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Expert study on the state of the art in

## Municipal Electric Mobility Strategies

Outlines, scopes, elaboration processes and integration into  
strategic frameworks

Presented by:

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## Table of Contents

1. Introduction .....	3
2. Municipal E-Mobility Strategies in Europe .....	3
3. Case Study: Aachen, Germany .....	3
4. Case Study: Bottrop, Germany .....	7
5. Conclusions and Lessons Learned for ELMOS Cities on E-Mobility Strategies .....	10
Appendix: References, contacts and reading list .....	12



## 1. Introduction

This report was prepared for the partners of the INTERREG IVA project ELMOS. It looks at the state-of-the-art and current practices in the elaboration of multi-modal and intermodal e-mobility strategies in small and medium sized cities. The German cities of Aachen and Bottrop, both advanced in e-mobility planning and both currently developing e-mobility strategies, will be looked at. A list of references, contacts and suggested reading will also be provided. The report is based on the presentation and discussion of first results at the ELMOS International Expert Conference in Växjö, Sweden (8 October 2013).

## 2. Municipal E-Mobility Strategies in Europe

Implementing e-mobility measures is a first step towards sustainable low-carbon urban development. However, an e-mobility measure cannot stand alone but must be seen in the context of a city's overall development strategy, key targets and its unique mobility situation. Various European cities have already introduced and are promoting electric mobility measures. Research shows that cities regard the integration of e-mobility measures into existing frameworks as highly important. It also finds interdepartmental cooperation (environment, transport, energy and economy) crucial when implementing e-mobility measures.

However, e-mobility strategy development is still in an early phase. A great number of European cities have various e-mobility measures in place – but very few take a strategic approach towards e-mobility. Generally speaking, the smaller a city is, the less likely it is to have a municipal e-mobility strategy. Best practice examples of local e-mobility strategies that have gone through all stages from development, integration into existing frameworks to evaluation are not known to the authors to date. For this reason, the report looks at two cities which are currently developing e-mobility strategies in order to find out what works well and what lessons have been learned. Their strategy development processes will be analysed as well as the management structures and the level of integration of e-mobility into existing planning and frameworks. Special attention is paid to stakeholder involvement and citizen engagement.

## 3. Case Study: Aachen, Germany

### Background

The City of Aachen (260,000 inhabitants) is one of the German e-mobility pioneer cities putting focus not only on research and development of electric mobility technologies but also on the take-up and promotion of e-mobility measures. The movement towards electric mobility was initiated when the city administration, one of Aachen's universities and the local energy provider applied together as part of the Rhein-Ruhr region for the national Electric Mobility Pilot Regions programme. Along with Rhein-Ruhr, seven other model regions were supported within this programme funded by the Federal Ministry of Transport, Building, and Urban Development from 2009 to 2011. The programme aimed to stimulate cooperation on electric mobility between academia, industry and local authorities in order to make progress in



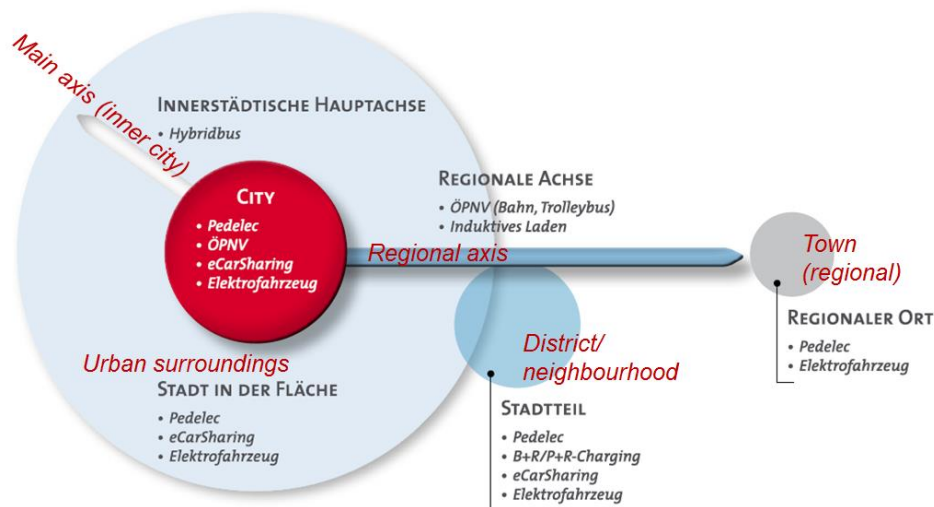


Figure 1: Potential areas of integration of electric mobility

Source: Aachen Task Force Mobilität (2011), p. 8; authors: ISB, RWTH Aachen

research and development but also to ensure that electric mobility is firmly embedded in the public realm (see Federal Ministry of Transport, Building and Urban Development, 2013). The application for the programme formed the basis for the e-mobility activities that followed in Aachen. The development of an e-mobility strategy was already included as one of the proposal elements. At that time, the local energy provider STAWAG was the key driver for establishing electric mobility in Aachen and still is one of the region's chief stakeholders.

### Management & Integration

In order to combine and concentrate all e-mobility related activities in the Aachen region and to steer the region's development towards electric mobility, an E-Mobility Task Force was established in 2010. Members of the task force were high level officials from:

- Aachen city administration
- CityRegion Aachen (association of the region's municipalities)
- Aachen's two technical universities (RWTH Aachen and FH Aachen), and the
- heads of six working groups: mobility, energy and environment, automotive engineering, infrastructure, manufacturing, economic development & media

The task force immediately started preparing a comprehensive strategy paper for the region in which it was clearly stated that e-mobility must be addressed with a holistic, integrated approach considering all steps and elements from, for example, regional technology development to energy supply for electric vehicles, mobility concepts and business models. The strategy defines the region's overall e-mobility goals as well as fields of action and suggests various measures to be taken. Further, the task force developed exemplary project ideas to foster Aachen's role as a model region (e.g. the development of an e-mobility network for the region, integrated ticketing, a public rental system for pedelecs, and the integration of e-mobility in a neighbourhood to be regenerated). Emphasis was also put on geographic interdependencies and where to strategically support which kind of electric transport mode. Spatial cooperation was addressed

and travel patterns and mobility needs of the region’s citizens and businesses were reflected (see Figure 1).

The task force’s approach towards e-mobility set the ground for the integration of electric mobility into the local mobility planning process. However, as it consisted of rather high ranking officials, the foundation for implementing the strategy and ideas they had in mind was lacking. As the strategy was not officially approved, financial resources for implementation were not available. As a consequence, the task force was dissolved and an E-Mobility Expert Commission established. The commission is larger than the task force and brings together representatives from the city, mobility service providers, universities, engineering companies, research institutes, the chamber of industry and commerce, political parties, local associations, energy providers and many more.

The e-mobility expert group now forms one of the eight commissions involved in sustainable urban mobility planning in Aachen (see Figure 2). In 2012, the eight commissions, totalling about 70 experts, jointly started to develop the “Aachen Mobility Strategy 2030”. The strategy development process is still on-going and is part of the development of Aachen’s new Sustainable Urban Mobility Plan (SUMP). E-mobility has been integrated as a horizontal thematic area on an equal level with the other horizontal themes including mobility management, accessibility & freight and road network & public realm. At the same time, all transport modes are addressed (walking, cycling, public transport, motorised private transport). The expert commissions regularly meet separate from each other but also all together.

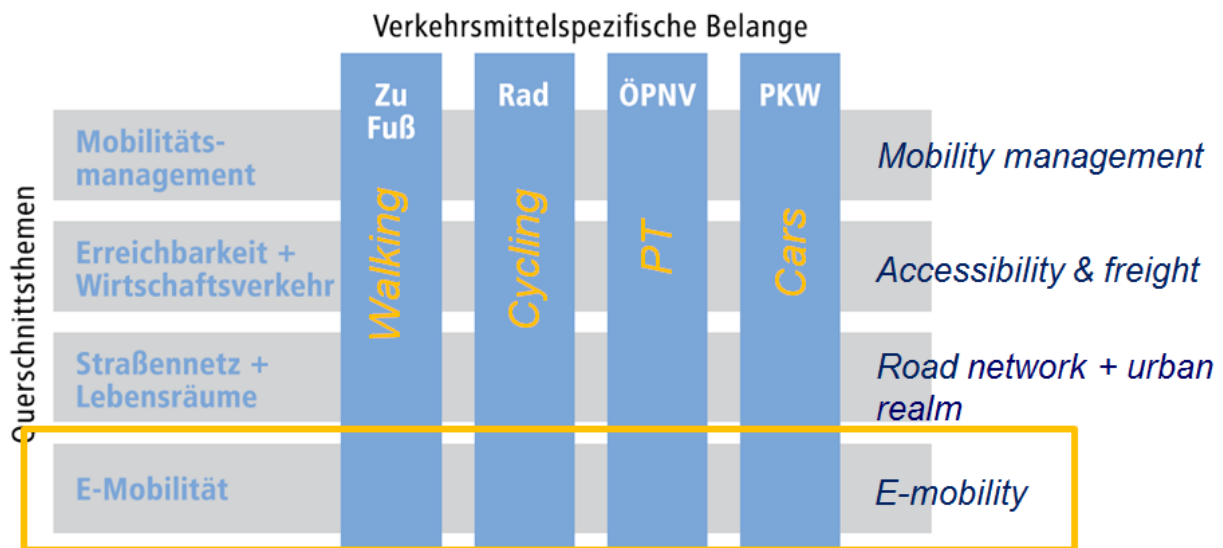


Figure 2: Aachen’s expert commissions responsible for sustainable urban mobility planning  
 Source: Verkehrsentwicklungsplanung Aachen ( 2013a)

## Strategy Development Process

Aachen is not developing a separate e-mobility strategy but integrates electric mobility as an equal element into the overall mobility strategy and the SUMP development process. As a result, it is ensured that e-mobility will be part of all relevant mobility planning processes.

### *Mobility survey*

A mobility survey conducted in 2011 prepared the ground for the strategy. As part of the Electric Mobility Pilot Regions programme, one part of the survey dealt solely with electric mobility. Participants were asked e.g. about their interest in electric mobility, their knowledge as well as their use and ownership of electric vehicles and what deters them from using or even buying electric vehicles. The responses were analysed and e-mobility priorities established. Based on the survey's overall results, work on the mobility strategy started in 2012.

### *Mobility visioning and mobility analysis*

The City of Aachen initiated a vision development process together with local institutions and stakeholders. They jointly developed visions for 2050 in all eight thematic areas and even visions for several subthemes within the thematic areas. Simultaneously, and with the help of the 2011 survey, the current mobility situation was analysed and published in a state-of-the-art report. Posters were then prepared comparing the current situation and the 2050 vision for the eight thematic areas (one of them being electric mobility). These were subsequently shown to the public.

### *Citizen participation*

In a citizens' workshop ("*BürgerWerkStadt*"), sustainable urban mobility planning and the strategy development processes were explained to citizens and the posters mentioned above were presented. By completing a questionnaire, citizens could vote how much they agree with the visions and add comments on both the 2050 visions and on Aachen's overall mobility future. The questionnaire was also available online for three weeks. After the voting and collection of opinions and ideas, the results were analysed and presented to the expert commissions. The overall approval rate was 80%; the detailed citizen feedback is currently being discussed.

### *Mobility strategy and action plan*

As a next step, the 2030 Mobility Strategy will be developed. It will identify how to achieve mobility aims and objectives in order to realise the 2050 visions. Strategy elements will be aims, indicators and targets; strategic fields for action; as well as monitoring and process management. At the same time, an Action Plan will be developed. The plan will also define financial resources needed and, in contrast to the 2011 strategy paper, will be officially approved and integrated into the municipal budget in 2014. It is seen as a crucial step to allocate funding to e-mobility in order to ensure strategy implementation.

### *Monitoring*

Continuous monitoring and evaluation of both the measures and of the overall process are planned.





Figure 3: Time planning of strategy development process  
Verkehrsentwicklungsplanung Aachen (2013a)

One of the key challenges still to be tackled in Aachen is to bring all e-mobility activities together. Even though the expert commission meets regularly and the city administration supports the local actors, a coordination unit is missing and funding for a coordination manager is not available as municipal resources are scarce. The vision and strategy development process is seen as an important element for motivation of stakeholders, politicians and citizens and as an awareness raising tool. As long as no overall coordination is feasible, working closely with media as well as supporting and promoting small-scale e-mobility activities have proven beneficial.

#### 4. Case Study: Bottrop, Germany

##### Background

Bottrop is a city of about 116,000 inhabitants which started participatory planning for electric mobility in early 2013 when they received national funding from the Federal Ministry of Education and Research for a “future workshop” initiative. The initiative aims to strengthen participation and cooperation processes between citizens, politicians, industry and science, thus developing sustainable cities. Bottrop used the funding to develop innovative e-mobility concepts for the city together with local stakeholders and citizens.



Slogan of Bottrop’s “future workshop” initiative:  
“Electric mobility becomes reality”



## Management

As part of the initiative, the City of Bottrop commissioned a consortium to develop e-mobility user concepts, strategies and recommendations for the city. The consortium consists of several research institutes, a technical university, a competence centre and associations all related to innovation research and electric mobility. Since public participation was one of the core elements of the initiative, a strategy and communication consultancy was subcontracted for the communication and strategy development in the participation process. The consortium reports back to the city administration which takes a rather hands-off role in this process. However, local stakeholders, the consortium and e.g. the transport department work closely together.

		Bottrop		
		100%	70%	
Deutschland	2020	100%	1.400	980
		75%	1.050	735
		50%	700	490
	2030	100%	8.400	5.880
		75%	6.300	4.410
		50%	4.200	2.940
		Anzahl Elektrofahrzeuge		

Figure 4: Calculation of electric vehicles required in Bottrop to meet national targets for 2020 and 2030  
 Source: ef.Ruhr GmbH, RIF e.V., NRW Kompetenzzentrum et. al., 2013, p. 8

As a first step in the process, the consortium had a closer look at the current mobility situation. This included the analysis of various indicators such as population characteristics, travel patterns, potential user groups, and the current number of e-vehicles, pedelecs and charging stations. They identified medium to high income individuals, tradespeople and service providers and the municipality itself as the key potential user groups in Bottrop.

Subsequent to the analysis, a quantitative e-mobility forecast was conducted. The numbers of electric vehicles and charging stations required to meet national targets and European guidance in 2020 and 2030 were calculated (see Figure 4). Both the analysis and the forecast then served as a scientific basis for interpreting the results of the participation process.

## Participation process

The two main elements of the citizen engagement and stakeholder involvement process were a visioning workshop and an “e-mobility made concrete” workshop organised and moderated by the communication consultancy. Both were based on developing new ideas and solutions to (e-) mobility problems and initiating creative decision-making. They aimed to start a dialogue with citizens and local stakeholders, to tackle behaviour change in mobility and to jointly develop e-mobility user concepts and implementation strategies. The participation process was communicated through various channels in advance such as through local media, posters and leaflets, online communication, e-mobility promotion events and an info box which is part of the InnovationCity Ruhr.

More than 100 citizens and representatives from various organisations, associations and companies participated in the first e-mobility vision workshop. Four working groups addressed the following thematic fields:

- charging infrastructure and energy
- being mobile by e-car, e-bus and pedelecs
- e-mobility from a societal perspective





- e-mobility and businesses

Participants discussed their ideas, which activities they would like to see put into practice in Bottrop and who would need to be involved. Subsequently, each working group developed a “vision of the future” and next steps to be taken. Based on the results of the first workshop, a scientific project team established four key thematic areas with several sub-themes to be addressed at the next workshop:

- charging: “always and everywhere”
- centralising mobility offers (information system)
- e-mobility & affordability
- information campaign and awareness raising

The second workshop, called “e-mobility made concrete”, aimed at elaborating on the ideas and themes of the first workshop and developing actual plans for the integration of e-mobility into everyday life. It was discussed how to centralise e-mobility (e-cars, public transport and pedelecs) and also how to raise awareness and promote electric mobility. It turned out, for example, that it was particularly important to the participants that the city administration/public transport provider electrify its own fleet, thus acting as a role model for citizens. As a result of the workshop, project profiles were developed and recommendations were made. These were then reviewed by the project team from a scientific perspective and recommendations, fields of action and responsible stakeholders were determined.

### Integration of results

Project ideas and final recommendations of the participation process are being integrated directly into Bottrop’s strategic transport plan and the Masterplan InnovationCity (Bottrop is also part of the InnovationCity scheme which addresses sustainable mobility among other issues). Although some ideas were indeed creative and innovative, not all of them were feasible due to regulations or the lack of financial resources (e.g. free parking for e-vehicles). Therefore, a sound filter process was required.



Figure 5: Workshop “E-mobility concrete”  
Source: <http://www.bottrop.de/stadtleben/umwelt/E-Mobilitaet/index.php>

The next step, the implementation phase, is now starting, requiring further funding. It is planned to continue working with citizens by establishing a citizens’ board. For the acquisition of future funding it is seen to be particularly helpful to be able to prove that the project ideas have evolved in a bottom-up manner and mirror the priorities set by the citizens.

Electric mobility was pushed in Bottrop and awareness was raised for more than a year and the project team can clearly see a spirit of public optimism now. While many citizens did not show much interest in e-mobility before and also did not know much about it, a more enthusiastic attitude has recently been identified. This was not only a result of the wide communication and media activities but also an effect of the participatory visioning and strategy development. Through the direct engagement, many citizens took ownership of the e-mobility project ideas.

### 5. Conclusions and Lessons Learned for ELMOS Cities on E-Mobility Strategies

This report has shown that the scope of e-mobility strategies and the development process depends very much on a city’s local situation. However, there are some elements that can be derived and identified as crucial for integrating e-mobility into local planning frameworks (see Figure 6). These range from the analysis of the current situation and the comparison with targets to be reached, to the development of a local action plan. The level of interaction with citizens and stakeholders, the cooperation on a horizontal, vertical and spatial level and the integration of visions, targets and measures into mobility and urban planning varies and depends on the city’s capacities, resources and also the composition of the stakeholder group. However, it does not necessarily depend on a city’s size – all suggested elements and activities can be addressed on both large and small scale.

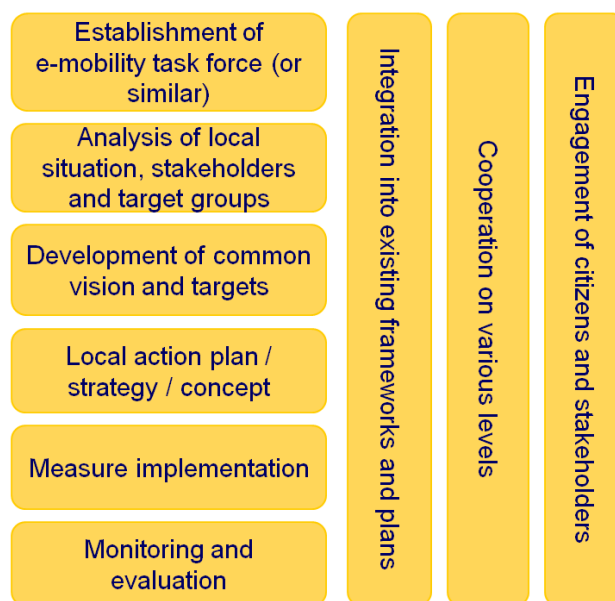


Figure 6: Potential elements of an e-mobility strategy development process  
Source: Rupprecht Consult

Lessons learned than can be derived from the case studies include the following:

1. *Develop your strategy step-by-step.* Developing an e-mobility strategy takes time. Agree on the scope of the strategy together with other planning departments, decision-makers and local stakeholders and identify which elements are required for your city. Also agree on the level of interaction and integration in advance.



2. *Ensure a clear distribution of responsibilities.* As electric mobility is a fairly new topic in local authorities, coordination and organisation activities as well as responsibilities must be defined. It does not matter whether it is a task force, an e-mobility manager or other arrangements – it just needs to be ensured that funding is allocated to a certain person or department for the coordination and integration of e-mobility activities.
3. *Treat e-mobility as an equal element in (transport) planning.* Electric mobility is closely linked to other areas such as research and development, housing, or accessibility. It also addresses several private and public transport modes. Therefore, it is important to integrate electric mobility as a horizontal element to your (transport) planning practices. Assess which of your city's plans or policy frameworks need to consider electric mobility (e.g. sustainable urban mobility plans, energy plans, housing plans).
4. *Identify relevant stakeholders for cooperation.* Cooperate with local stakeholders such as research institutes and universities, public transport providers, energy providers but also local associations. Define roles and responsibilities and establish an e-mobility network.
5. *Involve citizens in the planning process.* Regard interactive involvement as a chance to bring local stakeholders and citizens together. Participatory planning with citizens raises awareness of electric mobility, creates ownership and might even initiate behaviour change. Through citizen involvement, decisions for or against specific e-mobility measures can also obtain a significant level of public legitimacy.
6. *Look for scientific support and advice.* Scientific advice is of great value in strategy development processes and enhances the quality of decisions. It is objective and has a relatively strong influence due to the expertise and knowledge – which is extremely important as electric mobility also requires technical understanding.



## Appendix: References, contacts and reading list

### Contacts:

<b>Aachen</b>	Dr. Armin Langweg	City of Aachen	armin.langweg@mail.aachen.de
<b>Bottrop</b>	Dr. Jan Fritz Rettberg	TU Dortmund University	fritz.rettberg@tu-dortmund.de

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