

# E-mobility Good Practices Report

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## Introduction

In the framework of EMOBICITY, a Report of Good Practices on E-mobility is issued, based on the information available by the Interreg Europe Policy Learning Platform (good practices validated, webinars, policy briefs, etc.). The scope of this report is to identify, select and record good practices that are of high interest for the EMOBICITY consortium and that can be adjusted and replicated in the partners' local contexts.

## Topics

As electric mobility is a sector with many different aspects, the EMOBICITY partners have set 3 umbrella topics to focus on, as these are of high priority for the consortium and the project objectives. So, taking into account the partners' feedback, the topics and sub-topics to be examined for good practices available are as following:

### Topic 1: Policies and strategies to promote e-mobility

- T1.1: Integration of e-mobility in Action Plans
- T1.2: Subsidies for EV acquisition
- T1.3: Public and private investments for EV infrastructure

### Topic 2: Education and behavioural change towards e-mobility

- T2.1: Training of employees in public administration
- T2.2: Behavioral change of private drivers

### Topic 3: Practical experiences of e-mobility in the city

- T3.1: E-buses on the road
- T3.2: What about batteries and charging?
- T3.3: E-mobility in city logistics

CRES, EIHP and ADENE worked together to identify good practices for the topics and subtopics addressed, which will serve the EMOBICITY project as examples of inspiration and potential solutions to existing problems. One good practice per sub-topic is recorded as follow, so the report includes 8 good practices in total. Each good practice is described in a one page text. All partners may share this information with their Local Stakeholder Groups. It is worth mentioning that every good practice selected for this report, is accompanied by a positive and supportive Expert's Opinion, which can be found in the links below. Finally, the Good Practice "E-Lotsen in Hessen", mentioned under sub-topic T2.1, was identified into the framework of the EMOBICITY project itself.

## Topic 1: Policies and strategies to promote e-mobility

### T1.1: Integration of e-mobility in Action Plans

#### Good practice: Electro mobility – Electric vehicles for a green municipality

**Suceava Municipality in Romania launched a vast and ambitious project to switch from fossil-based public transport system to electric public transport system.**

Suceava City expressed into the Sustainable Energy Action Plan the willingness to create the local charging infrastructure network for electric vehicles (EVs) in order to increase the EVs used in private and public sectors, to reduce the traffic emissions and to promote alternative ways of travelling. For EVs to actually become attractive for the possible users it was necessary to:

- increase the technological performance, reduce the procurement price and increase the number of charging points to be present in public parking spaces around supermarkets, in the City Hall parking area and in the parking areas of other public institutions, as well as in underground parking spaces, and the places should be reserved and specially marked for EVs. Since March 2018, 28 charging units have been installed in public places. By the end of 2019, 5 e-mini buses for local public transport will be operational. By 2021 the Municipality will:
- acquire 40 full e-buses to replace the existing Euro 3 ones and perform in the entire city area,
- install 26 charging station for e-buses, from which 6 are fast charging stations and
- implement traffic management for public transport, real time information systems and e-ticketing

#### Resources needed

Total budget: 2.773.161 CHF, including Swiss grant (Swiss-Romanian Cooperation Programme): 2.039.100 CHF

#### Evidence of success

Between April 2018 and April 2019:

- number of kilometres travelled by the electric vehicles: 45.743 km
- cost related to the energy consumption of a classic car: 19.898 RON
- cost related to the energy consumption of an EV: 2.997 RON
- total costs saved: 16.901 RON/year
- reduction of CO<sub>2</sub> emissions per year: 4.143t CO<sub>2eq</sub>.

#### Difficulties encountered

- Appropriation of new technologies for the municipality
- Finding an external source of funding for the project as the Municipality didn't have the budget

#### Potential for learning or transfer

Replacement of existing (diesel or gasoline) vehicles with EV's, use of electric bikes (with charging station using photovoltaic panels), replacement of existing Diesel buses with Electric ones means:

- Significant reduction of energy consumption
- Reduction of CO<sub>2</sub> emissions
- Improve the quality of the life into the city
- Local development of new technologies (also into the private sector)
- Increase the quality and attractiveness of Public Transport

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/2896/electromobility-electric-vehicles-for-a-green-municipality/>

## T1.2: Subsidies for EV acquisition

### Good Practice: Go Electric Taxi Scheme

**Go Electric Taxi is a scheme to encourage taxicab drivers to move to e-mobility in Coventry (UK).**

The Go Electric Taxi scheme includes a range of different incentives worth £2.500 for taxi drivers interested in making the switch to a cleaner vehicle – as well as the opportunity for a two-week test drive for all Coventry Hackney cab drivers.

The initiative, led by Coventry City Council, is supported by a range of companies including, the Coventry electric taxi maker LEVC, Irish energy company ESB, Siemens and the taxi app Gett. Hackney carriage owners in Coventry get the chance to try out the latest electric taxis produced by LEVC, as part of a scheme to encourage cabbies to understand more about the benefits of electric taxis.

Go Electric Taxi aims to speed up the modernisation of the Coventry taxi fleet and offer a premium, better value, service for Coventarians. All these vehicles will offer laptop charging, mobile phone charging, free Wi-Fi, card payment – and zero emission capable driving. As part of the scheme, the first 60 drivers of electric taxis in the city will benefit from a significant contribution towards their insurance costs, as well as a waiver of several licensing fees, this is valued at around £2.500. The scheme has been funded by grants from the Office of Low Emission Vehicles and the Government's Joint Air Quality Unit. The scheme was promoted via an event held by the taxi rank by the station, whereby leaflets were given out to taxi drivers in addition to a letter and SMS being sent to all eligible participants.

#### Resources needed

The government pledged £1.2 Million to support the scheme.

#### Evidence of success

The Go Electric Taxi pilot scheme was oversubscribed and has led to a significant number of cab drivers placing orders and at least 15 electric taxis on the city's streets at the start of 2019 with 100 drivers taking part in the try before you buy scheme. This has reduced each driver's carbon footprint by 7 tonnes a year, improved the air quality, reduced running costs and initial reports suggest drivers are less stressed and more focused.

#### Difficulties encountered

One of the biggest challenges was that the scheme was oversubscribed and couldn't initially keep up with demand. In addition, the licensing authority needs to back such a scheme with regulation changes whereby highly polluted hackney carriages are not licensed anymore.

#### Potential for learning or transfer

This scheme of encouraging cab drivers to move to electric vehicles could be rolled out in any city given the backing from local governments and support organizations. Indeed, similar schemes in other cities have also been adopted and Coventry City Council have been in discussions with four other authorities on how the scheme was set-up because they were interested in setting something similar up in their particular authority.

**More information and Contact Details:** <https://www.interreurope.eu/policylearning/good-practices/item/3793/go-electric-taxi-scheme/>

### T1.3: Public and private investments for EV infrastructure

#### Good practice: PowerParking

**PowerParking is an ERDF project in which large car parks become renewable energy plants, connected with a smart grid to EV chargers and the adjacent buildings.**

PowerParking is an innovative pilot project to transform (large) parkings to decentralized sustainable energy plants. It provides a solution to the increasing imbalances on the grid and the need for a more flexible energy system. At Lelystad Airport (LA) and the adjacent Lelystad Airport Businesspark (LAB), part of the car parks (2x 100 places with 0,5 MW solar panels) will be covered by a carport with solar panels. The solar energy will be used to charge electric vehicles, for public lighting and for other needs of the terminal and business environment. A surplus of energy will be temporarily stored in the batteries of the parked vehicles and/or extra storage capacity. The system will be connected to a public DC (Direct Current) net. Each part of the construction is being developed in a sustainable way. A smart ICT system decides on where the energy is going. Part of the project is to further develop the business case, so the concept can be built without subsidies in the future. The PowerParking will be tested on small scale at the Green Village of Delft Technical University. There will also be a socio/economic research among users: when will car owners be allowed to use the batteries of their cars? Provincie Flevoland has developed the project together with LA, Schiphol Group, LAB, Delft Technical University, Pontis Engineering (SME engineering of composite constructions), Eneco (DSO) en Alfen (SME in electric engineering and construction).

#### Resources needed

PowerParking receives € 1,2 M from the ERDF programme and € 0,5 M co-financing from the Province of Flevoland. The rest of the investments (in total € 3,1 M) come from the project partners. These costs include the cost of human resources.

#### Evidence of success

The project is still on-going. However, there is a large interest already in the concept (for example from the national railway operator for their parks and rides at stations). According to the latest news from Flevoland province, a pilot is being carried out in Dronten municipality with the aim of rolling out the concept on a large scale to other locations, such as Lelystad Airport and Lelystad Airport Business Park. The construction of the pilot in Dronten municipality will be ready in March 2021. After that, the system will be monitored for another year and an evaluation will follow. (<https://www.flevoland.nl/dossiers/lelystad-airport/duurzame-luchthaven/powerparking>)

#### Difficulties encountered

The system demands new business models (who is earning what and when) which is rather complicated if you work with 8 partners together in the project. To add the DC component to the project is quite innovative, but has more technical complications that we had foreseen.

#### Potential for learning or transfer

The challenge is to make PowerParking economically viable without subsidy. From then, the potential of transfer is very large, since every country has large car parks, which can be transferred. Even if the number of electric cars is not very large yet, the PowerParking can deliver energy to the environment. Since car parks are normally situated in an environment where much energy is needed.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/93/powerparking/>

## Topic 2: Education and behavioural change towards e-mobility

### T2.1: Training of employees in public administration

#### Good practice: E-Lotsen in Hessen

**With the program “E-Lotse” the LEA Hessen offers to municipal employees free, multi-day training on the topic “Designing future-oriented mobility in the community”**

The "LEA LandesEnergieAgentur Hessen GmbH" is a public company who takes over central tasks on behalf of the Hessian Ministry in the thematic field of climate protection. In 2016 the LEA launched the program "E-Lotse" (in the following "E-Expert") with the help of the Hessian Ministry. With the program "E-Expert", the LEA Hessen offers municipal employees a free, multi-day training on the topic “Designing future-oriented mobility in the community” to become an expert in the topic of electric mobility. The program has the following aims:

- Providing a comprehensive knowledge base on the topic of mobility in the municipality with special attention to electric mobility.
- The “E-Expert” should be enabled to be the first contact person of the municipality for all questions related to the topic of e-mobility in order to coordinate the various issues related, both for the own administration as well as for companies and private households.
- The “E-Expert” is integrated in a Hessen-wide network and is the contact person between the municipality and the state of Hessen.

#### Resources needed

Costs each year (plus VAT): 22.100 EUR (3 x seminars for 3 days: 15.600 EUR and 4 x half-day regional meetings: 6.500 EUR)

#### Evidence of success

Over 180 people have already taken part in the program and can call themselves an “E-Expert” with special and detailed knowledge about the topic electric mobility. They are able to be the first contact persons of the municipality to deal with all problems and questions concerning the topic e-mobility. A number of e-vehicles or charging stations raised in the region cannot be mentioned because these are indirect results of the E-Expert's work that cannot be measured.

#### Potential for learning or transfer

The program “E-Expert” is suitable for every country in the world. Every country can implement such a program to train employees of municipalities and cities to be an expert on the topic electric mobility. It is an advantage for every municipality and city to have one employee who is trained in the topic electric mobility and who can answer questions from the population. The training is aimed at employees of Hessian municipalities, municipal institutions or municipal associations. The program is particularly suitable for energy and climate protection officers, employees of the traffic office, the environmental office or business development companies. The training takes three (formerly five) days and is specially tailored to the requirements of municipalities. The participation is free of charge for employees of municipalities in Hessen.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/4182/e-lotsen-in-hessen/>

## T2.2: Behavioural change of private drivers

### Good practice: Bella Mossa: a gamification process to promote sustainable mobility

**This good practice aims to foster sustainable mobility through an app that rewards citizens who choose public transport and soft/active mobility.**

Technology can effectively support to reduce the use of private transport and increase the use of clean fuel vehicles. Gamification is a proven process consisting in adding game like elements to encourage participation. Bella Mossa used gamification as a fun way to encourage people using sustainable mobility as quite a new approach. In the Bella Mossa initiative, there were challenges among single user or companies' teams that aimed at fostering a sustainable way of moving. Specifically, the app foresees a rewarding system: every trip made by foot, bike, public transport system or car sharing is collected and assigned a score. When a threshold is reached, rewards are available for the user to spend. At the same time, the collected data are available to public administration for planning purposes.

The Bella Mossa initiative used an already existing app called BetterPoints, developed by a British company 7-8 years ago for campaigns focused on behavioural change. However, the app was heavily customised by SRM to adapt it to the purposes of the Bella Mossa initiative. In fact, Bella Mossa gave a reward not only to users who changed their means of transport, but also to users who already moved in a more sustainable way. Moreover, the rewards were offered by sponsoring commercial activities in Bologna that have acquired visibility.

#### Resources needed

Bologna was a Take up city in the H2020 EMPOWER project. The project allocated 100.000€ to develop the campaign, divided in: 25.000€ for ICT; 25.000€ for recruitment; 25.000€ for marketing. The remaining amount was redistributed on marketing and recruitment.

#### Evidence of success

The app was a great success among people: the developers aimed to involve 10.000 citizens, but over 21.000 users made an account and, among these, 15.000 were active users. Users were very satisfied: 73% of the users declared to have reduced car use and 77% declared to walk more.

#### Difficulties encountered

The app was not developed for Windows Phone operative system, because statistics shows that only 5-6% of smartphone users have WP operative system. The cost to develop the WP version would have been too high to be considered worthy.

#### Potential for learning or transfer

The GP can be considered portable and transferrable to other contexts. The crucial point is the definition of a proper rewarding scheme balancing cost and benefits for the public administration. Rewards can be provided in different forms, directly by the municipality or through agreement with commercial partners interested in gaining visibility and improve their reputation. Its transferability is largely proved by the CIVITAS award won. Skilled people to develop and implement the app are necessary. For an app user, smartphone and data connection are the prerequisites to use Better Points.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/765/bella-mossa-a-gamification-process-to-promote-sustainable-mobility/>

## Topic 3: Practical experiences of e-mobility in the city

### T3.1: E-buses on the road

#### Good practice: Mobility on Demand service: The circuit of electric mini-buses of Viseu

**Urban circuit in center of the city of Viseu operated by electric mini-buses with pre-established schedules and stops for entry and exit of passengers on demand**

With the aim of demonstrating new mobility technological solutions, the General Direction of Land and River Transport (currently, Institute of Mobility and Transport – IMT, I.P) in partnership with the Portuguese Association of Electric Vehicles (APVE) and 25 Portuguese Municipalities, implemented the initiative “Demonstration Program for the Introduction of Electric Buses in Public Urban Transport Fleets in Portuguese Cities” between 2002 & 2005. Viseu was the first municipality to develop and implement a new integrated circuit in the urban public transport service operated by 3 electric minibuses. This circuit in operation until today contemplates the Historical Center where the main public equipment is located and it has a fixed route of 2,3 km, being the service operated on demand. The vehicles have a range of 100 to 150 km and a capacity for 22 passengers with the operation of the service every day and a frequency of 15 minutes. Totally free the service serves, mostly, the oldest population of the center of the city, transporting annually about 13.000 passengers. However, with the definition of the new mobility strategy of the Municipality, the MUV - Urban Mobility of Viseu, the minibuses will have a new image and the service will be paid. A 3-way ticket will cost 1,0€. This mobility on demand service is also one of the measures of the SUMP. The project is innovative, as it integrates low-carbon urban transport, mobility on demand concept and contributing to reduce emissions and promote sustainable mobility.

#### Resources needed

700.000 € (without VAT) – Value of the acquisition of three electric mini-buses

400.000 € - Approximately cost of the service per year (supported by the Municipality of Viseu)

#### Evidence of success

After 14 years the service is still active serving around 13.000 users on average per year. 2019 also marks the beginning of MUV - Urban Mobility of Viseu, the new mobility system and the circuit of the minibus continues to be part of the available mobility offer. Being operated by 100% e-buses, this service is also based on the Municipality's vision of making Viseu's mobility more sustainable, inclusive, safe and efficient.

#### Potential for learning or transfer

This service implemented by the Municipality of Viseu can be adopted and adapted to other cities; not only cities that also have a historic center or tourist areas, but also others that have Limited Traffic Zones or Low Emission Zones. Thus, the urban circuit has two dimensions: a touristic and a social dimension. From the tourist point of view, the service can promote e-mobility for accessibility to tourist sites and emblematic areas. From the social point of view, it allows the population residing in a certain area of the city, namely vulnerable people, to move to other points. This flexible transport service can integrate a SUMP as a more effective solution to promote a wider and adequate territorial coverage of public transport.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/2785/mobility-on-demand-service-the-circuit-of-electric-mini-buses-of-viseu/>



### T3.2: What about batteries and charging?

#### Good practice: Barcelona Electric Bus Opportunity Charging

##### Emission-free urban buses: Opportunity Charging strategy for electric buses in an urban context.

Urban bus operators share the challenge to run city buses in an especially sensible environment, where NO<sub>x</sub>, PM and HC emissions, same as noise pollution, have high effects on the population's health and well-being. For these reasons, e-buses become an alternative to replace ICE (internal combustion engines) for this specific use. A bus in an urban route usually requires 16 h of operation because it is used for two shifts of 8 hours in a row. The actual state of art in the battery market, allows the possibility to mount up to 400kWh on board, with a weight of 4 tons, but this energy is not enough to assure 16 h of operation during summertime (with air conditioning). Hence, the bus must be replaced before finishing its daily service. In this case, the operator needs two buses for a daylong service of 2 shifts. To solve this problem, TMB has implemented an Opportunity Charging strategy consisting in a special kind of batteries (LTO) that allow frequent charging of smaller amounts every half route (12/15 km) in a very short time (3 minutes), guaranteeing 16 h of bus service.

Considering the infrastructure, one fast charger is placed at each side of the line where the bus charges the necessary energy to arrive to the other side. The bus has however enough autonomy to run 60 km without charging. This strategy allows the vehicle to run more than 24 hours without returning to the depot.

#### Resources needed

- Main stakeholders:
  - Transport de Barcelona (buses operator)
  - Barcelona city council (civil works permissions)
  - AMB (align city strategies)
  - Ferrocarril Metropolitana de Barcelona (energy supply)
  - Endesa (energy supply)
- Price for seven 18 m long 100% electric buses: 5,7 million EUR.

#### Evidence of success

In 2016 (within the EU co-financed project ZeEUs), the viability of this strategy was tested in Barcelona with two 18 meter articulated buses and one charging point in route H16. The results allowed implementing this first 22 buses line (H16) and expanding to new routes in the coming years.

#### Difficulties encountered

Necessity to work hand in hand with the city council and aligning efforts adopting the project as the city's strategy. The impact on the street is high (civil works and visual impact with large bus chargers).

#### Potential for learning or transfer

This is a viable way to operate urban buses with a price (TCO) comparable to other technologies, and at the same time meet the needs of the operator, reduce emissions and noise pollution. Citizen's health justifies the use of zero emission buses and will become imperative in next years in order to be able to comply with urban air quality requirement and climate goals.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/1727/barcelona-electric-bus-opportunity-charging/>

### T3.3: E-mobility in city logistics

#### **Good practice: Last mile delivery by electric cars and cargo bikes in urban areas**

The city administration of Maribor set new rules for last mile delivery in city center to avoid air pollution and regulate the delivery in pedestrian zone.

In the city center of Maribor (especially in the pedestrian zone), where shop keepers and restaurant owners need urgently goods to be delivered during the day (10:00–20:00) only electric cars of the Post Office are allowed to deliver. A social enterprise was established and provides last-mile delivery services to grocers and retailers throughout the city center of Maribor by cargo bikes which are fast and reliable.

#### **Resources needed**

Delivery companies had to adapt and cover the financial resources to purchase environmentally friendly vehicles.

#### **Evidence of success**

There is less traffic during the day in the pedestrian zone, the retail sector and delivery service organizes more efficiently the delivery. With the measure low carbon strategy is carried out.

#### **Difficulties encountered**

Surveys were carried out among delivery companies, as well as among shop and restaurant owners, analysis were made and a new city ordinance was adopted. After meetings with companies and informing the involved companies a certain time was set to let the companies adapt.

#### **Potential for learning or transfer**

The surveys and adapting process were important for all stakeholders: Municipality of Maribor, delivery companies, Cargo bike delivery social enterprise, retail stores and restaurants.

**More information and Contact Details:** <https://www.interregeurope.eu/policylearning/good-practices/item/2867/last-mile-delivery-by-electric-cars-and-cargo-bikes-in-urban-areas/>

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