabout A/S
Rydén	Patrik	Lunds University
Wechner	Kai	CBS

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND
ECOMOBILITY
4. Presentations

4.1 Presentation by Per Homann Jespersen – Roskilde University

Introduction to the workshop theme and to the issue of a cross-border e-mobility corridor between the Øresund region and Berlin.

This workshop has been developed in partnership between Scandria and Øresund EcoMobility projects. Scandria aims at promoting green transport solutions, integrating metropolitan areas and promoting collaboration in a corridor between the Baltic and the Adriatic Seas. Øresund Ecomobility aims at collecting knowledge on climate friendly transportation technologies for goods and people, and at transferring them to public and private organisations in need of that type of knowledge within the Øresund Region. This workshop follows a trip-helix approach, and aims at bringing together public authorities, companies and knowledge institutions from each country in order to produce short-term strategies for the promotion of e-mobility along the corridor.

4.2 Presentation by Christian Erik Kampmann, Copenhagen Business School

Title: Business strategies for EV infrastructure development.

Bottom line up front: “Public transport and shared-vehicle operators can play a key role in accelerating EV infrastructure and fleet build-up by sharing platforms and coordinating mobility solutions”.

There are three EV operators on the Danish market at the moment. They all have





ØRESUND

ECOMOBILITY

different business models, but their target group overlap on some points. Choose EV focuses on a broad segment of the population by leasing various types of electric cars from small to medium size. By providing smaller cars, they target the “second car” segment, used for daily short distance trips. In that context, because of the advantage of a smaller and more economical electric car in the city, the “second car” can play a larger role in the mobility pattern of the family. Choose EV provides their customers with a home charging post and a network of public charging posts with “fast-charging” ability. Their offer was launched in 2011 and they are working in partnership with the energy provider Seas/NVE.

A second EV operator called Clean Charge, follows a similar model by providing charging spots capable of “fast-charging”, but does not provide leasing solution for EVs. Clean Charge works then as a sub-supplier to energy suppliers by providing recharging infrastructure for all type of users, be they private, professional or public. CleanCharge originates from Germany, where they already have a dense network of charging spots.

Finally, there is Better Place; an operator with a very specific business model. Better Place has decided to target the “first car” segment of the market, by selling a family-car, the Renault Fluence. It presupposes that the Renault Fluence can replace the only car of the family. They sell a complete package solution with home charging spot and fixed mileage including electricity. They also offer to remove the problem of limited range by providing battery-switching stations where cars with battery-swapping technology can exchange their empty battery with a loaded one. Two battery-swap of 5 minutes could thus give a theoretical range of 450km to a Renault Fluence. However, this model requires that Better Place owns the battery and that car-manufacturers start selling cars with battery-swap technology. However, only the Renault Fluence is equipped with this technology today. On the other hand, the EV operator is better suited to manage and maintain batteries and customers do not need to worry about wearing out, since the costs are distributed across all the users. Better Place has planned to provide with battery-swap stations at strategic points in Denmark and charging spots with “fast-charging” capacity by 2012.

However, EVs are not the only business model to replace conventional ICE cars. Another business model focusing on fuel cells offers an alternative without reducing range or changing habits. However, the technology is not ready yet. Commercial launching is planned for 2015.

All those business models try to compete with conventional cars on their own territory, taking for granted that the actual mobility patterns are there to stay. However, a car in 20 years might not be the same than a car today. As science fiction movies from the 70s show, thinking about the future based on our present mind-set

This project is co-funded by



EUROPEISKA
UNIONEN
Européiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND ECOMOBILITY

made us predict solutions, which are far from those in use today. Indeed, no fictional film predicted the triumph of internet and smart phones before they happened. Planning the mobility of tomorrow should thus not be based on the long-range family car.

Looking at traditional transport, one can see two major patterns of ownership, privately owned and individually used vehicles against publicly owned and collectively used public transports. However, there are two underexploited segments with a great service value: collectively owned and individually used vehicles (car-sharing, city-bikes), and individually owned but collectively used vehicles such (car-pooling). The later schemes are highly underexploited mobility pools but are promising sectors for the development of tomorrow's mobility.

The existing operators will ensure EVs integration within the traditional pattern of car ownership and car-use. However, urban settings are very favourable for the development of mobility solutions based on the aforementioned unexploited segments. Car-sharing companies are especially attractive for EVs. They allow to share costs across an entire fleet, mainly target urban areas where EVs are more competitive and give access to long-range vehicles for the weekend. They also help reducing land-use from parking and ultimately reduce total car-use. Copenhagen presents a strong potential for car sharing and has committed to become a carbon neutral city by 2025. Secondly, public transport providers can also play a strong role by helping to integrate all mobility options, such as biking, car-sharing, and carpooling into one package centred on public transports. This can be achieved by developing an integrated trip planning system on the model of the Bremen transport card and could target the "Generation Y" consumers who are less concerned with ownership of durable goods and open to new mobility solutions.

4.3 Presentation from Thomas Meissner, Berliner Agentur für Elektromobilität eMO c/o TSB Innovationsagentur Berlin GmbH

Title: Strategic approach of the German capital region to implement electric mobility.

The capital region of Germany is part of an audacious project to create a shop window for the promotion of EVs in Germany and in the world. With a goal to reduce CO₂ emissions from transport by 90% in the period 2008-2050, the German government needs to find solutions already now. With regardsto the lastest development of battery technologies and smart grid integration, EVs present a good potential for reaching this target in urban areas. However, integrating EVs to the mobility mix of

This project is co-funded by



EUROPEISKA
UNIONEN
Europelska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND

ECOMOBILITY

Germany go beyond replacing conventional cars with EVs and require a rethinking of our mobility patterns. Berlin/Postdam region has been selected by the federal ministry of Transport as a pilot region for e-mobility and received 115 million € for the promotion of alternative business models based on EVs.



The number of public charging posts in the region will be increased from 110 to 1500. An EV car-sharing scheme including 45 cars will be tested in connection to the S-bahn (public transport), EVs will also be incorporated to the public car-fleet. A project testing EVs for urban goods-transport such as the post and local delivery is under development. However, the lack of 12-14 tons utility EVs on the German market makes it difficult.

The availability of EVs in large numbers is still a bottleneck for the development of e-mobility. Moreover, many of them are converted designs from existing vehicles and do not necessarily fulfil specific needs. For that reason, it is important to develop EVs specifically designed to meet transport needs in urban environments, where they are most competitive. Berlin-Brandenburg region will thus serve as an international open shop window for the design, testing and development of e-mobility. The Berlin Agency for Electro Mobility (eMO) was opened in November 2010 in order to coordinate those efforts, promote e-mobility at the municipal level, promote

This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND

ECOMOBILITY

innovation in companies and scientific institutions, and facilitate the dissemination of knowledge. The ultimate goal is to raise Berlin as a centre of excellence for electro mobility.

The shop window for electro mobility aims at supporting market penetration in order to reach a critical mass of vehicles and infrastructure. Berlin is the perfect place for such a project because the city is an attractive international pole, shows a low rate of car-use (50%), can benefit of the 100% renewable policy of the Brandenburg state and acknowledge interdisciplinary RTD. The shop window strategy in Berlin unfolds over a three year period. It involves many federal ministries (transport, economy/technology, research, education, environment) and is part of a 180 million € project together with 3-5 other projects in Germany.

The shop window follows a systemic approach including vehicles technology, energy systems and transport systems. 9 of the 10 leading car-manufacturers in the world contribute to the shop window, there are 257 partners, of which 200 are private companies. The total budget is 165 million € for 35 projects, of which 75 million comes from the industry and 25 million from the Berlin Government. The goals is to have 5.200 electric vehicles, including 4.000 passenger cars, busses and commercial vehicles, and 3.700 charging devices, including 1.400 publicly accessible.

There are several shop window sites around the metropolitan area of Berlin, such as the showcase and experience centre situated in the old airport area of Tempelhof. The shop window projects will also serve for monitoring what is happening in the e-mobility area and advertise it on an international scale. All shop window projects will be connected to each other so that break through from one project can spread faster. It will also generate scenarios for faster market penetration of EVs.

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND

ECOMOBILITY

4.4 Presentation by Prof. Udo Onnen-Weber, Wismar University

Title: Development of lost spaces with light electric vehicles (LEV). Potentials of electro-mobility in touristic oriented rural areas.



The development of an e-mobility corridor from Berlin to the Øresund Region could be the occasion to introduce LEVs in the rural regions situated on the way. LEVs present a valuable potential for rural uplifting and eco-tourism. Today, electro-mobility happens in cities, but a large part of the European space is rural. Therefore, there is much to gain by focusing on how to bring e-mobility to rural areas as well. The centre for rural mobility has been working about how to introduce e-mobility in lost spaces and rural areas.

We are working to find solutions for today and tomorrow rather than for ten years later. The “peak oil” means that oil prices will rise in the future and that we need to find alternatives now. Moreover, there is a clear demographic trend of an ageing population and urbanisation. In this context, rural spaces are left behind. We are working on two basic concepts for rural mobility: equity and access. Access to mobility should be equal for all citizens. We consider that we are at the end of the current mobility system based on ever-increasing speed and growth. We must therefore reinvent our ideology of mobility.

This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND ECOMOBILITY

We are working on lost spaces, so our concept can apply to many rural areas in the EU. Those spaces are emptying because of aging population and increasing urbanisation. For example, Mecklenburg-Vorpommern has few cities and 83% of its territory is classified as rural area with serious development problems. Rural areas are facing specific mobility problems. On the one hand, older “immobile” people with local mobility needs and on the other hand long-distance commuters travelling to larger cities in neighbouring regions. Governments have difficulties to answer such needs and electric cars cannot answer those specific needs.

However, rural areas have one strength, their beauty. This is why tourism can be the solution to bring the mobility needs that rural population needs. It can ensure the access for commuting to large cities of neighbouring regions and mobility for inhabitants and tourists at the local level.

The e-mobility solutions we have developed for tourism is based on light electric vehicles (LEV), such as e-bikes, e-rickshaws, light-duty EVs. They can provide local mobility and be coupled to public transport for long-distance trips. This strategy includes local mobility management for local and touristic mobility, mobility forums to ensure the participation of the population and the stakeholders, example projects and the monitoring of all projects by the centre for rural mobility.

One project deals with the terrible traffic jams experienced in small coastal towns during the tourist season. In order to make it more pleasant for everyone, we are removing car-traffic from the city by building car-parks at the entrances and supplying e-shuttles for locals and tourists for their trips within the town. Those shuttles can be e-taxis, e-rickshaws, e-bikes. Using e-mobility services is cheap, based on a parking + shuttle ticket. There is also a project of constructing a cargo station on the outskirts with the possibility to unload into smaller LEVs for deliveries into town. A second project called INMOD focuses on the revitalisation of public transports in rural areas. In most rural areas, there are no public transports except for the local school bus. This project proposes to introduce one bus-line on one main road with the possibility to connect surrounding villages to bus stops on the main road by LEVs. And finally the last project supports the introduction of the said LEVs in all forms required as fast as possible.

Questions/Comments

There is a similar project on Ærø, where the municipality uses EVs during the week days and rent them to tourists during the weekends. It profiles Ærø as a green island and maximise the use of these EVs. Such integration between public services/tourism could be a solution.

Conventional cars are prohibited in town and must park at the outside car-parks. First it starts with day-guests and then moves on to the rest of the population.

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERÅK



ØRESUND

ECOMOBILITY

What is the speed of those LEVs and where can they drive. Indeed, in case of collision with larger vehicles, they offer little protection to their passengers. We may have some regulatory issues concerning this problem in Denmark.

This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND
ECOMOBILITY
5. The Workshop

5.1 Background and Methodology

The future creating workshop was invented by the Austrian future-scientists Robert Jungk and Nobert Müllert in the 1970's.

The scope of the method is concentrated on three main points:

- What could our world look like?
- How would we like it to be?
- “We should not go blindly into the future”

The method was taken into a Danish context by the sociologists Nielsen, Nielsen and Paaby in the 1980s. The execution of the workshop is divided in three main phases, which have a set of simple rules.

Phase 1 (Critique Phase): In the first phase, the participants gather around the theme and have the opportunity to share their critique and frustrations by brainstorming and answering the theme question.

Rules:

- Short statements
- No discussion
- All statements allowed

After the inputs are exhausted, the participants get five votes to select the inputs they found relevant and the votes are counted.

Phase 2 (Utopian Phase): The second phase allows the participants to brainstorm and give their inputs in order to answer in an imaginary and ideal situation to a theme question.

Rules:

- Short statements
- No discussion
- All statements allowed

After the inputs are exhausted, the participants get five votes to select the inputs they find relevant, the votes are counted and the inputs with most votes are chosen as background for the group work during the realization phase.

Phase 3 (Realization Phase): The participants are divided into working groups under a main theme which guides them into drawing a time line of events that should take place in order to achieve the desired goal by taking into consideration the inputs given in the 2 first phases. Finally, the groups present their proposals' timelines.

This project is co-funded by



EUROPEISKA
UNIONEN
Europeliska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND ECOMOBILITY

Roles:

- Participants: Engage themselves and participate with heart and mind
- Organizers: Facilitate the workshop and make sure that the participants know and follow the rules

5.2 The Critique phase – sharing critiques, frustrations and irritations

The critique phase starts by a brainstorming where all participants give their input. At the end, the participants get five votes to allocate to the inputs they find most relevant/important.

Question: What are the obstacles to a comprehensive e-mobility system in 2020?

Catchwords	votes
Price of vehicles	12
Strong mental barriers	11
Limited range	10
Lack of big scale first-movers	7
Financial situation (crisis)	7
Lack of burning platform	7
Resistance from German car-manufacturers	7
Lack of standards	6
ICEs are just more attractive	4
Access to vehicles	4
Lack of incentives for private users	3
Battery technology	2
Lack of coordinated platform	1
Regulatory uncertainties	1
Contradicting interests among stakeholders	1
Entrance barrier (investment)	1
Regulatory obstacles	1
Limited resources for battery and engine production	1
Lack of familiarity/knowledge	1
Access to charging	1
technological uncertainties	1
Lack of convenience	1
Lack of critical mass	0
Lack of comfort	0

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK

The major obstacles to a comprehensive vehicle system are the high prices and limited range of EVs, as well as mental barriers. The first obstacle relates to market penetration and technology costs, the second one to technology and the last one to social acceptance.

5.3 The Utopian phase – Expressing hopes, dreams and wishes.

The utopian phase starts by a brainstorming where every participant gives his or her input. At the end, the participants get five votes to allocate to the inputs they find most relevant/important.

Question: How would you like an e-mobility system in 2020?

Catchwords	votes
Cheap electric vehicles	12
Attractive functionality (range, charging, ...)	8
public fast-charging	7
Integrated public-private transport	7
Integrated smart grid	7
Fewer cars	6
Low usage-cost	6
100% renewable	5
Wide range of EV models	5
Change of mindset	4
Out of the pilot phase	3
e-public transport	3
One-stop mobility solutions	2
Variety of choices for transport (public and private)	2
Car-sharing scheme in every village	2
100% regulatory support 100%	2
Reduced speed, safer transport	1
Integration in smartphone solution	1
European plug-in standard	1
Seamless travel-plans	1
Research funding	1
Reduced space dedicated to cars in cities	0



ØRESUND

ECOMOBILITY

EV as a driver for sustainability	0
National and regional pride	0
Fully integrated energy market at the EU level	0
More push from car-manufacturers	0
electrical trucks	0
Low noise urban areas	0
e-BMW for my boyfriend	0
Solution exportable to 3rd world	0
CO2 neutral business trips	0

The main hopes were “cheap electric vehicle”, “attractive functionality”, with a strong emphasis on “fast-charging”, then the integration of EVs to public transport and the smart grid. Those hopes served as a starting point for the realisation phase.

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



ØRESUND

ECOMOBILITY

5.4 The Realisation phase – “The roadmap workshop”

For this part of the workshop, participants were divided into three groups where they discussed how their utopia could become reality? The voting in the utopian phase led to five questions, which served as a base for discussing short-term strategies for the introduction and promotion of e-mobility within the corridor:

1. What can be done to make public transport support e-mobility?
2. Which initiatives can be taken to make e-mobility “the” choice of consumers
3. How can car-industry become drivers of e-mobility?
4. How could public regulation support e-mobility?
5. What could be the role of tourism in promoting e-mobility?

It was decided to merge questions 1 and 2 in group 1 and questions 3 and 4 in group 2, in order to create the following working groups:

- Group 1: Consumer attraction and the role of Public transport
- Group 2: Regulation and participation of car-manufacturers
- Group 3: the potential of e-mobility in Tourism

Each group elaborated on a practical strategy for the period **2012-2020**, in relation to the theme, and then sent forward a member to explain it to the rest of the participants. The three resulting strategies are described below.

5.4.1 Group 1: Consumer attraction and the role of Public transport

Participants: Christian E. Kampmann, Clement Guasco, Marianne Jakobsen, Jakob Kiel, Niels Frees, Per J. Møller, Anna S. Poulsen and Patrik Rydén





ØRESUND

ECOMOBILITY

Working questions: Which initiative can make e-mobility the 1st choice of consumers, and what can be done to make public transportation support e-mobility?

EVs cannot directly compete with conventional vehicles in the actual mobility practices. They lack the autonomy to be able to simply replace a conventional vehicle. It is thus vital to rethink the entire mobility system, in order to integrate EVs with alternative mobility solutions including public transports.

There is a lot of inertia into the actual system. Vehicles bought today will be around in the next 10-15 years. Therefore, we should focus on the younger generation, which does not have a car yet, and make sure that they do not need or want to buy a car. Indeed, it is much more difficult to get rid of the car once it has been bought and integrated into the daily routine. We propose thus to start a project to accompany a change of behaviour in the young generation. This generation we are talking about is between 16-25 years old today, does not own a car and is mainly living in urban settings. In 2020, those people will be 24-33 years old, they will have an age of founding a family and we could make sure that they postpone their first purchase of a car, because they have already developed their daily-life without a car. In order to do so, it is vital to develop new mobility solutions, which can fulfil the mobility needs of that generation, to accompany them in this change of habits.

We should divide the working period in two parts: the first one from 2012-2016 and the second one from 2016-2020. What we can already do now is to create a platform to integrate existing alternatives to the car (green taxis, car-sharing, carpooling, rejseplanen, city-bikes, ect...), so that it becomes easier for young people to plan their everyday mobility. This system should be developed by DSB, Movia and the municipality of Copenhagen, but youth organisations, universities and schools should be involved in the design in order to match the needs of younger people. This system could integrate EVs in car-sharing schemes.

We should start producing businesses cases to show the municipality of Copenhagen how much money there is to save. If a parking space in Copenhagen costs 600.000 dkk, there is potential for investing money in alternative mobility patterns, which do not require the use of parking space.

The municipality of Copenhagen has already planned to equip its fleet with EVs. However, they will be mainly used during working hours in the week. It should be possible to outsource them to an external company, which could then rent them out to private persons in the evening and in the weekend.

This project is co-funded by



EUROPEISKA
UNIONEN
Europeliska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERAK



ØRESUND ECOMOBILITY

Campaigns to sensitize people to alternative modes of transportation, car-sharing, EVs, should be start already now. They could make use of radio, TV and news media.

The ultimate goal is to introduce EVs as one element of a general mobility package including many other alternatives.

From 2016 and onwards, there should be a fully integrated mobility system up and running. It should use a universal payment system like the autocard in Bremen. The infrastructure should be developed, including car-sharing schemes, electrified public transport, charging spots, and booking systems.

Regarding cross-border cooperation, we should start already today. It is important to see how things are done in other countries in order to learn from each other and copy best practices. Maybe we can use the experience of Deutsche Bahn with car-sharing. If we do not want to reinvent the system each time, we need to cooperate.

Questions/Comments:

Who will put money into this project?

The Municipality of Copenhagen should definitely put some money.

In this strategy, we assume that, by 2016, EVs will be available on the market at a competitive price and that infrastructure will be developed. Under those conditions, there are good business cases to develop and financing should not be a problem.

5.4.2 Group 2: Regulation and participation of car-manufacturers

Participants: Mads B. Lauridsen, Nils Dullum, Jens Andersen, Thomas Meissner and Sandrina Lohse





ØRESUND

ECOMOBILITY

Working question: How can public regulation support e-mobility + how to get car-industry to drive e-mobility innovation?

Before discussing the regulatory framework, it is important to develop a vision to guide regulation. For some countries, the vision has started to take shape, but in the case of Denmark, for example, there is a lack of common vision for EVs. Only after a vision has been developed we can start to design regulations.

It is also important to set-up milestones with intermediate targets (every 2-3 years), where we can evaluate the progress of our strategy.

The necessary actors to implement such a strategy are the Governments, regions, cities and the EU. The EU is necessary since it decides some regulatory frameworks, which apply to cars, such as the regulation of CO₂ emissions from passenger cars.

On a regional perspective, it is important to look at the interaction between the national regulatory framework and local implementation. There is a need for “experimental clauses” giving incentives for EVs users for a short period. It could be free parking, the right to use bus lanes, or tax reductions. There should also be standard guidelines on the most efficient way to install charging infrastructure. Several public institutions have a say in the matter and they should be brought together around one table in order to produce one comprehensive guideline. They are already working on it in Berlin. This type of guideline is very important for regulation at the regional level. This guideline could also be useful for Danish and Swedish cities.

There is also a need for financial incentives for EVs in commercial fleets. Public owned fleets can definitely act as frontrunners. For example, in France, public fleets are forced to renew their park with EVs instead of conventional cars.

Questions/Comments:

How much resistance is there really from car-manufacturers?

The picture is not that black and white. They are different visions within the car-manufacturers so they should not be seen as a hindrance to change. KPMG has conducted a survey among senior executives from the car-manufacturing companies asking them what the next challenge was. Their answer was that a generation change is coming and that the next challenge is that they will not be selling vehicles any longer, but mobility solutions. They have to adapt their product to meet this new demand. Another example is that of the Smart car. When it was launched, it was presented as a revolution in car-mobility. It did not pick up then, but we can see the same idea showing up stronger today. In some years, new ideas will show up in the same way.

Moreover, it seems that BMW and Siemens are already working hard on EV solutions for fear of being left behind by the Japanese and the Chinese, but also because of the

This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND ECOMOBILITY

new EU regulation on CO₂ emissions for private passenger cars. However, car-manufacturers are torn between the need to maximize capital investment in their actual production facilities and the need to be ready in case EVs break through on the automobile market.

5.4.3 Group 3: The role of tourism in promoting E-mobility.

Participants: Martin Glud, Leise Marud, Udo Onnen-Weber, Kai Wechner and Jean Endres



Working question: What could be the role of tourism in promoting e-mobility?

The integration of EVs through tourism should focus on smaller activities, to give a - taste of EVs to tourists and locals alike. Group 3 has discussed a series of concrete activities where EVs can be promoted in touristic regions:

1. In the west of Denmark, cars are allowed on the beach. Prohibiting them and replacing them with LEVs (light electrical vehicles) could help people get familiar with those types of vehicles.
2. EVs could be included in hotel packages, so that they can be rented together with a room.
3. EVs could be used in theme parks, where visitors could park their car outside and use an EV to get around in the park.

This project is co-funded by



EUROPEISKA
UNIONEN
Europiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK



4. Eco business trips: There is an increasing number of businessmen coming to see what is going on in Bornholm. Integrating EVs to those types of trips could serve as a shop-window.
5. The Royal family could exchange their luxury cars for EVs in order to show the good example.
6. Educational tourism for schools: EVs could also be included in school trips packages to design eco-school trips. It would require a network of related attractions and suppliers in the area.
7. The creation of “højskole” (a type of independent educational institute), focusing on eco-mobility, in touristic regions, could also serve as a base for the promotion of EVs. They should be open to all family members.
8. A “EV island” cooperation could integrate all touristic islands interested in introducing EVs as alternatives modes of transportation, such as Samsø and Ærø

Questions and comments:

- Comment 1: There is a “højskole” already working on eco-mobility in Humlebæk, Denmark. They could serve as example.
- Q1: What about cross-border cooperation?
Answer: Group 3 discussed the possibility for German, Danish and Swedish touristic regions to establish joint cooperation for educational tourism and “højskole” focusing on eco-mobility.

6. Outlook

When we look at the critical and utopian phase of the workshop, it appears that barriers and hopes are rooted in our current mobility habits based on private passenger cars running on gasoline. The obstacles are the high price and low range of EVs compared to conventional cars and the mental barriers they induce. Likewise, our hopes are anchored in the traditional use of private vehicles. EVs should become as cheap and convenient (range, fast-sharing) as “private passenger cars running on gasoline”. However, the result from the realisation phase during group work shows that the solution might be a rethinking of our mobility habits altogether.

Group 1 came to the conclusion that EVs should be integrated within a comprehensive mobility offer including public transports, bicycles, car-sharing and car-pooling, thus removing cars as the centre of the mobility system. This behaviour change should focus on the younger generation in order to ensure the continuity of this mentality change. Group 2 working on regulation also focuses on the need to establish a new vision for mobility in order to guide regulation towards new mobility

This project is co-funded by



EUROPEISKA
UNIONEN
Europeliska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK



ØRESUND

ECOMOBILITY

habits. Finally Group 3 also talked about changing mentalities by integrating EVs in a comprehensive mobility system for rural areas using tourism.

All agreed on the fact that EVs should not compete with conventional vehicles on their own ground, but should be included in a mobility revolution where private vehicles are only one piece of the puzzle.

The starting point of the workshop, the establishment of a connection between the e-mobility 'islands' of Berlin and Denmark was not explicitly addressed in the strategies from the groups, but was more seen as one initiative supporting e-mobility efforts, in line with the initiatives and actions described in the strategies from the groups.

This project is co-funded by



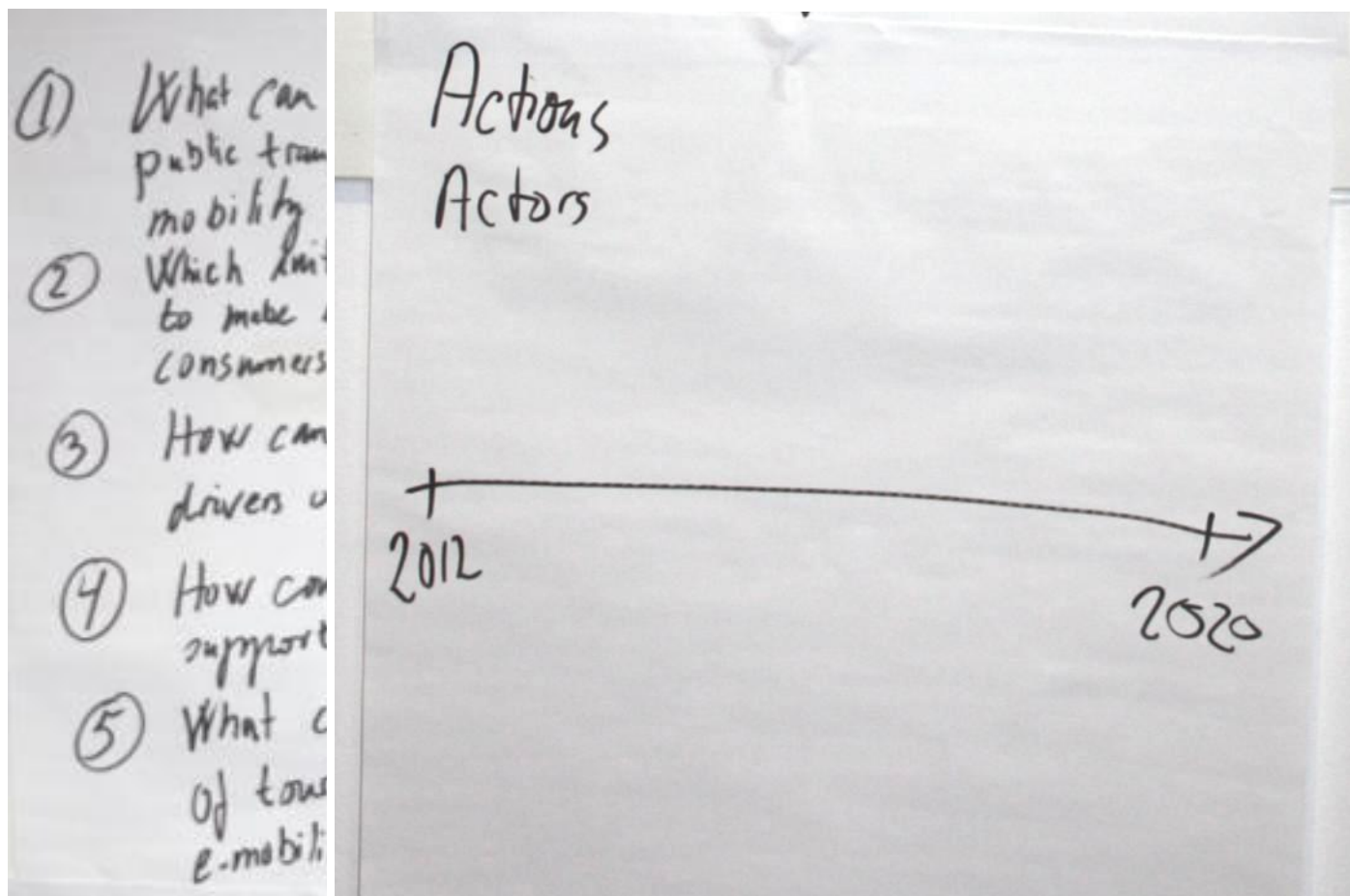
EUROPEISKA
UNIONEN
Europeliska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKADERRAK

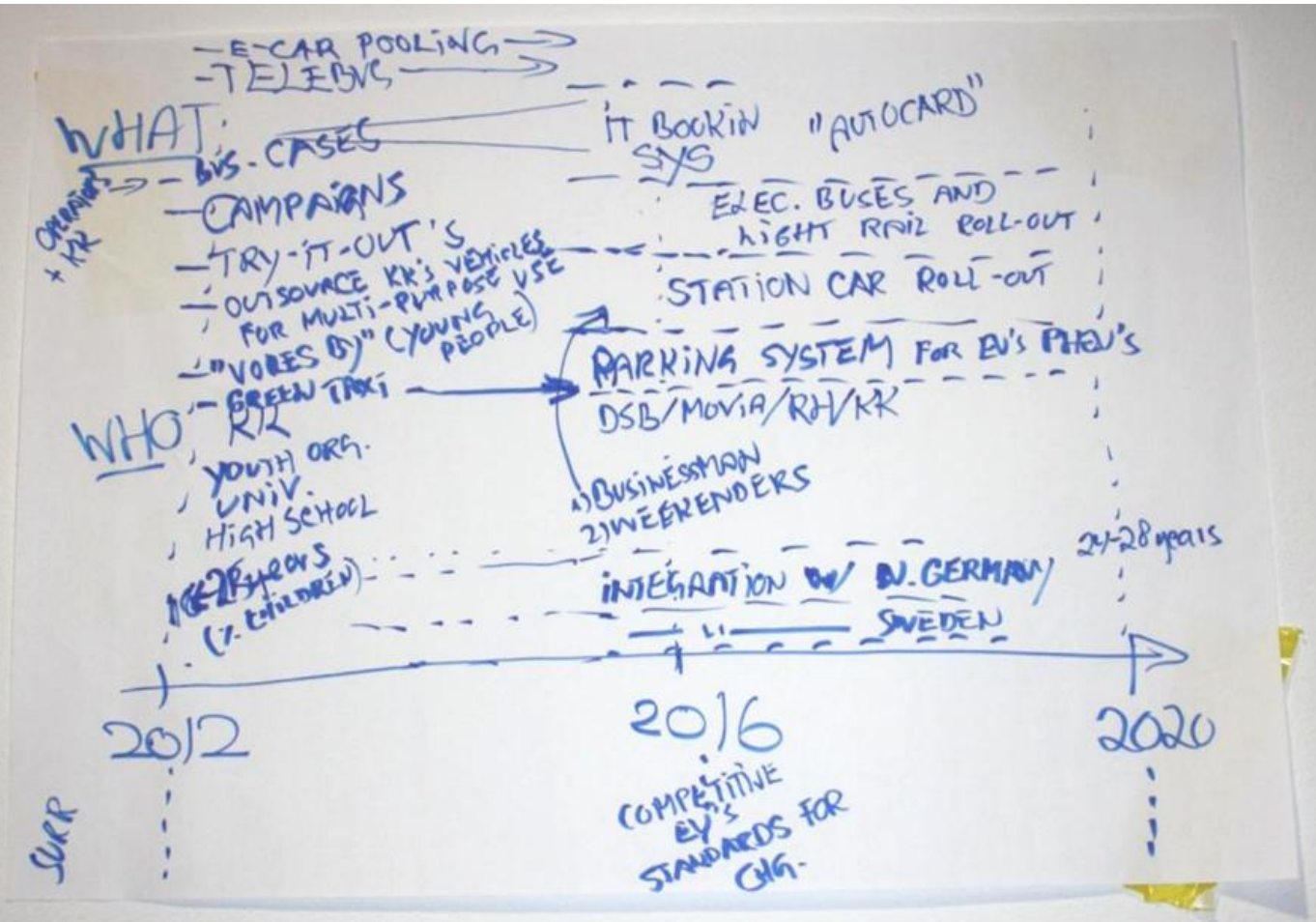
7. Annex - Group work posters

The critical and utopian phases led to 5 questions, which served as the base for discussing short term strategies for the introduction and promotion of e-mobility within the corridor.



7.1 Group 1 (Question 1+2):

Which initiative can make e-mobility the choice of consumers, and what can be done to make public transportation support e-mobility?

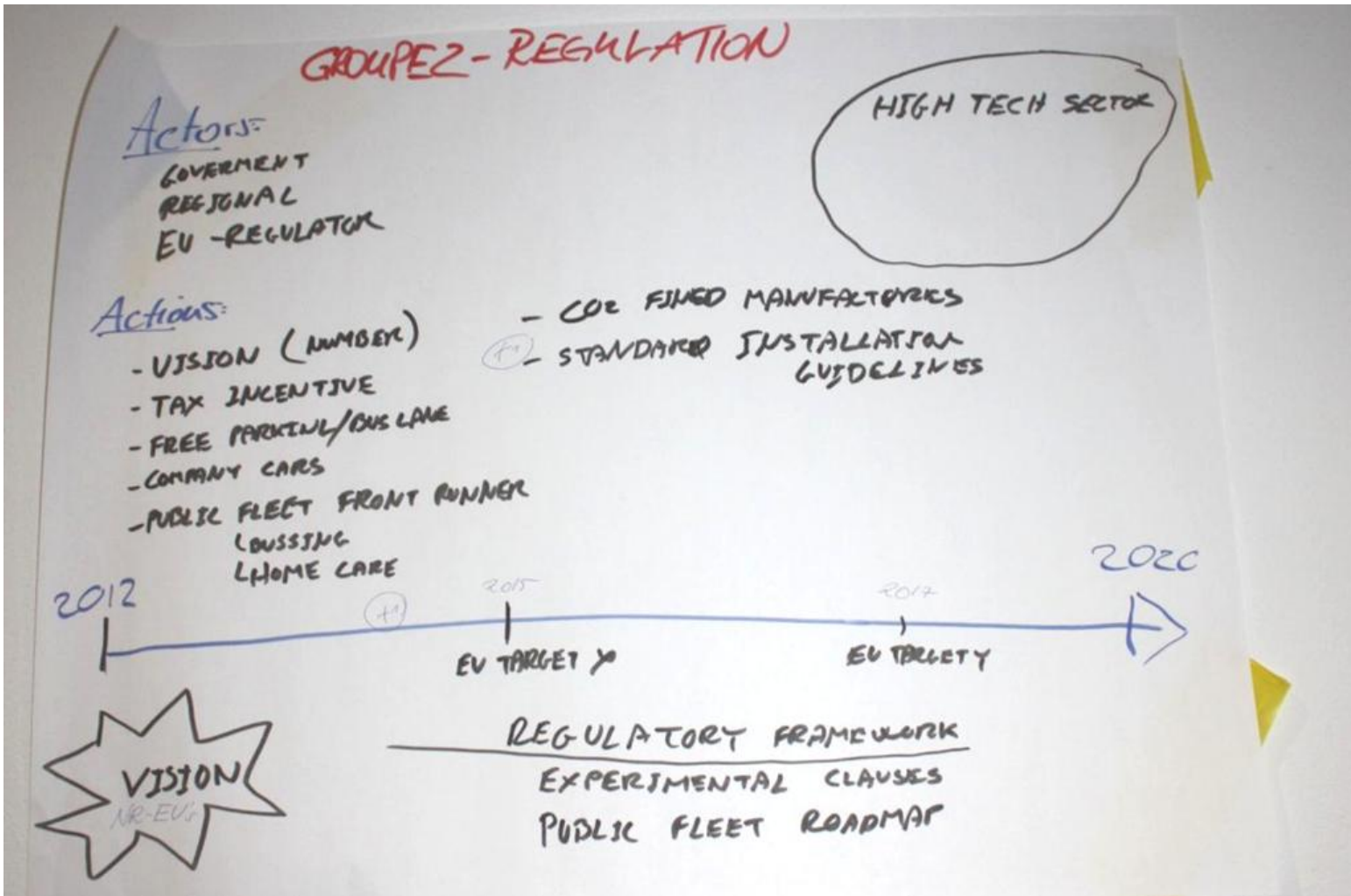




ØRESUND ECOMOBILITY

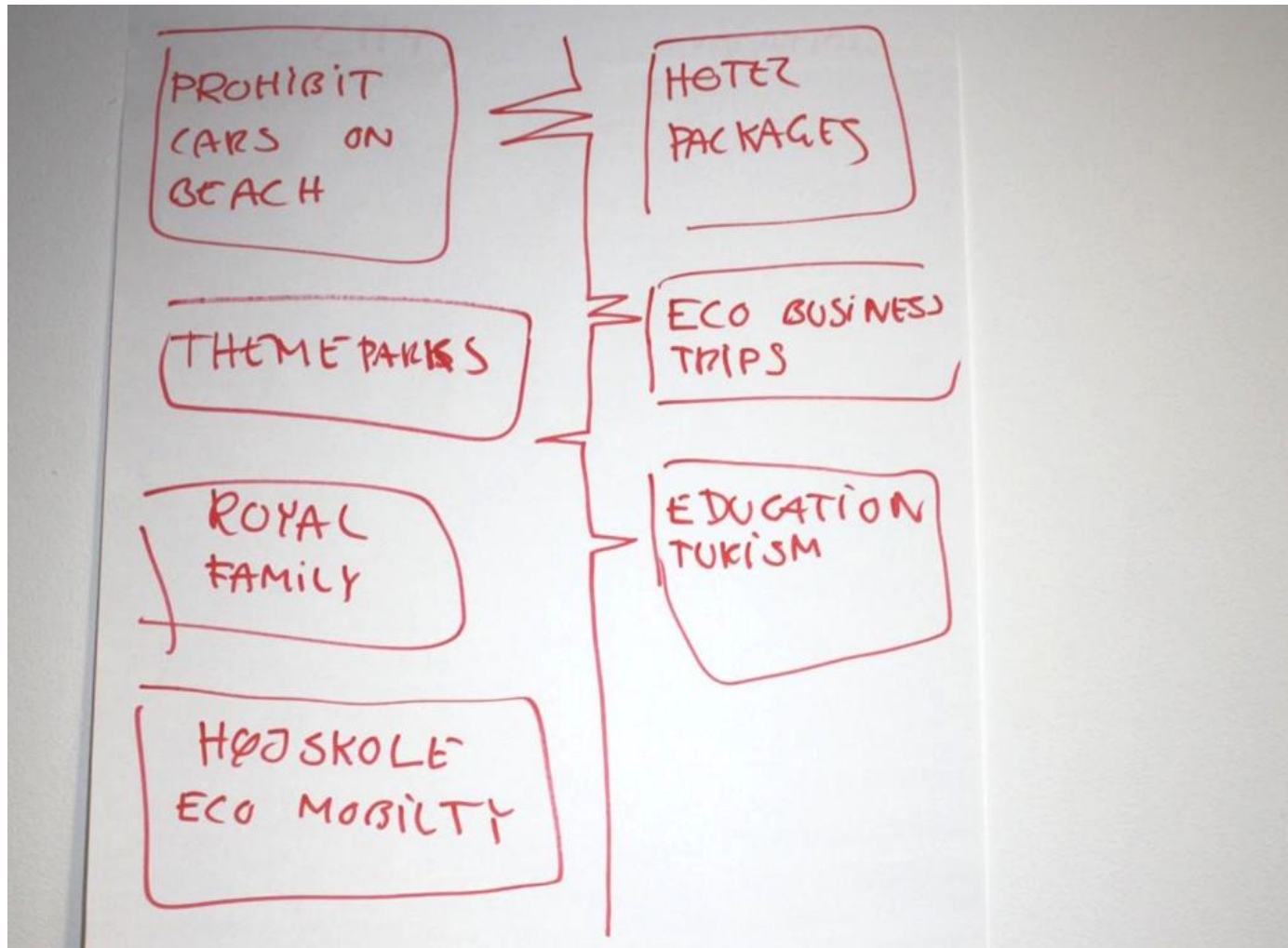
7.2 Group 2 (Question 3+4):

How can public regulation support e-mobility + how to get car-industry to drive e-mobility innovation?



7.3 Group 3 (Question 5):

What could be the role of tourism in promoting e-mobility?





This project is co-funded by



EUROPEISKA
UNIONEN
Europeiska
regionala
utvecklingsfonden



Interreg IVA
ØRESUND - KATTEGAT - SKAGERRAK