# *EMOBILITY* WORKS!
## Municipalities pave the way

e-MOBILITY WORKS

Co-funded by the Intelligent Energy Europe Programme of the European Union

***EMOBILITY* WORKS**
Integration of e-mobility in European municipalities and businesses (IEE/13/706/S12.675111). The project is **funded by the Intelligent Energy Europe Programme** (IEE) of the European Commission.

**AUGUST 2016**

If you are interested, please also visit the *EMOBILITY* WORKS website (emobilityworks.com) or have a look at the project video, which can be found on youtube as well as on the project website.



# CONTENT

# PREFACE

**The European Union** is a global forerunner of sustainable energy, prioritizing renewable energy, energy efficiency and low-carbon transport. This can be seen in its 2030 energy package which seeks to cut greenhouse gas emissions (GHGs) by 40%, assure 27% of energy come from renewables and increase energy efficiency by 27%. The EU is leading by example in building a sustainable low-carbon society helping achieve the ambitious goals set out in the global climate agreement reached in Paris last December. But much more needs to be done.

Sustainable mobility is crucial if we are to reverse global warming. Transport is responsible for around a quarter of EU GHGs making it the second highest polluting sector after energy. Road transport alone contributes about one-fifth of the EU's total emissions of carbon dioxide ($CO_2$). Today, urban transport is the only sector in the EU where greenhouse gas emissions continue to rise.

The European Committee of the Regions welcomed the European Commission's 2011 white paper which launches a roadmap for a Single European Transport Area and defining specific targets for 2050. This will contribute to a 60% cut in transport emissions by the middle of the century. I am particularly pleased also to see conventionally-fueled cars will no longer pollute our cities by 2050.

We need to streamline all EU policies and investment instruments to support local and regional governments in developing clean mobility. At the end of May in 2016 the EU Urban Agenda – through the Pact of Amsterdam - was adopted promoting the integration EU policy so that the different policy fields complement each other. The Committee was actively involved in shaping this important step how we co-create effective EU policy. Making e-mobility a success must therefore be taken hand-in-hand with other policy measures that create sustainable communities, such as promoting clean energy sources.

We also need to change our mind-set developing an entire transportation system based on "Mobility as a Service" (MaaS). In my home city, Espoo in Finland, we see huge potential for this. In summer we will extend the metro from downtown Helsinki to Espoo using one €1bn of investment. This will mean that our five city centers, of around 50 000 inhabitants each, will be served by rails – metro or train. We then plan to include electric buses and integrate different transport systems based on MaaS – moving to fully functional e-services. These are among the reasons why Espoo was ranked the first among 140 European cities in sustainability in a recent Dutch EU Presidency study.

The "*EMOBILITY* WORKS" project must be applauded as it fosters long-term commitment and support to municipalities in delivering e-mobility action plans and motivates other cities and regions to take action. Cities and regions are largely responsible for urban and regional mobility. Their insights must be heard and considered to move faster in decarbonising the transport sector. Creating support networks, engaging with local stakeholders and sharing knowledge and experiences through sharing best-practice is a necessary step on the road towards zero-emission clean transport.

**So let's move ahead!** Together we can build a better and greener Europe!

**Markku Markkula**
President of the committee of the regions

# EXECUTIVE SUMMARY

***EMOBILITY WORKS*** is a project funded by the **Intelligent Energy Europe program**, running from **March 2014** until **August 2016** and involving **12 partners from 10 European countries**.

**The project** aimed at **fully developing e-mobility potentials in European municipalities and businesse**s, primarily by elaborating so-called **"e-mobility action plans"** for participating municipalities. E-mobility action plans provide an integrated and holistic approach for the strategic and long-term integration of e-mobility on local level. Parallel to the elaboration of action plans (together with the participating municipalities), the project partners also intensely cooperated with businesses in the respective municipalities and regions. By doing so, synergies in the field of e-mobility between public and corporate bodies could be identified and deployed.

In total, project partners developed and finalized **28 e-mobility action plans** together with the participating municipalities and **consulted 152 businesses**. By doing so, the acquisition of more than 400 e-vehicles and more than 120 charging stations in European municipalities was triggered.

**This brochure** provides municipalities with **a guideline on how to best integrate e-mobility on local level**. Particularly experts and decision makers in the field of transport, mobility, infrastructure and sustainability are the target group of this brochure (e.g. fleet managers, traffic planers, building department managers, environmental experts, etc.). But of course, it also aims at political decision makers to give them a recommendation on where to start from if e-mobility is new to them. The **necessary steps to be taken are explained and complemented by a number of best practice examples**, each representing one of the countries participating in the *EMOBILITY* WORKS project.

# CHAPTER 1. E-mobility in a European context

In 2015, e-vehicles have - for the first time ever - exceeded the one million threshold (globally). Even though the biggest markets are Asia and the United States, also in Europe, registration numbers are rising steadily. However, the current status of e-mobility is presenting itself quite differently across Europe. The European Union nevertheless sets the direction by elaborating strategies and a legislative framework, guiding the members states towards are more energy-efficient transport system in the future.

Basis for development of the transport strategies and the correspondent legislative framework are various climate protection and energy efficiency goals, which have been set during the past years. The most important milestones are summarized in the table below.

| Strategies and goals | |
|---|---|
| **White paper on transport (2011)** | A roadmap of 40 initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. Goals also include no more conventionally-fuelled cars in cities by 2050. |
| **Clean power for transport package (01/2013)** | A package of measures to ensure the build-up of alternative fuel stations across Europe with common standards for their design and use. |
| **2030 climate and energy framework (10/2014)** | The 2030 climate and energy framework sets three key targets for the year 2030:<br>• 40% cuts in greenhouse gas emissions (from 1990 levels)<br>• 27% share for renewable energy<br>• 27% improvement in energy efficiency<br>The framework was adopted by EU leaders in October 2014. It builds on the 2020 climate and energy package. |

| | |
|---|---|
| **Framework strategy for a resilient energy union with a forward-looking climate change policy (02/2015)** | A European Energy Union will ensure that Europe has secure, affordable and climate-friendly energy. Wiser energy use while fighting climate change is both a spur for new jobs and growth and an investment in Europe's future. The publication of this strategy created a new momentum to bring about the transition to a low-carbon, secure and competitive economy. It also brings together a series of Commission reports and initiatives in an integrated way. |
| **COP21 Paris agreement (12/2015)** | The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C. The agreement is due to enter into force in 2020. |
| **Directives** | |
| **Directive on the promotion of clean and energy efficient road transport vehicles (2009/33/EG)** | The Directive aims at a broad market introduction of environmentally friendly vehicles. The Directive extends to all purchases of road transport vehicles, as covered by the public procurement directives and the public service regulation. The directive requires that energy and environmental impacts linked to the operation of vehicles over their whole lifetime are taken into account in purchase decisions. |
| **Directive on the deployment of alternative fuels infrastructure (2014/94/EU)** | Directive resulting from the clean power for transport package (see above), following the inter-institutional negotiations:<br>• Requires Member States to develop national policy frameworks for the market development of alternative fuels and their infrastructure;<br>• Foresees the use of common technical specifications for recharging and refueling stations;<br>• Paves the way for setting up appropriate consumer information on alternative fuels, including a clear and sound price comparison methodology. |

**Within the scope** of those European initiatives and developments, member states are now more than ever asked to steadily implement measures to enforce e-mobility. European ambitions are often supported by national initiatives, such as funding schemes, model regions, smart city projects, etc.

The following overview provides a short **outline** on the **status quo on e-mobility in the *EMOBILITY* WORKS countries**:

## Austria

Currently, there are 5.032 BEVs (M1) registered, with numbers rising steadily. A national funding program for corporate and municipal purchase supports this trend. Also legislative framework conditions improve, having resulted in a tax reform (valid since 01/2016), strongly supporting e-mobility for businesses. There is also an intense process going on, necessary to implement the directive on the deployment of alternative fuels infrastructure. Austria will furthermore develop a new climate and energy strategy in 2016 in order to reach the climate protection goals set during the COP21 in Paris, which will also comprise actions in the transport sector.

## Estonia

The Estonian Electromobility Programme entered into force in March 2011. As part of this program, the number of iMiev's for social workers has increased up to 545 and the total the number of e-cars (M1) has increased up to 1.141 by June 2016. The necessary infrastructure for quick charging e-cars was created to cover the whole country, thus 163 quick chargers are now to be found all over Estonia. Due to exhausting of funds, KredEx stopped accepting new applications for purchasing e-cars (a subsidy of 50% from the e-car price, with a maximum up to € 18.000 per e-vehicle, was granted, starting from 7th August 2014). This caused that only 34 new e-cars were purchased in 2015. In May 2015, the "Act amending the Traffic Act and the State Fees Act", which permits e- vehicles with a full-electric drive to use public transport lanes, entered into force.

## Finland

From 2011 to 2015, the national e-mobility development programme called EVE was active. The programme focused especially on launching pilots and demonstrator projects and on getting different stakeholders to work together. It funded several interesting development projects and additionally approximately 10 new start-up companies have emerged, the most notables ones being Liikennevirta Ltd. (charging operator) and Linkker Ltd. (electric bus manufacturer). The number of electric vehicles has risen steadily for the past

years in Finland and currently stands at 658 registered BEVs. However, currently both public and private sector wait for new national level support mechanisms in order for the investments in e-mobility to continue.

## Germany

As part of the "Vision 2020", Germany aims to have one million e- vehicles on the road by 2020. To achieve this target, the government has launched a buyer's premium of € 4.000 for e- cars up to € 60.000, coming into effect in May 2016. Together with the planned € 100 million investment in the charging infrastructure until 2017, annual investments in research and development of € 360 million as well as plans to replace 30% of the public fleet with e-vehicles, Germany hopes to become a role model country in e-mobility. Although there are still fairly few e-vehicles around, the number of new registrations has jumped to a new record level last year. In 2015, the Federal Motor Transport Authority reported 12.363 newly registered e-vehicles, an increase of 45% compared to the year before. In June 2016, there were almost 33.400 e-cars (BEVs) on the roads in Germany.

## Greece

E-mobility has been funded within the framework of the National Energy Efficiency Action Plan. However, currently there are no direct funding or subsidies for e-vehicles and recharging infrastructure available. E-vehicles are exempted from annual circulation and registration taxes and have free access to vehicle restricted areas in city centers. CRES, in cooperation with the Hellenic Institute

of Electric Vehicles (HELIEV) and the Ministry of Environment and Energy, has prepared an integrated technical study for the penetration of e-vehicles in Greece. Recent developments concerning the legislative framework for electricity utilization and possible tax deduction for e-cars is estimated to stimulate more drivers and fleet owners to purchase more e-vehicles. Finally, several municipalities in Greece have submitted an application in order to receive funding for purchasing e-vehicles and investing recharging station from renewable energy sources. According to the European Alternative Fuels Observatory, there are 139 registered PEVs (M1) in Greece at the moment.

## Italy

In 2014, the Italian Parliament approved a € 95 million subsidy program of incentives for buying e-vehicles. Despite a stable 11 % annual growth (from 2011 to 2014), the new e-vehicle registrations in 2015 increased by 31 %, with a promising sale of 1.500 e-vehicles (the total BEV passenger car registration number according to the European Fuels Observatory was 4.436 for Italy in June 2016). The Energy Authority subsidy program which was launched in 2011 was responsible for the installation of 1.000 charging points in nine Italian regions and is now almost accomplished. Besides that, Italy is also registering a number of spot initiatives of public/private charging point installations in medium to big sized cities.

## Romania

In Romania, authorities are dedicated to boost e-mobility. The Romanian Ministry of Environment made an important step in stimulating the e-mobility market proposing a grant of € 75 Mio. to stimulate the purchase of electric and hybrid cars and to develop charging infrastructure. By introducing a new "Rabla Plus" scheme of incentives, Romania provides subsidies for people who are looking to buy e-vehicles. The incentive is very promising as people are already attracted to buying an e-vehicle. Figures show that the market is constantly increasing. Reports say that more than 100 e-vehicles are registered and sales increased by 110% in 2015 compared to 2014. Drivers interested in buying an e-vehicle can benefit from up to € 4.440 in the form of an eco-ticket. The charging infrastructure also developed in a fast manner as currently there are 55 charging stations implemented in Romania most of them providing free charging. As the government rolls out the new scheme, which also provides subsidies for infrastructure projects, charging station companies are confident that the market will also know a fast development. In June 2016, the European Alternative Fuels Observatory counted 75 BEVs (M1) and 54 PHEVs (M1) in Romania.

## Slovenia

245 e-cars (BEVs) and 186 electric charging stations (out of which two are Tesla Superchargers and 30 are quick chargers) were registered in June 2016. At the moment more than half of them are to be found in the capital city of Ljubljana. In 2015, there were only 144 e- cars registered, so the trend shows a strong increase in numbers. The Slovenian environmental public fund gives national subsidies for buying electric vehicles, with up to € 7.500 for a new e-car, which is supposed to be a strong incentive and boost the market.

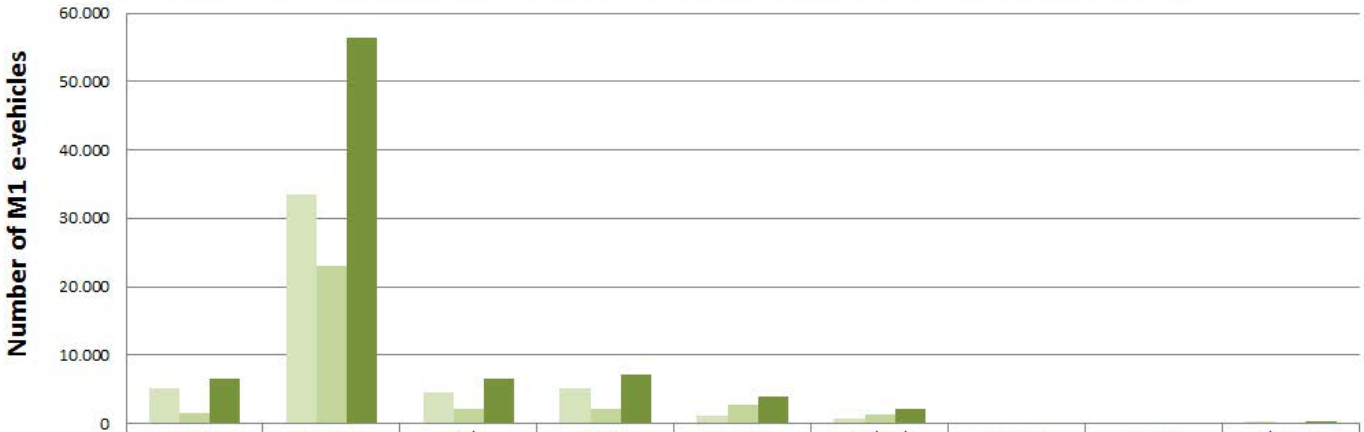
## Spain

There is clearly an increasing interest in relation to e-mobility. Although the market share is still very low (in 2015 the market share for e- vehicles and plug-in hybrids was 0,21 %), the sales are increasing significantly (from January to April 2016 the increase was 187%). Yearly national subsidies for the acquisition of e-vehicles/charging infrastructure since 2010 exist, but they are not continuous (duration is 6 months by year) and the total amount assigned has decreased from € 10 Mio. in 2013 and 2014 to € 4.5 Mio. in 2016. Currently, there are 5.041 e-cars (BEVs) registered across the country. The main challenges for the complete implementation of e-mobility in Spain are the lack of stability for a continuous national financial support, the need of simplifying/clarifying the legislative framework, the need of a wider network of charging infrastructure around the Spanish territory and continuous awareness-raising among the public.



**The following table** provides an **overview of the total number of registered BEVs, PHEVs and PEVs** (only M1 category) **in *EMOBILITY* WORKS countries**. The numbers are taken from the **European Alternative Fuels Observatory** (www.eafo.eu) and represent the latest numbers from June 2016.

**Total number of registered BEVs, PHEVs and PEVs in *EMOBILITY* WORKS countries**

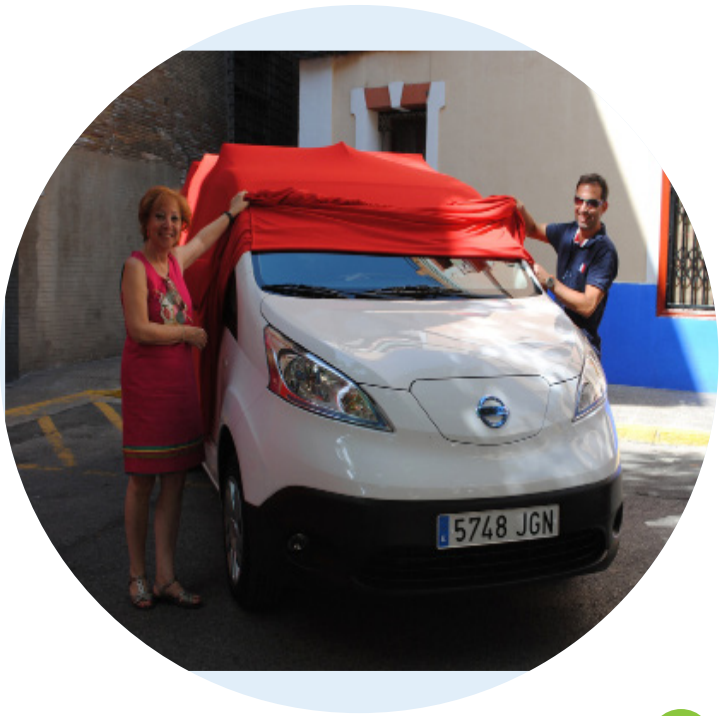



| | Austria | Germany | Italy | Spain | Estonia | Finland | Greece | Romania | Slovenia |
|---|---|---|---|---|---|---|---|---|---|
| BEVs (M1) | 5.032 | 33.398 | 4.436 | 5.041 | 1.141 | 658 | 119 | 75 | 245 |
| PHEVs (M1) | 1.512 | 23.102 | 2.035 | 2.106 | 2729 | 1.397 | 20 | 54 | 69 |
| PEVs (M1) | 6.544 | 56.500 | 6.498 | 7.147 | 3.870 | 2.055 | 139 | 129 | 314 |


**The table shows** that in absolute numbers, Germany is by far the leading country in registration numbers in *EMOBILITY* WORKS countries. The difference among the countries also becomes obvious when looking at the national PEV market share:

| Country | PEV market share | % BEV in PEV market |
|---|---|---|
| Austria | 0,14% | 77% |
| Estonia | 0,40% | 96% |
| Finland | 1,00% | 16% |
| Germany | 0,60% | 42% |
| Greece | 0,10% | 86% |
| Italy | 0,10% | 46% |
| Romania | 0,10% | 24% |
| Slovenia | 0,20% | 66% |
| Spain | 0,30% | 47% |

**Summarizing**, it can be said that even though the European framework accounts for all, **the status quo regarding e-mobility still differs immensly** among project partner countries. **Know-how transfer** between further developed countries and those lacking behind as well as **awareness-raising** (as it has taken place in the *EMOBILITY* WORKS project) is therefore essential in the coming years in order to enforce e-vehicles uptake.



# CHAPTER 2. E-mobility in a municipal context

**But let's go a level deeper!** Agreements and directives may offer a legislative framework, but the ones implementing e-mobility on the basis in Europe are the cities and municipalities which want to improve the quality of life for their citizens. Therefore, we need to have a closer look on what the concrete benefits and challenges for this target group are.

## What are the main advantages of e-mobility for municipalities?

- E-mobility results in reduced $CO_2$ emissions (subject to the condition that the energy comes from renewable sources) and also other air pollutants (such as fine-particles) are reduced, which is particularly important for urban regions
- E-mobility reduces noise emissions, which improves the quality of life in cities and makes living in the city more attractive
- E-mobility offers new and interesting technologies and future-oriented business models
- E-mobility is a chance for municipalities and cities to develop a green and sustainable image
- E-mobility provides a chance to re-think mobility as a whole, starting with the municipal fleet, over public transport to sharing systems, etc.

**E-mobility measures** are therefore not only necessary to live up to national or international law and standard, they are also a g**reat chance for each individual municipality to improve the quality of life as a whole**!

But of course, e-mobility also requires re-thinking in some ways, as the technology and also its use differ from conventional combustion engines.

## What are the challenges of e-mobility today

and how should municipalities cope with them?

- Acquisition costs of e-vehicles are usually still higher than costs for conventionally fueled vehicles. This, however, strongly depends on the country (differing funding schemes, tax systems, etc.). Special awareness-raising regarding reduced maintenance costs and additional advantages, such as image improvement, must therefore be the focus.
- Apart from models such as Tesla, there is still a range limitation, which requires awareness-raising and learning by the users of e-mobility. As e-mobility is not suitable to replace all conventional vehicles, municipalities need to find sensible substitution cases. This can be done by carrying out respective fleet, infrastructure and mobility behavior analysis.

**E-mobility is not the mobility of the future any more it is already part of the presence.** Also, we simply don't have an alternative, given the fact that fossil fuels will be ending eventually and an intact environment is the best investment we can make. Or, as Elon Musk (founder of Tesla) puts it, *"Some people don't like change, but you need to embrace change if the alternative is disaster."*

**Now let's get ready for e-mobility in your municipality!** If you want to enforce e-mobility locally, the following chapter provides you with a **guideline on how to set up an e-mobility action plan**: an individual and long-term plan, based on a status quo analysis and comprising those measures which promise to be most successful when implementing e-mobility in your municipality.



# CHAPTER 3. How to set-up an action plan

**A smart integration of e-mobility** on municipal level requires combined forces and competences. Even though isolated solutions (such as installing a charging station in front of the town hall) are nice, municipalities need an **integrated strategy** when dealing with e-mobility if they want to get the most out of this new technology in the **long-term**.

The so-called **"e-mobility action plan"** follows this holistic approach. It is based on a **status quo analysis** of the respective municipality. Subsequently, **vision, goals and concrete measures** are developed with a **team of relevant local stakeholders**. In order to ensure the effectiveness of measures, this process is **accompanied by experienced mobility consultants**. This external (and politically neutral) support opens up new possibilities, because it is easier for the respective municipality to put aside everyday politics and see the "big picture".

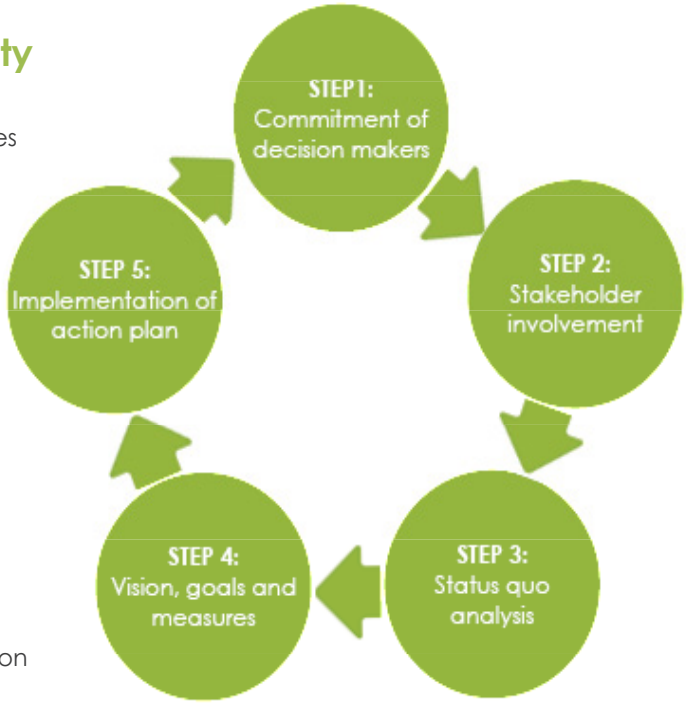
**The main benefits of an e-mobility action plan** for the municipality are:

- **Integrated approach:** The goals and measures defined in the action plan are matched with existing strategies and activities, such as energy strategies, transport concepts, sustainable urban mobility plans, etc. This ensures that there are no diverging goals and synergies between strategies are fully used.
- **Long-term perspective:** The action plans encourage long-term thinking, thus preparing the municipality for the challenges of the future.
- **Obtaining a broad consensus**: By integrating all relevant stakeholders in the set-up process of the action plan, a broad support for the defined measures can be ensured. This alleviates the implementation afterwards.

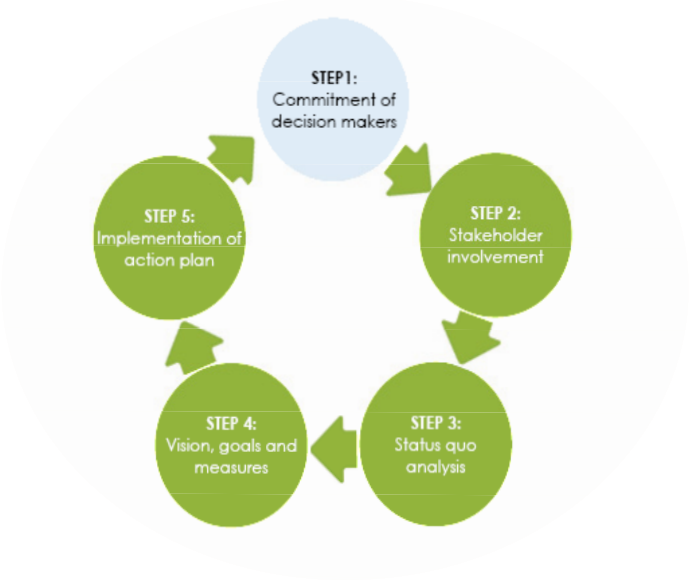
The graph illustrates the **process necessary for the development of an e-mobility action plan**. In the course of the following chapters, the single process steps are firstly described and then complemented by using examples of participating municipalities within the *EMOBILITY* WORKS project.

Step 1 is particularly well represented by Austria and Slovenia, step 2 by Germany and Greece, step 3 by Finland and Estonia, step 4 by Spain and Romania and step 5 by Italy.

**If you are interested in integrating e-mobility in your municipality**, we warmly invite you to follow this approach. Numerous examples across Europe show that it is an efficient and effective way of integrating e-mobility in the long term. The *EMOBILITY* WORKS project partners (see chapter "Partners and contact") remain at your disposal if you are looking for external experts to support your ambitions.



# STEP 1 - Commitment of decision makers




**Step 1:** The commitment of local decision makers lies at the core of the action plan development. Municipalities which want to set up an e-mobility action plan need to have an intrinsic interest in improving the quality of life in their region. This interest can be ecological, of course, but it can also be economic, e.g. using e-mobility to create a USP for a touristic region. Committed local decision makers are crucial for the subsequent implementation of the measures defined in the e-mobility action plan. Involving the top local decision makers in the set-up of the e-action plan from the very beginning onwards ensures implementation of the action plan measures in the long-run.

**Result of step 1:** Officially committed local decision makers who are eager to integrate e-mobility in their municipality and are aware of the e-mobility advantages.

**But what can be done to ensure the commitment?** Local decision makers need to be aware and convinced of the advantages e-mobility can provide for their municipality. This can be achieved by various means of **awareness raising** and **information work**, such as: face-to-face talks between decision makers and (e-) mobility experts, test events, elaboration of respective information material, etc. Experience has shown that particularly test events are a very successful instrument to ensure commitment.

# AUSTRIA

**The municipalities Schladming, Feldbach and Kapfenberg** participated in *EMOBILITY* WORKS. Schladming represents step 1 particularly well: As one of the most important tourist destinations in Austria, the municipality knows from previous activities how important investments in sustainable transport are in order to provide the tourist with the best environmental quality possible. And this is closely linked to clean air and as little noise pollution as possible. The necessary commitment was therefore present from the very beginning and the political leadership strongly supported the e-mobility ambitions. Overall, the main project results in Austria comprise the set-up of three e-mobility action plans, resulting in more than 180 new e-vehicles and 13 new charging stations, accompanied by numerous dissemination activities, events and business consultations.

**Jürgen Winter, mayor of Schladming:** *"As one of the most important tourist destinations in Austria, we have a special responsibility and we are obliged to set appropriate milestones - also in the field of e-mobility. The e-action plan is particularly important to us, as now we are all even more strongly involved and we were able to define the next steps into an e-mobility future. From Schladming, we want to spread the positive aspects of e-mobility to the rest of Austria."*

NEUE STADT FELDBACH

KAPFENBERG SPORT INDUSTRIE LEBEN

Schladming

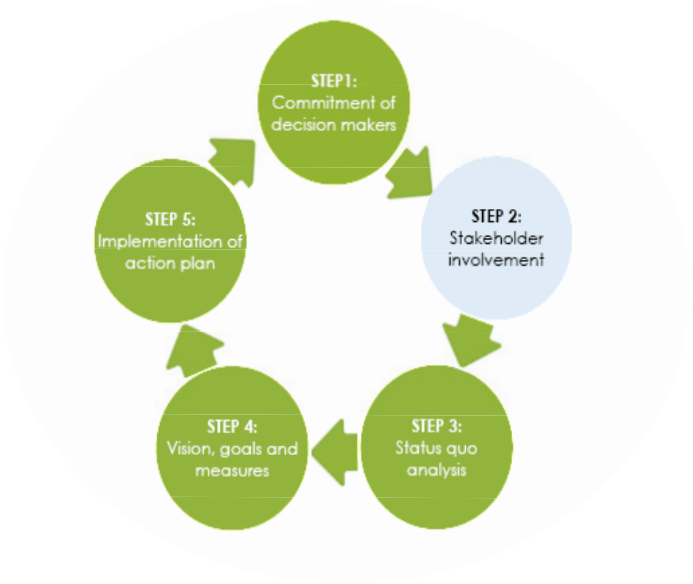
# SLOVENIA

**Municipalities in Slovenia** may have financial problems, but they are still very committed to work actively in the field of sustainable transport, as they know about the importance of e-mobility regarding the future and the quality of life in their regions. The Slovenian municipalities involved have made a big step forward and have already started to implement the e-mobility action plans: Maribor, Radlje ob Dravi and Slovenska Bistrica. They consider the integration of e-mobility as a basic development goal. Radlje ob Dravi linked e-mobility to its social development plans and uses e-vehicles to improve mobility of old people. Maribor's first steps are towards public e-buses and more charging stations around the city. Slovenska Bistrica analyzed possibilities of e-vehicles in the municipal fleet in order to make it more energy and cost efficient. The involved municipalities show that intense top - down as well as bottom - up commitment is needed to be successful with e-mobility.

MESTNA OBČINA MARIBOR

OBČINA SLOVENSKA BISTRICA

# STEP 2 - Stakeholder involvement




**Step 2:** In order to guarantee broad acceptance of e-mobility measures, a network of local stakeholders is set up. This network primarily comprises municipal and business representatives, but also representatives from various interest groups (e.g. tourist associations, NGOs, etc.). Involving all relevant local stakeholders generates interdisciplinary cooperation and ensures a target-oriented definition and subsequent implementation of e-mobility activities, meeting local needs and visions.

**But how to achieve stakeholder involvement?** First of all, it is important to **identify the key players** in a municipality and **set-up a local action team** with those key players. Local action teams should comprise about 5 to 10 people (depending on the size of the municipality) and the involved people should cover all e-mobility related areas in a municipality, such as: fleet or facility managers, traffic planners, building and construction experts, energy experts, etc. However, key players must not necessarily be directly involved in topics on (e-) mobility, transport or energy, they may also function as **opinion leaders** and should therefore be involved in the stakeholder network as well. Additionally, it needs to be ensured that not only municipal representatives are part of the network, but also other areas are covered, such as the business sector, the tourism sector, NGOs, etc. Applying the method of a **stakeholder landscape** can be an effective way of identifying who the most important local people are.

**Once the network is set-up,** a workshop or kick-off event is needed, in which the action team members **define their common vision on e-mobility** for the municipality. The local action team will subsequently (see following steps) elaborate the action plan in the course of a workshop series.

**Result of step 2:** An engaged local network, representing the municipality as well as other interest groups, which is willing to contribute (to different extent), to the subsequent e-mobility action plan set-up and implementation and which has a common vision regarding e-mobility.

## GERMANY

**The three small to medium sized cities** Eberswalde, Hohen Neuendorf and Iserlohn participated as pilot municipalities. The inclusion of various local stakeholders from the very beginning onwards is considered one of the strongest assets in their e-mobility concepts. Iserlohn, for example, works closely together with car dealers, who actively promote information on e-mobility and offer test-drives for interested citizens. By doing so, the car dealers can prepare their businesses for the future market and gain customer loyalty at a very early stage, as well as being an important source of information. Another example is the launch of a project initiated by Iserlohn public utilities and a provider of charging solutions. The aim is to ensure an extensive network of charging points in Iserlohn.

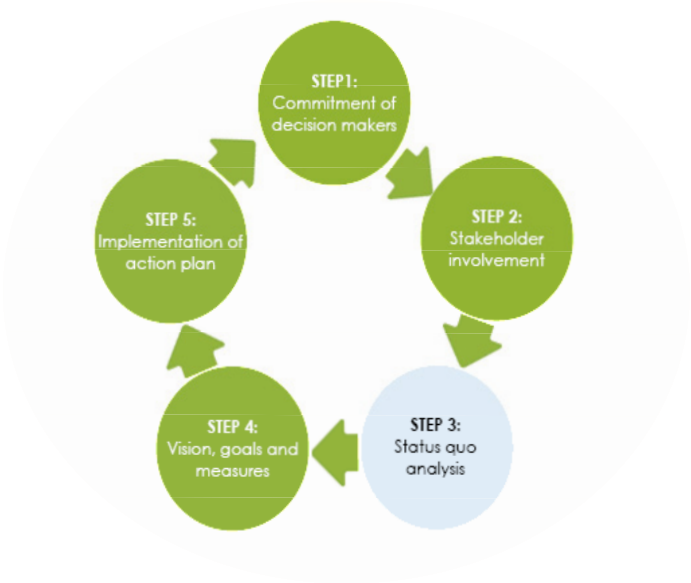

**Ulrike Badziura, Head of Department Climate and Environment, Iserlohn:** *"For our city, promoting e-mobility brings great benefits: Citizens profit from cleaner and quieter mobility, companies profit from new business opportunities and the municipality is meeting its local energy efficiency and climate protection targets."*

**Malte Stöck, Climate Manager, Hohen Neuendorf:** *"For a town next to Berlin, mobility is very important. Electric cars, e-bikes, charging stations and networking mark the beginning of a new era. The field of urban mobility has become much more varied, but changing consumer habits is complex and demands a dedicated society as well as committed players on all levels."*

## GREECE

**Five municipalities** participated as pilots: Trikala, Lykovrisi-Pefki, Chalki, Thessaloniki and Alexandreia Imathias actively supported the objectives of the project with action plans and the purchase of e-vehicles for their municipal fleets. This could only be achieved by intense stakeholder involvement from the beginning onwards. By doing so, Thessaloniki, for example, has obtained four electric small garbage trucks for the municipal cleaning services and in Alexandreia Imathias, two e-cars were acquired for the municipal employees. All municipalities which were part of the project, have identified e-mobility as an important and sustainable mobility option and plan to invest in various types of e-vehicles. *EMOBILITY* WORKS was presented in many dissemination events and a substantial amount of local stakeholders and businesses have been informed about the goals of the project. Some of them have also been consulted in order to integrate e-mobility in the future. However, there is still limited information about the advantages of e-vehicles for municipalities and businesses available. In order to bridge this gap, CRES has organized a national event to foster the promotion of e-mobility. More than 210 attendants, including the Minister of Environment and Energy, 50 municipalities, businesses and stakeholders were informed about the legal framework, advantages and business opportunities of e-mobility along with the presentation of e-vehicles types. This triggered the establishment of a National E-mobility Committee.

# STEP 3 - Status quo analysis




**Step 3:** Looking closely at the starting point of (e-) mobility in a municipality is an integral part of the action plan development process. The status quo analysis provides a comprehensive picture of mobility and it further provides a detailed check of the municipal fleet. This information is necessary when estimating the potentials and impacts of e-mobility and formulating the e-mobility action plan.

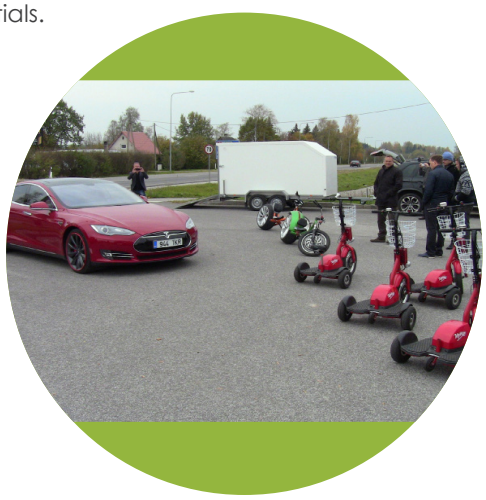
**But which information is needed** for a thorough status quo analysis? In order to be able to best identify the e-mobility potentials in a municipality, the analysis should at least comprise the following fields:

- **Short description of the municipality**: km², inhabitants, topography, political setting, number of businesses, main points of interest, etc.
- **Background data on local mobility**: modal split, level of motorization, availability of public transport, etc.
- **Background data on local energy supply** and renewable energies in the municipality
- **Report on the current development status of e-mobility**: how many municipal, corporate or private e-vehicles are there, how many charging stations and where are they located, etc.
- **Detailed information on the municipal fleet**: average mileage, average path length, age, fuel costs, etc. per vehicle
- **Detailed information on local mobility infrastructure**: cycling paths, parking spots, etc.
- **Report on political or legal framework conditions**: is there free parking or charging for e-vehicles in the municipality, any other special rules for e-vehicles, what energy / mobility strategies already exist, etc.
- **Report on awareness raising projects or other e-mobility related projects** which have taken place so far
- **Report on mobility behavior of municipal employees**: how are business trips handled, share of e-vehicle owners, etc.

The status quo analyses can be carried out by members of the local action teams, by external experts, or a combination of those.

This information allows to set up an e-mobility **SWOT analysis** for the respective municipality and to **identify the e-mobility potentials and impacts of e-mobility measures**.

**Result of step 3:** A finalized status quo analysis, which gives details on the current status of (e-) mobility in the respective municipality and which functions as a basis to identify the biggest e-mobility potentials.



## FINLAND

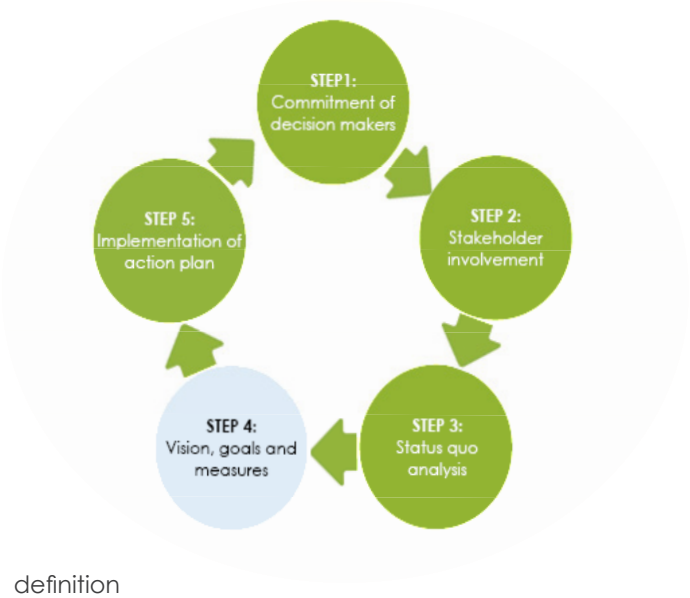
**Four municipalities** took part in the *EMOBILITY* WORKS project: Turku, Tampere, Lappeenranta and Kotka. The project partners carried out intense fleet analyses (as part of the status quo analyses) in Turku and Lappeenranta. Based on the available vehicle information, an estimation on which of the current conventionally fueled vehicles could be replaced with e-vehicles was made. Interestingly, in Turku almost 40 % and in Lappeenranta about 25 % of the vehicles could be replaced with e-vehicles. It should be noted that in most cases daily total mileage or long one-way trips were not the main barriers, but the special needs that municipalities have for the vehicles (e.g. heavy duty, four wheel drive). Generally, the two municipalities of Turku and Tampere both have set quite ambitious goals regarding e-mobility for the next few years. Both of them have started to build charging stations, they have acquired their first e-cars and are about to include e-buses in their operational fleet in 2016. E-mobility has been integrated in their organizations as well. The two smaller municipalities Lappeenranta and Kotka on the other hand, have only identified the importance of e-mobility in the future, but have done relatively little implementation so far. They need to start investing in e-mobility in order to boost the sector.

## ESTONIA

**The cities of Tartu, Kuressaare and Rakvere** participated in the project. In Tartu, the e-mobility action plan (as part of the Transport and Development Plan) started off with an in-depth analysis of e-mobility in the municipality. Tartu compared charging systems for e-busses, assessed parking places for e-bikes and the overall necessity of e-vehicles. The *EMOBILITY* WORKS partners helped to compare charging systems for e-busses. Main result was that e-busses cannot yet compete with vehicles which use diesel or methane gas. However, e-vehicles for commercial use proved to be rather competitive. As a result of the status quo analysis, Tartu will start creating parking spaces for e-bikes in pre-selected locations. Rakvere city also plans a smart street concept, which includes overnight charging points in street lighting posts. In Kuressaare city (capital of Saaremaa island), there are visions about producing all needed renewable electricity for e-vehicles on the island from solar energy and biomass.

Also in future, the cities will switch service fleet vehicles to e-vehicles. In the course of *EMOBILITY* WORKS, also companies have been consulted. One of the biggest corporate e-mobility success stories in Estonia is a private taxi company running solely on e-cars. The company has also carried out a fleet comparison using *EMOBILITY* WORKS tools. With up to € 18.000 CAPEX support from KredEx in 2014, the company has expanded by 100% annually since 2012, resulting in 160 employees in 2016. The e-taxi business proves to be a success story for e-mobility, as it is also economically profitable.

# STEP 4 - Goals and measures




**Step 4:** Based on the results of the status quo analysis, the action plan is elaborated by the local action team (ideally accompanied and supported by external e-mobility experts). Based on the common vision (defined in step 2), short-, medium- and long-term goals are defined and subsequently the measures necessary to reach those goals are identified in different fields of action. It is very important to streamline the e-mobility action plan with existing strategies (e.g. SUMPs, SEAPs, etc.), in order to exploit the full potential and to use synergies.

**But how to best organize the set-up of the action plan?** The people involved in the set-up should foremost be the representatives of the local action teams. Based on the **vision** (step 2) and the results of the **status quo analysis** (step 3), the action team members **commonly define the fields of action**. These can comprise: municipal fleet and infrastructure, employee mobility, internal organization, awareness-raising and legal framework conditions, etc. The fields of action can of course be adapted or changed according to local necessity and needs. Along those defined fields, goals and measures are then elaborated:

a. **E-Mobility goals:** Short- medium and long-term goals are defined for each field of action. It is important to ensure that SMART (specific, measurable, attainable, realistic, timely) goals are applied.

b. **E-Mobility measures:** In order to reach the goals, measures are defined and described in detail, including: time-line of implementation, responsibilities, impact, costs and savings.

The definition of goals and measures requires an intense **discussion and feedback process**. It is recommended that the elaboration therefore follows a **workshop series** of 4 to 6 workshops. Furthermore, there should only be **one main responsible person** elected from the action team who is in charge of the action plan document, who organizes the workshop and revises the document according to the workshop results. Ideally, the finalized action plan is then officially adopted by the city council of by other public authorities, in order to ensure sustainable implementation.

As final activity in this step, the **action plan should be presented to the public** as well, ideally in the course of a press conference (or similar) and accompanied by respective dissemination activities.

**Result of Step 4:** Finalized and published e-mobility action plan with a clear common vision, the goals and concrete measures to reach the defined goals in a given time frame.

## SPAIN

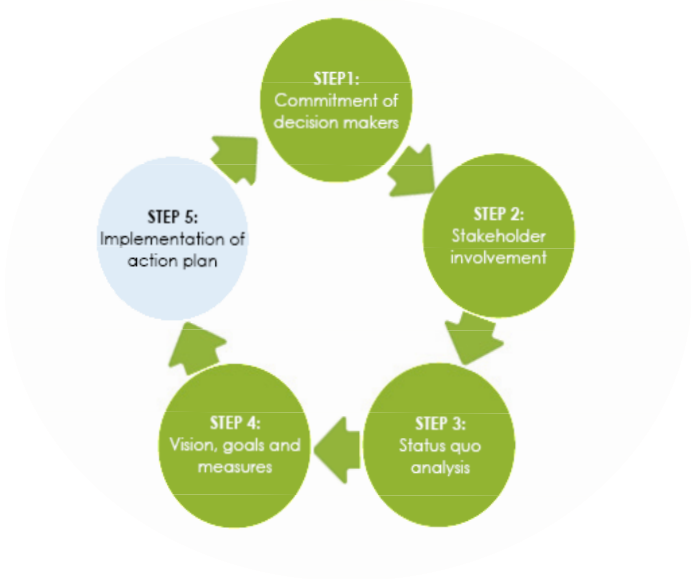
**The municipalities** of Calatayud, Logroño, Zaragoza and Tarazona demonstrated their interest in being involved in the *EMOBILITY* WORKS project from the very beginning. As an outstanding example, the municipality of Calatayud was actively involved from the beginning of the project and an action plan was signed by the department, which comprised actions such as the renewal of the municipal fleet. This change towards e-mobility started in 2015 and also two charging points were installed, which can now be used by the municipal staff. Since 2016, a regulatory change in e-vehicle taxes supports e-vehicle buyers as well. Also in the other municipalities, e-mobility activities are ongoing, thanks to the finalized action plans, which were set up along a participation process and evolved around different areas of action (municipal fleet, infrastructure, awareness raising, etc.). Besides Calatayud, Logroño, Zaragoza and Tarazona, which were already initially planned in the project set-up, also the city of Ponferrada developed an e-mobility action plan, even though it only joined the project at a later stage.

**Jose Manuel Aranda Lassa, Mayor of Calatayud:** *"Calatayud has to be a European and uncontaminated city where institutions and the City Council are involved in enabling the use of non-polluting vehicles. The EMOBILITY WORKS project is an important project to reach this goal and to raise citizens' awareness."*

## ROMANIA

**The municipalities** of Alba Iulia, Bistrita, Ploiesti and Baia Mare were identified as committed municipalities regarding sustainable mobility. They showed high interest in e-mobility from the very beginning onwards and during the e-mobility action plan elaboration each of the municipalities put the emphasis on measures depending on its specific needs and overall goals. Alba Iulia and Bistrita, more eager to roll out actions related to tourism, made concrete steps towards implementing measures in this field. Alba Iulia set up the infrastructure for e-vehicle sharing inside the touristic zone, whereas Bistrita made the first step toward the implementation of the Green Line, which is a dedicated line for e-buses to transport passengers into the touristic city centre. Ploiesti and Baia Mare put more emphasis on green public transportation with electrical trams anxd buses, however, it must be said that all four municipalities considered the acquisition of green buses as priorities given that the POR axis ensures financing in this respect. Furthermore, Alba Iulia set itself the goal to put up several charging stations which are connected to photovoltaic panels so that the power to run the e-vehicles would be 100% from renewable energy from local production. It is also worth mentioning that introducing *EMOBILITY* WORKS to other cities such as Zalau, Oradea and Tirgu Mures (municipalities currently elaborating their Sustainable Urban Mobility Plans) showed that they are also interested in taking up e-mobility measures in the future.

# STEP 5 - Implemention of the action plan




**Step 5:** After the **action plan elaboration** and its **official presentation**, the final step in the process is, of course, the **implementation** of the identified measures according to the defined timetable and ideally accompanied by **continuous documentation and regular evaluation**.

**But how to start action plan implementation?** Engaged municipalities should start implementing the measures as defined in the timetable of the action plan. Ideally, the starting phase of the action plan implementation is accompanied by respective publicity, according to the motto: **"Do good and talk about it"**. Subsequently, depending on the measures defined, regular evaluation of the implemented measures should take place. In some cases, maybe an adaptation of the action plan is needed as well.

**By doing so, *EMOBILITY* WORKS!**

# ITALY

**In Italy,** the project has been implemented in three municipalities, namely Budrio and Correggio (in the Emilia Romagna region) and Conegliano (in the Veneto region), bringing the focus to the regions to which these municipalities belong to. The Emilia Romagna region has signed an agreement with its main cities in order to create a regional main infrastructure backbone, as a basis for local charging point networks. The Veneto region has recently launched a subsidy program for municipalities providing a 30% reduction of EV purchasing cost. This is considered to be a pilot program for the launch of a broader subsidy program, which will be shaped according to the lessons learnt from a specific technical and financial monitoring system.

On municipal level, Conegliano, through the definition of an e-mobility action plan and being the main policy driver, has catalyzed a number of synergies with local businesses. The municipality has therefore joined a regional initiative, led by Ville Venete association, aimed at creating a wide charging network, connecting main tourist sites. It has also integrated local regulations with principles and criteria endorsing EVs, including facilities for charging points; additionally, it has applied to the EV regional subsidy program and it has established, together with local businesses, a platform supporting the creation of e-mobility services. The municipality of Correggio, on the other side, has implemented specific e-mobility actions supporting the EV use in the municipal fleet and in the historical center. Budrio, the third Italian city, has mainly focused its e-mobility strategies on local regulations and the creation of EV hubs for commuters. Parallel to that, company consultations have taken place to stimulate both - municipal and corporate - uptake of e-mobility.

# CHAPTER 4. Conclusions

***EMOBILITY* WORKS partners** have collaborated with hundreds of stakeholders across the European Union. The **main conclusions** from the project comprise:

- **External expertise alleviates e-mobility uptake on local level**: Particularly smaller municipalities appreciate external support, as they are often lacking the personal, financial and technical resources and skills to set up an e-mobility action plan on their own.
- **Individuality must be thoroughly considered**: Each municipality is different and in each municipality, the triggers and incentives leading to an enforced integration of e-mobility are different. "One for all" approaches will not work when it comes to e-mobility.
- **Awareness-raising is still needed**: Even though things are improving, there is still a lot to be done on municipal level, particularly in small and medium sized municipalities, as there are still a lot of prejudices around when it comes to e-mobility. National and international know-how exchange, as well as continuous communication and information work on local level to show the advantages of e-mobility can be successful methods to reduce barriers.
- **Local networks are essential**: By setting up local networks and bringing people from different sectors together, synergies can be created and the full e-mobility potential can be exploited.
- **Corporate and municipal interests differ; alliances are very promising**: Whereas municipalities often have an interest beyond financial aspects, companies foremost have finances in mind, particularly SMEs. Providing them with examples of positive business cases usually does the trick. Whether e-mobility is a positive business case, however, very much depends on national circumstances (funding and subsidies, tax schemes, etc.) Also, *EMOBILITY* WORKS partners have experienced that certain alliances between businesses and municipalities work particularly well for both sides, e.g. alliances with local energy suppliers, mobility services providers and the tourism branch. In general, however, it must be noted that currently, due to high investment costs, e-mobility is foremost a topic for bigger companies with bigger car pools.
- **Streamlining e-mobility with other strategies as key to success**: E-Mobility measures promise to be particularly successful if they are in line with other municipal strategies (e.g. SUMPs, energy strategies, transport plans, etc.). Stand-alone strategies on the other hand, do not find as much support.

**The approach to enforce integration of e-mobility** on local level by means of action plans has proven to be a **successful concept**, leading to 30 finalized e-mobility action plans across Europe. Those municipalities, as well as the project partners themselves, are now important disseminators and promoters of the concept of e-mobility action plans within their networks.

# CHAPTER 5. Recommendations

**If you are interested** in setting-up an action plan in a municipality (regardless of whether you are a municipal employee or an external mobility consultant/ expert, etc.), the *EMOBILITY* WORKS partners **recommend** considering following points before and while setting up an e-mobility action plan:

- **Get used to politics!** As political support for the topic does not only alleviate action plan set-up, but also ensures the long-term implementation of the action plan measures, it is important that political key players support your ambitions and are part of the local action team. You should therefore know the political structure very well and integrate the political opinion leaders from the beginning onwards. Note that these people must not necessarily be top politicians!

- **Work with the right people!** Ensure that you have all the necessary people in your local action teams, not only thematic experts, but also opinion leaders from other areas and interest groups are necessary for broad support of e-mobility measures. Also make sure that you include all relevant departments in the administration, as e-mobility is a highly cross-sectional issue.

- **Work with emotions!** As soon as people experience e-mobility themselves, they will want to have it, because it is fun and causes so many positive emotions. Work with these emotions to get the support you need, test events are a particularly promising method for this.

- **Find the right trigger!** The incentive for integrating e-mobility differs a lot between municipalities. Some want to live up to their fore-runner role and want to improve the quality of life, others think it might be beneficial for touristic purposes, etc. Find the right trigger and you will have the support you need.

- **Know your subject well!** There are a number of framework conditions, which shape the intensity of e-mobility take-up in a country (taxes, e-vehicles models on the market, etc.). The better informed you are, the easier it is to convince people and to argue. If you feel overwhelmed by the quantity of information, get external experts to support you.

- **Integrate external experts!** If you are working for a municipality and want to set-up an e-mobility action plan, you should think of integrating external experts in the process. Experience has shown that for politically neutral people it is often easier to argue and convince local stakeholders, because they are not biased.

- **Do good and talk about it!** Ensure to disseminate your activities among the public as well: give press conferences, organize public test events, put articles on the website or in municipal magazines, etc. Experience has shown that e-mobility is very well received among the public. Therefore: "Do good and talk about it."

# CHAPTER 6. *EMOBILITY* WORKS results

**In total, 34 municipalities** have been consulted in the course of *EMOBILITY* WORKS and **28 of them now have finalized e-mobility action plans**, on which they will base their future activities regarding e-mobility. Additionally to that, project partners have consulted **153 companies** in the field of e-mobility during the project runtime. The project activities have led to the acquisition of more than **400 e-vehicles across Europe and to almost 120 additional charging infrastructures between 2014 and 2016**. The long-term consequences due to the elaboration of local plans must not be underestimated and will lead to many more e-vehicles across Europe and boost the market. Additionally, intense dissemination work has been carried out by all partners on national and international level, promoting the concept of e-mobility action plans. Due to the positive feedback on this idea in all countries, all involved partners will follow the setup of further e-mobility action plans.

The following table depicts the main activities and results of the *EMOBILITY* WORKS project.

| Country | Action plans | E-vehicles | Charging stations | Consulted companies |
|---|---|---|---|---|
| Austria | 3 | 186 | 13 | 25 |
| Estonia | 3 | 53 | 1 | 16 |
| Italy | 3 | 33 | 3 | 20 |
| Finland | 3 | 14 | 17 | 12 |
| Germany | 3 | 33 | 27 | 15 |
| Greece | 3 | 18 | 2 | 15 |
| Romania | 4 | 16 | 1 | 18 |
| Slovenia | 3 | 9 | 40 | 16 |
| Spain | 3 | 46 | 17 | 16 |
| **Total** | **28** | **408** | **121** | **153** |

**If you are interested** in integrating e-mobility in your municipality by means of an e-mobility action plan, contact the *EMOBILITY* WORKS partners for external expertise and consultation. The contact details can be found in chapter "Partners and contact".

# CHAPTER 7. Expert interview

**Henriette Spyra** is a clean transport professional at AustriaTech, an agency of the Austrian Ministry for Transport, Innovation and Technology. In her work as a national expert for the implementation of the AFI Directive, she represents Austria in the European Commission's Sustainable Transport Forum and is responsible for coordinating Austria's national AFI implementation including the development of a National Policy Framework on the market development of alternative fuels in transport.

**How would you assess the development of e-mobility on a European level?**

*"We are witnessing a growing trend towards electrification of transport with Europe in 2015, covering about a third of worldwide EV sales. In my view this is the result of a clear regulatory push towards greening transportation, also at the European level. As more zero emission vehicles become available and the market is growing, we need much better policy coordination at European, national, regional and local levels."*

**From your experience, which European countries are the drivers for e-mobility and why? In how far are they "better" than other countries and what can we learn from them?**

*"In absolute terms, Norway and the Netherlands are of course the strongest markets. We also see very good growth in Sweden, Denmark, France, the UK and Switzerland. I believe there are two very important drivers but in the end what is needed is a good policy mix. First comes the development of an electrification vision such as the Dutch zero emission deployment target for 2035. Second, taxes play an important role: the Norwegian tax system punishes heavy and polluting vehicles – as a result a tax exemption of EVs makes it simply cheaper to buy an electric car. A policy portfolio to push e-mobility also needs to include non-financial benefits for users and the deployment of charging infrastructure. Austria is a very good recent example of the impact of such measures: a change in company car taxation led to sharp increase in EV registrations since January 2016."*

**What do you think is the role of municipalities related to e-mobility?**

*"The negative effects of transport in terms of air pollution, traffic jams etc. are most intensely experienced at municipal level. So municipalities are very important and we took great care to involve the local level in implementing the AFI Directive in Austria, working together with the Austrian Towns Association and the Austrian Association of Municipalities with whom we organized workshops on the role of municipalities in boosting e-mobility. I think there are three aspects: Firstly, local governments usually take a holistic view at e-mobility which is not just about replacing one type of car with another type of car. Instead, introducing e-mobility should include rethinking mobility in general and increasing the modal share of pedestrians, bikes and public transport. Secondly, municipalities operate fleets so they are key to greening important parts of local transport. Lastly, municipalities can set important incentives for people travelling in zero emission cars – from low emission zones to parking benefits."*

**What would you recommend municipalities who want to boost e-mobility?**

*"Municipalities play a very important part in the policy mix I have mentioned before. Boosting e-mobility in my view requires two things: a clear vision or target and a clear action plan on how to achieve this target which details measures and takes a step-by-step approach involving a variety of stakeholders from different municipal departments, companies and the private sector. This was exactly the approach taken by EMOBILITY WORKS! "*

# Thanks to

| Country: | Participating municipalities: | Supporting partners: |
|---|---|---|
| **Austria:** | • Stadtgemeinde Schladming<br>• Neue Stadt Feldbach<br>• Stadtgemeinde Kapfenberg | • Energie Steiermark AG<br>• Wirtschaftskammer Österreich<br>• Land Steiermark, Wirtschaftsinitiative Nachhaltigkeit |
| **Estonia:** | • Tartu<br>• Rakvere<br>• Kuressaare | |
| **Finland:** | • Tampere<br>• Turku<br>• Lappeenranta<br>• Kotka<br>• (Vantaa) | |
| **Germany:** | • Eberswalde<br>• Hohen Neuendorf<br>• Iserlohn | |
| **Greece:** | • Trikala<br>• Lykovrisi-Pefki<br>• Chalki<br>• Thessaloniki<br>• Alexandreia | • Hellenic Institute of Electric Vehicles<br>• Hellenic Petroleum S.A<br>• Petroupoli<br>• Maroussi<br>• Kavala<br>• Nikaia- A.I Rentis<br>• Agios Dimitrios<br>• Rafina-Pikermi |
| **Romania:** | • Alba Iulia<br>• Bistrita<br>• Ploiesti<br>• Baia Mare | • AVER - The association of electric vehicles in Romania<br>• University "1st December 1918" of Alba Iulia<br>• TMC Electric<br>• Aurocar Alba Iulia - Renault/Dacia distributor |
| **Slovenia:** | • Maribor<br>• Radlje ob Dravi<br>• Slovenska Bistrica | • Ruše<br>• Piran<br>• Miklavž na dravskem polju<br>• Biograd na moru (Croatia)<br>• RIC<br>• Mariborski vodovod |
| **Spain:** | • Calatayud<br>• Logroño<br>• Ponferrada<br>• Tarazona<br>• Zaragoza | |

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# Abbreviations

**BEV:** Battery electric vehicle

**PEV:** Plug-in electric vehicle

**PHEV:** Plug-in hybrid electric vehicle

**M1 category vehicles:** Vehicles which are used for the carriage of passengers and comprise not more than eight seats additionally to the driver's seat

**SEAP:** Sustainable energy action plan

**SUMP:** Sustainable urban mobility plan

# IMPRINT

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