

# Report on ELIPTIC Stakeholder Dialogue Workshops

<b>Deliverable</b>	5.7
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<b>Status (D: draft; F: final)</b>	F
<b>Document's privacy (Public: PU; Private: PR)</b>	PU
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 636012.

# SUMMARY SHEET

<b>Programme</b>	Horizon 2020
<b>Contract N.</b>	636012
<b>Project Title</b>	Electrification of public transport in cities
<b>Acronym</b>	ELIPTIC
<b>Coordinator</b>	Free Hanseatic City Of Bremen
<b>Web-site</b>	<a href="http://www.eliptic-project.eu/">http://www.eliptic-project.eu/</a>
<b>Starting date</b>	1 June 2015
<b>Number of months</b>	36 months
<b>Deliverable N.</b>	5.7
<b>Deliverable Title</b>	Report on ELIPTIC Stakeholder Dialogue Workshops
<b>Milestones</b>	-
<b>Version</b>	1
<b>Date of issue</b>	22-05-2018
<b>Distribution [Internal/External]</b>	External
<b>Dissemination level [Public/ Confidential]</b>	Public
<b>Abstract</b>	Six stakeholder dialogue workshops were organised and executed throughout the ELIPTIC project, each focusing on a particular issue regarding the implementation of ELIPTIC's use cases. The workshops were conducted using interactive formats, overall engaging almost 250 participants in discussions and offering expert insights into the challenges and opportunities presented within the ELIPTIC project. Finally, the workshops provided a basis for the development of policy recommendations towards the implementation of ELIPTIC'S use cases.
<b>Keywords</b>	Workshops, stakeholder dialogue, ELIPTIC, stakeholders
<b>Critical risks</b>	Lack of interest in participating in the stakeholder dialogue workshops.

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## DOCUMENT CHANGE LOG

Version	Date	Main area of changes	Organisation	Comments
0.1	25-05-2018	First draft	Rupprecht Consult	
1		Final version	Rupprecht Consult	

## PARTNER CONTRIBUTION

Rupprecht Consult is leader of the document.

Company	Sections	Description of the partner contribution
Rupprecht Consult	Entire document	Rupprecht Consult is leader of the document
Bremen SUBV	Entire document	<i>Review of document</i>

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# 1. Executive Summary

In order for future initiatives in other cities to capitalize on the knowledge gained and exchanged within the successful implementation of business cases in ELIPTIC partner sites, it is necessary to analyse the lessons learnt, to identify barriers and obstacles, and eventually transform these insights into practical guidelines, business models and policy recommendations.

One channel for this translation was the organisation and execution of targeted ELIPTIC stakeholder dialogue workshops. These dialogue workshops were designed in a format to offer expert insights (e.g. from policy, industry, energy sector etc.) and encourage candid discussion about the challenges and opportunities presented by ELIPTIC's use cases. The six dialogue workshops provided a basis for the development of ELIPTIC policy recommendations to tackle key issues and barriers encountered within the use cases. To ensure that each dialogue workshop was topical, the themes were defined over the course of the project, each focusing on a particular issue. The findings of the stakeholder dialogue workshops were consolidated and compiled into political recommendations, supporting the systematic take-up and implementation in the area of ELIPTIC's thematic pillars.

The workshops were organised by the three project partners Polis, VDV (Verband Deutscher Verkehrsunternehmen) and trolley:motion, whereby Polis organised four of the workshops, VDV and trolley:motion organised one each. The workshops were conducted using interactive formats, overall engaging almost 250 participants in discussions and offering expert insights into the challenges and opportunities presented within the ELIPTIC project. The following table gives an overview of the six stakeholder dialogue workshops conducted.

WS number	Date	Organizer	Topic	Place	Participants	Workshop details
1	18.11.2015	Polis	Electric Mobility: Cities - industry dialogue meeting	The Egg, Brussels, Belgium	45	Combined ZeEUS – FREVUE - ELIPTIC workshop at Polis conference
2	07.06.2017	Polis	Electromobility In Europe: Linking EU research & innovation	Rotterdam, Netherlands	47	Combined ZeEus – ELIPTIC - AVERE workshop

			with local expertise & deployment			
<b>3</b>	13.9.2017	Polis	Using PT electric infrastructure for charging urban e-freight vehicles	Barcelona	41	Combined ELIPTIC - FREVUE workshop
<b>4</b>	5.12.2017	VDV / City of Bremen	Thermal management in e-buses	Bremen, Germany	50	Combined VDV -ELIPTIC workshop
<b>5</b>	19.03.2018	Polis	Charging Infrastructure and Policy recommendations	Brussels, Belgium	40	Combined ELIPTIC – ASSURED – Clean Mobile Energy Workshop
<b>6</b>	11.04.2018	Trolley: motion	ELIPTIC workshop on Trolleybuses	Berlin, Germany	25	Combined Trolley 2.0 - ELIPTIC workshop

## 2. Description of Stakeholder Dialogue Workshops

The six stakeholder dialogue workshops each had different objectives, formats and thematic foci. In the following, each workshop will be described with special emphasis on the particular topics, discussions and outcomes of the workshops.

### 2.1. Electric Mobility: Cities - industry dialogue meeting (Polis, November 18, 2015, Brussels)

On November 18, 2015, ELIPTIC project partner Polis organised an industry dialogue meeting on electric mobility together with the FREVUE and ZeEUS projects. The meeting's objective was to allow for an open dialogue and exchange between local/regional authorities and private stakeholders in the area of electric mobility, considering current and future policies, products, implementation barriers, common needs and cooperation opportunities. 45 participants were provided with the opportunity to discuss aspects such as vehicle/charging infrastructure technologies as well as e-mobility schemes, policies and services.

The event started with a presentation by each of the different projects, as well as a presentation of Amsterdam Vehicle2Grid, and on the CIVITAS network, to set the scene. This was followed by a World Café in which 4 discussion rounds, each of 25 minutes, with discussion groups of 5-7 people, were formed. Each time a new group started a new thematic discussion, the moderator summarised the main points from the previous exchanges. Thus, every new discussion round considered the key questions raised in the session before.

The World Café session was divided into the 6 following topics:

Topic	Moderators
E-vehicle & infrastructure for passenger: policies, financing tools, legal framework and operational needs, energy provision and governance	VDI/VDE-IT
E-vehicle & infrastructure for freight: policies, financing tools, legal framework and operational needs, energy provision and governance	Cross River Partnership & Amsterdam University
E-vehicle & infrastructure for buses: policies, financing tools, legal framework and operational needs, energy provision and governance	UITP
E-vehicle availability: what is needed and what is coming. Smart services to optimise EVs fleets use & management	Rupprecht Consult
Multipurpose & use of existing EV charging infrastructure: concepts, technologies, legal framework (cross-sectoral). Life cycle costs	Rupprecht Consult
Electric vehicles participating in the electricity grid, controlled charging and other EV related Smart Grid developments	Resourcefully

The discussion rounds of the World Café highlighted many valuable points on the challenges and needs of cities regarding the electrification of multipurpose use of EV charging infrastructures. Some of the implementation barriers identified in the discussion rounds concerned grid capacities, range issues, overnight charging of buses, and industry readiness for supply and repair of vehicles.

During the ‘market-place’ session, all participants had the opportunity for detailed exchange regarding the products/services from industry partners. Further information regarding the projects presented at the beginning were also given. This exchange took place through short presentations/poster sessions while the attendees were having lunch. During the summary panel, all moderators reported on the main discussions and findings from each table, while the

participants had the opportunity to comment on this. Conclusions and recommendations from the day closed the meeting.



**Figure 1:** Introduction into the ELIPTIC project to workshop participants by Rupprecht Consult

### 2.2. Electromobility in Europe: Linking EU research & innovation with local expertise & deployment (Polis, June 7, 2017, Rotterdam)

The 2<sup>nd</sup> ELIPTIC stakeholder dialogues workshop was held on 7 June 2017, as part of a joint 2-day workshop organised by Polis with the projects AVERE France, ZeEUS and ELIPTIC, in Rotterdam. This workshop was organised as part of the CIVITAS thematic group on Clean Vehicles and Fuels, with the aim to promote the exchange of key policies and measures in the area of clean vehicles and fuels. 47 participants joined the stakeholder dialogue workshop.

After introductory presentations regarding the latest project activities of ZeEUS and ELIPTIC, the stakeholder dialogue workshop was conducted as an open session for cities and EU stakeholders in the format of World Café discussions. Two topics were discussed in parallel discussion groups, whereby the structure of two subsequent discussion rounds per topic gave each participants the chance to join both thematic discussions. The two discussion topics were:

- **Theme 1:** Which urban policies and urban planning can impact the deployment of e buses in your city? (LEZ, Special cost for energy, Urban space: rules for charging infrastructure)
- **Theme 2:** What are the existing plans for shared use of infrastructure? Would you anticipate any conflict between different modes and if yes, how to solve them?

In these two group discussions, workshop participants assessed and classified the most relevant indicators for buses in cities, while also discussing the following questions:



### Theme 1:

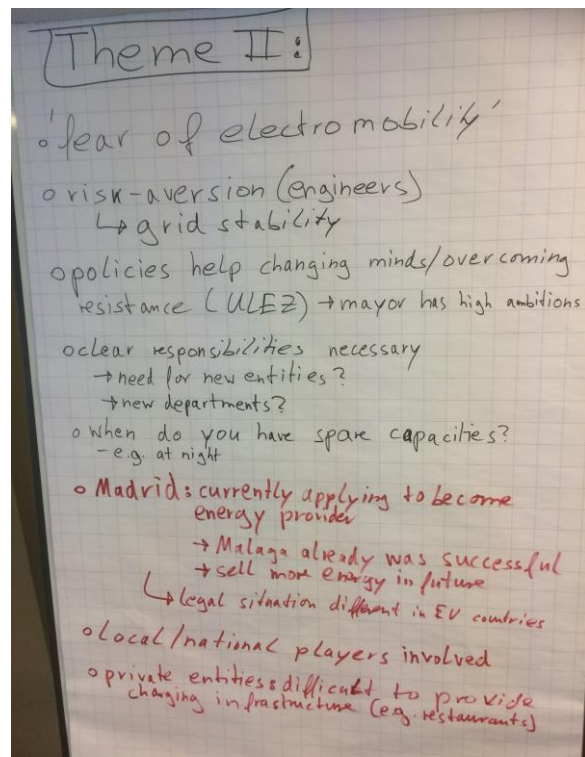
- Which urban policies are hampering the deployment of e-buses today?
- Which urban policies can encourage this deployment? i.e.: Are LEZ and ULEZ a good tool?
- How can a local authority support the cooperation process between the energy actors on one side (electricity provider, grid owner and energy regulator), and the PTA/PTO on the other side? i.e.: ensuring installation of charging points; ensuring energy cost stability?
- Charging infrastructure for e-buses in public space: what can be improved to support the stakeholders (i.e.: building permits, etc.)?

### Theme 2:

- What are existing plans for shared use of electric public transport infrastructure?
- Which stakeholders need to be involved (e.g. PPP)?
- Where should multi-purpose charging infrastructure be placed?
- Would you anticipate any conflict between different modes, such as metro, tram, e-bus, e-cars, and if yes, how will you solve them?
- What legal barriers do you foresee?

The main outcomes of the thematic sessions included impulses to clearly define roles and allocate responsibilities among actors for the local development of charging infrastructures. Participants expressed concerns about grid stability and urban space capacities, which are perceived as serious barriers to the implementation and operation of multipurpose charging infrastructures (see figure 2).

The presentations held during the workshop are available [here](#).



**Figure 2:** Flipchart showing the key points resulting from the Theme 2 discussion rounds

### 2.3. Using PT electric infrastructure for charging urban e-freight vehicles (Polis, September 13, 2017, Barcelona)

The FREVUE and ELIPTIC projects organised a joint workshop in Barcelona on the theme of "the use of electric PT infrastructure for charging freight vehicles". The workshop was followed by site visits in the city. Since Barcelona-based partners (BSM, TMB, CENIT and the city/LIVE platform) were involved in either the electric freight project FREVUE or the ELIPTIC project on the electrification of public transport.

The workshop started with an introduction by the host of the day, BSM, and was followed by an introduction of the two projects FREVUE and ELIPTIC. The case studies from the cities of Barcelona and Madrid highlighted the specific challenges related to the use of electric PT infrastructure for other purposes and related to charging electric freight vehicles in an urban environment. After the introductory presentations, the 41 workshop participants from cities all over Europe had the opportunity of a one-hour discussion with some of the ELIPTIC and FREVUE partners present in Barcelona.

The questions discussed at the tables were:

- Does your city/ organization use electric PT infrastructure for other purposes?
- Is freight considered? Or other types of uses (e-cars, e-bikes, etc.)?
- Do/ did you experience any difficulties? How to solve them?
- Cooperation between cities and other actors: what's the situation?
- Are your activities in a plan (SUMP, SEAP, etc.)?

After the discussion sessions, workshop participants were given the opportunity to join one of two site visits. One option was a visit at the TMB depot and its charging infrastructure, the other option was a visit to several charging infrastructure spots (off-street parking, bike-sharing station, on-street parking, etc.), located within or around one of Barcelona's SuperBlock. The presentations held at the workshop are available [here](#).

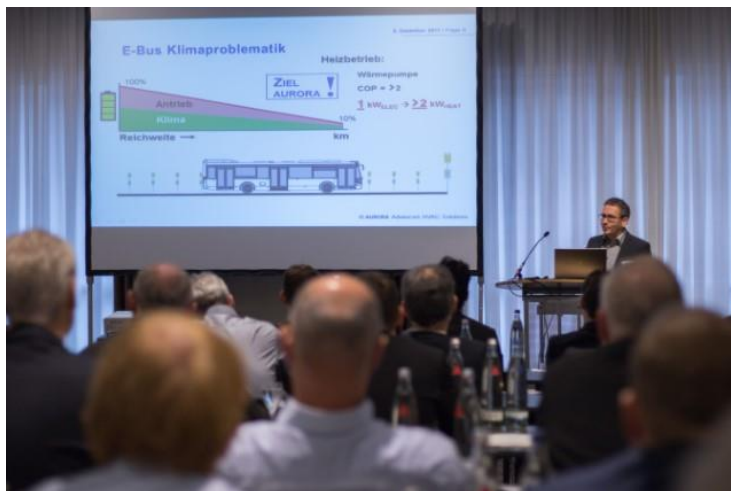


**Figure 3:** Impressions from the workshop introductory sessions and study visit.

### 2.4. Thermal management in e-buses (City of Bremen together with VDV, December 5, 2017, Bremen)

On 5 December 2017, the ELIPTIC project organised a workshop in Bremen on "Thermal Management of E-Buses" in cooperation with the German Association for Public Transport Operators (VDV) and the Free Hanseatic City of Bremen, bringing together leading experts from transport operators, public sector and industry. 50 participants from several German speaking cities joined the workshop, which addressed the questions of whether buses with a diesel-powered heater can truly be called zero-emission buses and how public transport operators can ensure an effective operation of buses while being committed to zero emissions.

The workshop started with an introductory session on the ELIPTIC project and the topic of heating in electric buses. In the next session, manufacturers of cooling and heating aggregates introduced their products and technical approaches to heating systems. A discussion round followed, in which questions and alternatives to diesel-powered heaters, such as bioethanol, were discussed among all participants. The workshop was concluded with a site visits of all participants to the BSAG bus depot in Bremen. The agenda of the workshop is shown in figure 5 below, and all presentations held can be downloaded [here](#).



**Figure 4:** Introductory presentations

Among the key outcomes of the workshop was the insight that consistent use of battery-powered heating or air conditioning systems in electric buses can reduce the range of the buses by up to 50%. These shortcomings are significant factors to be taken into account when planning for thermal management and zero-emission targets for buses, and compromises may have to be made in the early stages of e-bus deployment. Alternative thermal management systems are still in the developmental phase and only few manufacturers can currently provide buses with the operating daily range that the operators would like to see on the market. High expectations for zero-emission buses pose a great difficulty for public transport operators who

have to bear the high costs for e-buses. Even with available funding, the high expenditures are a barrier to meeting the zero-emission goals.



**Figure 5:** Excursion of workshop participants to the BSAG Bremen bus depot

### 2.5. Charging Infrastructure and Policy recommendations (Polis, March 19, 2018, Brussels)

On March 19, Polis conducted the 5<sup>th</sup> ELIPTIC stakeholder dialogue workshop in combination with the projects ASSURED and Clean Mobile Energy, which took place in the Polis office in Brussels. This workshop focused on charging infrastructure in cities as well as on the policy recommendations of ELIPTIC. Over 40 representatives of public authorities and other electro-mobility-related organisations attended the event.

From within the three projects, four cities presented their strategies and activities for electric charging infrastructure. Peter Swart from the City of Arnhem and Coordinator of Clean Mobile Energy opened the session with a presentation focused on the use of clean energy for electric mobility, he was followed by Angel Lopez from BSM Barcelona, who explained the overall charging infrastructure strategy and plan of Barcelona. Peggy Magnusson, from the municipality Gothenburg introduced the actions of her city regarding the electrification of mobility, including urban freight and public transport. David Talbot from TfL London closed this session with an overview of the ELIPTIC activities implemented in London on the multi-purpose use of the metro energy grid. This was followed by a presentation of the ASSURED project. All presentations held at the conference are available [here](#).



The second part of the workshop was dedicated to the presentation and validation of the ELIPTIC policy recommendations. Based on the main conclusions and recommendations of ELIPTIC, presented by Wolfgang Backhaus from Rupprecht Consult, the two topics “Electric PT as key ingredient for sustainable urban mobility” and “How to integrate electro mobility into your SUMP” were discussed between the local authorities and the ELIPTIC partners in two parallel interactive sessions. In the two sessions, workshop participants discussed the following questions:



**Figure 6:** Introduction to the ELIPTIC policy recommendations

### Factor 100: electric PT as key ingredient for sustainable urban mobility?

- What are your experiences
  - with e-bus pilots (best practices)?
  - with (joint) procurement?
  - with procurement of system “packages” (bus and charging infrastructure)?
- How to foster modal integration with a strong electric PT as a backbone (best practices)?
- What are your experiences regarding interoperability & upscaling (critical issues)?
- What is the perception of e-buses / electro mobility in your country / by your passengers/inhabitants? What do they appreciate most: Noise/particulate matter/CO2 reduction?
- How can the ELIPTIC Factor 100 campaign be beneficial for you? Could you use the campaign?
- Are there new obligations for PT operators? New services PT operators can offer (e.g. grid stabilization; but what happens when PT operators also become electric utility companies)?

### Good planning is half of the job: how to integrate electro mobility into your SUMP?

- Which planning / strategy document pushes the introduction of electro mobility in your country / region / city?
- Which governance models exist to ensure cooperation among needed stakeholders from different sectors?
- Do you have an electro mobility strategy / roadmap (do you know good examples)?
- Which regulations (from quota to access restrictions) and incentives foster the uptake of electro mobility in your country / region / city?

- How do you plan public charging infrastructure (best practices)?
- Electrification of public fleets: cities and authorities as pioneers (best practices)?

Some of the points emphasized within the discussion groups were that cooperation with the energy sector is considered a key element of integrating electro-mobility on a local level, whereby a combination of mobility concepts with energy concepts into a Sustainable Urban Mobility and Energy Plan is seen as a possible future solution. Furthermore, workshop participants discussed the general endorsement of e-buses by local citizens but agreed that reliability and efficiency of the electric systems are indispensable for passengers.



**Figure 7:** Summary session of the workshop

### **2.6. ELIPTIC Stakeholder Dialogue Workshop with a Trolleybus focus (Trolley:motion, April 11, 2018, Berlin)**

On 11 April, various trolleybus stakeholders came together in Berlin as part of the combined ELIPTIC stakeholder dialogue workshop on trolleybuses and launch of the new Trolley 2.0 project, to discuss current developments and promising innovations demonstrating that battery-supported trolleybuses are a way forward towards electric public transport systems in European cities. The stakeholder dialogue workshop was organised by the international association for trolleybuses, trolley:motion. The workshop was a great success with more than 24 participants, with backgrounds ranging from public transport operators, city authorities, research, industry and consultancies.

The workshop was kicked-off with a presentation by Mikołaj Bartłomiejczyk from Politechnika Gdanska who gave an overview on the technical aspects of in-motion charging specifying requirements, current limitations and perspectives of the concept. This was followed by a block of presentations from Ádám Németh (SZKT), Marcin Wolek (University of Gdansk) and Thoralf Knote (Fraunhofer IVI) presenting the results achieved by the three cities Szeged, Gdynia and

Eberswalde within the ELIPTIC project. The ELIPTIC business case and evaluation task leaders Diego Salzillo (Siemens) and Fabian Meishner (RWTH Aachen University) presented their findings on the trolley bus cluster including a total cost of ownership calculation and a comprehensive SWOT-analysis. The workshop ended with three presentations from the industry demonstrating innovative IMC projects (Marcel Manheller, Kiepe Electric) as well as solutions to allow for a smoother and cost-efficient operation of trolleybuses, e.g. through automated wiring technologies (Jan Messerschmidt, DiaLOGiKa) or systems to automatically detect maintenance requirements of trolleybus infrastructure (Wolfgang Lienhart, Kruch Railway Innovations). After each presentation, workshop participants had the opportunity to discuss the respective presented developments and innovations in the light of the ELIPTIC project objectives.



**Figure 8:** SZKT presenting their ELIPTIC project results achieved in Szeged.

The stakeholder dialogue workshop was followed by the launch of Trolley 2.0 - Trolley Systems for Smart Cities which is a project funded by the Electric Mobility Europe program in which many of the trolleybus partners from ELIPTIC will be continuing their work related to the upgrade of trolleybus systems. Trolley 2.0's aim is to prove that battery-supported trolleybuses are a way forward towards electric public transport systems in European cities, making use of the charging concept in-motion charging (IMC) which allows for the partial off-wire operation of hybrid-trolleybuses in remote sections of the networks.

### 3. Conclusion

The envisaged six stakeholder dialogue workshops were successfully conducted throughout the course of the ELIPTIC project. The organization and conduction of the workshops was assumed by the three associations of the ELIPTIC consortium, namely the association for e-bus systems trolley:motion, the German Association for Public Transport Operators (VDV) and the European city network Polis. The three workshop organizers were able to disseminate the workshop invitations to a large number of people through their respective networks.

The cooperation of workshop organisers with consortia of other related projects represents an additional benefit to the stakeholder dialogue events. The stakeholder dialogue workshops events were co-organised jointly with partners from seven other European research projects, namely Trolley 2.0, FREVUE, ZeEUS, ASSURED, Clean Mobile Energy, Amsterdam Vehicle2Grid and the CIVITAS thematic group on Clean Vehicles and Fuels/ AVERE France. These cooperations brought together stakeholders from several electromobility-related fields and enabled exchange on the different project approaches, best practices and project results.

Altogether, the workshops covered a broad range of topics related to electric buses and charging infrastructure, including EU policy on clean vehicles and fleets, multipurpose use of electric charging infrastructure, thermal management in electric buses, integration of e-mobility into SUMP and battery-supported trolley buses, thereby covering all ELIPTIC-relevant topics and research questions. The workshops were conducted in various interactive formats (e.g. World Café sessions), allowing participants to delve deeper into specific topics and actively engage in discussion rounds or brainstorming sessions. The exchange of experiences, concerns raised and opportunities identified during discussions were some of the most valuable outcomes of the stakeholder dialogue workshops. The discussions pointed out several existing barriers to the implementation of e-mobility solutions, such as low industry readiness for supply and repair, or the limiting effects on bus range when using battery-powered thermal management systems. Moreover, participants drew important conclusions for future implementation activities from some discussions, like the need for closer cooperation with the energy sector for local integration of e-mobility and charging infrastructures.

The workshops were designed in close connection to the development of the ELIPTIC policy recommendations. The workshop discussions pointed out important needs for policy changes, while, in turn, the topics identified for the ELIPTIC policy recommendations served as a discussion basis for subsequent workshops. The interactive discussion sessions also served the purpose to validate important project results and key lessons.

Having reached and engaged a total of almost 250 participants representing public transport operators, city authorities, research, industry, consultancies, and other electromobility-related organisations all over Europe, the ELIPTIC stakeholder dialogue workshops have left a lasting effect and can be considered a great success for the project and for future uptake of e-mobility solutions in public transport.