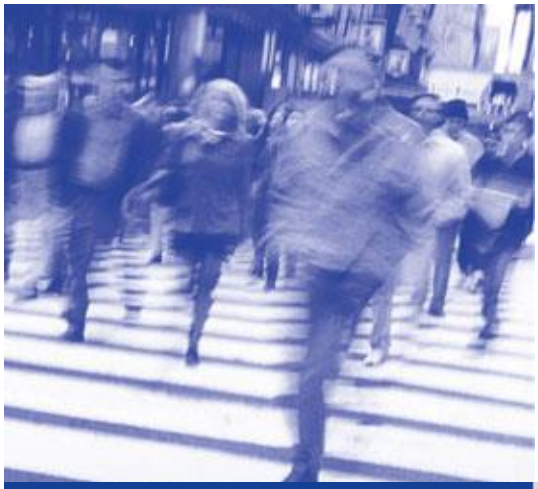

CiViTAS
Cleaner and better transport in cities

KOPRIVNICA

Implementation Status Report

K2.1 Report on the introduction of electric municipal car-sharing scheme in Koprivnica

Deliverable No.:	D2.5
Project Acronym:	CIVITAS DYN@MO
Full Title:	
DYNamic citizens @ctive for sustainable MObility	
Grant Agreement No.:	296057
Workpackage/Measure No.:	WP2/ K2.1
Workpackage/ Measure Title:	
Clean vehicles/ Electric municipal car-sharing scheme	
ResponsibleAuthor(s):	
Maja Hleb	
ResponsibleCo-Author(s):	
Mario Perković	
Date:	30th November 2015
Status:	Final
Dissemination level:	Public

CiViTAS
Cleaner and better transport in cities
KOPRIVNICA

THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION

Abstract

The goal of this measure is to increase the share of electric vehicles in the municipal fleet to 30% and establish a demonstration example of efficient use of electric vehicles. In order to establish an electric car-sharing scheme, a system of electric chargers has been constructed in partnership with the national electricity provider HEP. The anticipated result of this measure is a reduction of CO_2 emissions of the municipal fleet by 27%, to which the replacement by obsolete vehicles will contribute. It is expected that the operating costs of the fleet will equally be reduced by 24% by the end of the project. Intense promotion of the measure will contribute to the gradual increase of the use of electric vehicles by the citizens and industry at the local and regional level and reaching national aims regarding the deployment of chargers for electric vehicles in Croatia.

Project Partners

Organization	Country	Abbreviation
City of Koprivnica	HR	CoK
Komunalac	HR	Komunalac
Development agency North	HR	DAN

Document History

Date	Person	Action	Status	Diss. Level
10 Oct 2015	Maja Hleb	Draft for approval	draft	SC
27 Oct 2015	Jasna Golubic	Technical specifications added	draft	SC
30 Nov 2015	Maja Hleb	Final version for PM	final	SC, PM,EM
7 Dec 2015	Marcel Braun	Final editing and layout	Final	PC

Status: Draft, Final, Approved, and Submitted (to European Commission).

Dissemination Level: PC = Project Coordinator, SC=Site Coordinator, TC=Technical Coordinator, EM=Evaluation Manager.

Table of Contents

List of Figures

1. Introduction

At the beginning of the project, the use of electric vehicles in the region was rather limited. There was no promotion or any subsidies for their purchase, while the data referring to their benefits and actual performance was almost completely unavailable. On the other hand, the City of Koprivnica had already developed a Local Sustainable Energy Action Plan, as the result of its Covenant of Mayors' declaration. This plan includes the aim of increasing the use of renewable energy sources and reducing emissions by over 20%, which has urged the city to search for sustainable solutions in each aspect of life at the local level, including transport.

By planning and developing an electric car-sharing scheme for the municipal authority as well as municipal companies and institutions, two important aims have been reached. A car-sharing scheme enables the efficient use of the municipal fleet, while the introduction of electric vehicles and elimination of unclean and less energy efficient options results in the reduction of emissions and local noise levels with an increase of renewable energy use.

The intense promotion targeting local businesses and citizens, but also regional authorities and other decision makers at all levels of government contributed to the faster uptake of electric vehicles in Croatia. It has reinforced the national clean car campaign by the National Fund for Environmental Protection and Energy Efficiency. The partnership with the national electricity provider HEP resulted in the construction of five fast-charging stations in the city, which was the first system of electric chargers implemented in the scope of HEP's development programme ELEN. Monitoring and evaluation of the implementation of the e-car-sharing scheme contributes to the removal of barriers for this innovative transport solution at the European level.

First results of the municipal electric car-sharing scheme show that the energy efficiency and reduction of emissions goals can be reached by the end of the project.

2. Status at the beginning of the CIVITAS DYN@MO project

At the start of the DYN@MO project in 2012 the municipal fleet comprised 23 small or middle-sized gasoline-powered personal and delivery vehicles. They were used by various municipal departments and companies, without any car-sharing system. The average distance covered daily by each vehicle rarely exceeded 30 km per day. In order to increase their efficiency a car-sharing scheme was planned. Electric vehicles were foreseen as an ideal solution for the scheme due to the relatively low daily range of the vehicles.

A market research was conducted in from May 2012 to December 2012 in order to determine the offer of electric vehicles available at the regional market. The status of charging infrastructure was extremely poor: In 2008 only two chargers were available in Croatia (in the cities of Vukovar – the easternmost Croatian city, and in Labin – the westernmost Croatian city) but the national electricity provider HEP had launched the programme ELEN with the aim of installing public electric chargers in all seats of the 20 Croatian counties. The City of Koprivnica was the first one to express an interest for this charging infrastructure.

In April 2011 the City of Koprivnica had already bought a small Ducatti electric vehicle with the aim of promoting the use of clean vehicles locally. The City has been promoting sustainable mobility solutions systematically for over a decade, mostly cycling and walking.

The National Fund for Environmental Protection and Energy Efficiency had also announced a subsidy programme for the procurement of clean vehicles by public authorities and private owners. The state grant was 4,000€ for hybrid vehicles, 6,667€ for plug in-hybrid vehicles and 9,333€ for full electric vehicles.

3. Description of work

3.1 Design and setting up of the electric chargers

The City of Koprivnica and the Croatian national electricity company HEP d.d. have signed on the 19th of February 2015 an agreement on setting up a network of chargers for the electric vehicles in the scope of the HEP programme ELEN. The agreement included the set-up of five charging stations on the land that is being owned by the City of Koprivnica and its partners which gave the right to build on the land and the other partner, HEP d.d. installed the stations together with the surrounding infrastructure. Regarding the choice of the charging stations, the City of Koprivnica gave advice and valuable input to the HEP electricity company. The HEP company had to conduct a public tender since they are, according to law, obliged to follow the public procurement law. The input from the City of Koprivnica was mainly regarding the requirements of the electric vehicle that were purchased. The City of Koprivnica purchased the following: five full electric vehicles (Mitshubishi i-Miev), one plug-in hybrid (Toyota Prius plug-in hybrid) and one hybrid (Toyota Auris hybrid). The full electric vehicle has a battery pack of 16 kw and the possibility to charge the vehicle via the ChaDeMO protocol. The ChaDeMo protocol is used mainly by Japanese manufactures. On the other hand, a decision of the European Union was made to favour the Combo 2 protocol, so that all of the charging stations in Europe will have the Combo 2 protocol as a standard. HEP d.d. has taken into account the needs of the electric vehicles from the City of Koprivnica and the future requirements of the European Union and has launched a tender for the purchase of charging stations that have three charging standards; COMBO 2 standard, fast AC and ChaDeMo. The chosen supplier of the charging stations was ABB, with the charging station model 53 CJG.

TheTerra 53 CJG was regarded as the best all-in-one electric vehicle charging solution because the Terra 53 CJG is compatible with all CHAdeMO, CCS and Type 2 AC vehicles currently on the road. This charger is the ideal choice to serve all these vehicles en route. Typical charging times range between 15 and 30 minutes.

All ABB chargers come with connected services. These allow customers to easily connect their chargers to different software systems such as back-offices, payment platforms or energy management solutions via the Internet.

Outlet specifications	C (default)	J (option)	G (option)	T (option)
Charging standard	CCS	CHAdeMO	Type 2 cable	Type 2 socket
Maximum output power	50 kW	50 kW	43 kW	22 kW
Output voltage range	50 - 500 V_{DC}	50 - 500 V_{DC}	400 V +/- 10%	400 V +/- 10%
Maximum output current	125 A_{DC}	125 A_{DC}	63 A	32 A
Connection standard	EN61851-23 / DIN 70121	CHAdeMO 1.0	EN61851-1:2010	EN61851-1:2010
Connector/socket type	Combo-2	CHAdeMO / JEVS G105	IEC62196 mode-3 type-2	IEC62196 mode-3 type 2
Cable length	3,9 m	3,9 m	3,9 m	-
Compatible car brands	BMW, Volkswagen, GM, Porsche, Audi	Nissan, Mitsubishi, Peugeot, Citroen, Kia	Renault, Daimler, Tesla, Smart, Mercedes	Renault, Daimler, Tesla, Smart, Mercedes, Volvo, Opel

Possible configurations (from left to right): Terra 53 C, Terra 53 CT, Terra 53 CJ, Terra 53 CJG

General specifications	
Environment	Indoor / outdoor
Operating temperature	-10 °C to +50 °C (de-rating characteristic applies) Option: -35 °C to +50 °C
Storage temperature	-40 °C to +70 °C
Compliance and safety	CE / Option: CHAdeMO
Input AC power connection	3P + N + PE
Input voltage range	400 V_{AC} +/-10% (50 Hz or 60 Hz)
Max. rated input current & power	C, CJ: 80 A, 55 kVA CT: 112 A, 77 kVA CJG: 143 A, 98 kVA Power limiting options available
Power factor (full load)	> 0.96
Efficiency	94% at nominal output power
RFID system	ISO/IEC14443A/B, ISO/IEC15693, FeliCa™ 1, NFC reader mode, LEGIC Prime & Advant
Network connection	GSM / CDMA / 3G modem, 10/100 Base-T Ethernet
Protection	IP54
Dimensions (D x W x H)	760 mm x 525 mm x 1900 mm
Mass	400 kg

Advantages of connected charging

Flexible interfacing with customer's added value systems

Optimal insight in charger operation

Maximize charger uptime with fast and reliable service

Optimize user experience

For more information please contact:

ABB EV Charging Infrastructure
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone: +31 70 307 6200
Fax: +31 70 307 6209

www.abb.com/evcharging

Power and productivity for a better world™ ABB

Outlet specifications	C (default)	J (option)	G (option)	T (option)
Charging standard	CCS	CHAdeMO	Type 2 cable	Type 2 socket
Maximum output power	50 kW	50 kW	43 kW	22 kW
Output voltage range	50 - 500 V_{DC}	50 - 500 V_{DC}	400 V +/- 10%	400 V +/- 10%
Maximum output current	125 A_{DC}	125 A_{DC}	63 A	32 A
Connection standard	EN61851-23 / DIN 70121	CHAdeMO 1.0	EN61851-1:2010	EN61851-1:2010
Connector/socket type	Combo-2	CHAdeMO / JEVS G105	IEC62196 mode-3 type-2	IEC62196 mode-3 type 2
Cable length	3,9 m	3,9 m	3,9 m	-
Compatible car brands	BMW, Volkswagen, GM, Porsche, Audi	Nissan, Mitsubishi, Peugeot, Citroen, Kia	Renault, Daimler, Tesla, Smart, Mercedes	Renault, Daimler, Tesla, Smart, Mercedes, Volvo, Opel

Possible configurations (from left to right): Terra 53 C, Terra 53 CT, Terra 53 CJ, Terra 53 CJG

General specifications	
Environment	Indoor / outdoor
Operating temperature	-10 °C to +50 °C (de-rating characteristic applies) Option: -35 °C to +50 °C
Storage temperature	-40 °C to +70 °C
Compliance and safety	CE / Option: CHAdeMO
Input AC power connection	3P + N + PE
Input voltage range	400 V_{AC} +/-10% (50 Hz or 60 Hz)
Max. rated input current & power	C, CJ: 80 A, 55 kVA CT: 112 A, 77 kVA CJG: 143 A, 98 kVA Power limiting options available
Power factor (full load)	> 0.96
Efficiency	94% at nominal output power
RFID system	ISO/IEC14443A/B, ISO/IEC15693, FeliCa™ 1, NFC reader mode, LEGIC Prime & Advant
Network connection	GSM / CDMA / 3G modem, 10/100 Base-T Ethernet
Protection	IP54
Dimensions (D x W x H)	760 mm x 525 mm x 1900 mm
Mass	400 kg

Advantages of connected charging

Flexible interfacing with customer's added value systems

Optimal insight in charger operation

Maximize charger uptime with fast and reliable service

Optimize user experience

For more information please contact:

ABB EV Charging Infrastructure
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone: +31 70 307 6200
Fax: +31 70 307 6209

www.abb.com/evcharging

Power and productivity for a better world™ ABB

Outlet specifications	C (default)	J (option)	G (option)	T (option)
Charging standard	CCS	CHAdeMO	Type 2 cable	Type 2 socket
Maximum output power	50 kW	50 kW	43 kW	22 kW
Output voltage range	50 - 500 V_{DC}	50 - 500 V_{DC}	400 V +/- 10%	400 V +/- 10%
Maximum output current	125 A_{DC}	125 A_{DC}	63 A	32 A
Connection standard	EN61851-23 / DIN 70121	CHAdeMO 1.0	EN61851-1:2010	EN61851-1:2010
Connector/socket type	Combo-2	CHAdeMO / JEVS G105	IEC62196 mode-3 type-2	IEC62196 mode-3 type 2
Cable length	3,9 m	3,9 m	3,9 m	-
Compatible car brands	BMW, Volkswagen, GM, Porsche, Audi	Nissan, Mitsubishi, Peugeot, Citroen, Kia	Renault, Daimler, Tesla, Smart, Mercedes	Renault, Daimler, Tesla, Smart, Mercedes, Volvo, Opel

Possible configurations (from left to right): Terra 53 C, Terra 53 CT, Terra 53 CJ, Terra 53 CJG

General specifications	
Environment	Indoor / outdoor
Operating temperature	-10 °C to +50 °C (de-rating characteristic applies) Option: -35 °C to +50 °C
Storage temperature	-40 °C to +70 °C
Compliance and safety	CE / Option: CHAdeMO
Input AC power connection	3P + N + PE
Input voltage range	400 V_{AC} +/-10% (50 Hz or 60 Hz)
Max. rated input current & power	C, CJ: 80 A, 55 kVA CT: 112 A, 77 kVA CJG: 143 A, 98 kVA Power limiting options available
Power factor (full load)	> 0.96
Efficiency	94% at nominal output power
RFID system	ISO/IEC14443A/B, ISO/IEC15693, FeliCa™ 1, NFC reader mode, LEGIC Prime & Advant
Network connection	GSM / CDMA / 3G modem, 10/100 Base-T Ethernet
Protection	IP54
Dimensions (D x W x H)	760 mm x 525 mm x 1900 mm
Mass	400 kg

For more information please contact:

ABB EV Charging Infrastructure
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone: +31 70 307 6200
Fax: +31 70 307 6209

www.abb.com/evcharging

Power and productivity for a better world™ ABB

Figure 1: General specifications for four ABB models of charging stations

CHAdeMO Associations

CERTIFICATE of REGISTRATION

EPYON B.V.
Delftweg 65 2289 BA Rijswijk The Netherlands

CHAdeMO Association certifies that your quick charger listed below has been assessed and found to be in accordance with the requirements of CHAdeMO protocol detailed below

CHAdeMO protocol Rev0.9

Certified list Terra Base Station (50.x/100.x)
Terra 51

Certificate No. 201013
Date 31st JAN 2011

CHAdeMO

Figure 2: Certificate of registration for CHAdeMO protocol

Opening of charging stations

On 4 November 2014 five public charging stations for electric vehicles were inaugurated, inviting all interested citizens and users of electric vehicles to recharge their vehicles. The City of Koprivnica together with local DYN@MO partners (municipal companies Kampus and MUC Komunalac, Development Agency North (DAN), Čazmatrans Nova and HŽ infrastructure) as well as business partners Podravka d.d. and HEP d.o.o., expressed interest in further investments and development of ELEN public charging stations for fast charging of electric vehicles. The implementation of the project and the increased availability of electric vehicles are expected to gradually reduce air pollution in cities and improving the quality of life by reducing noise and CO_2 emissions. The participant list of the inauguration included Mr Zvonimir Mrsic, CEO of Podravka d.d., the leading food processing company in Croatia and the region, Mr Saša Cvetojević, the founder of the Zagreb incubator of entrepreneurship and energetic electromobility champion, Mr Drazen Pros, Deputy Minister of Entrepreneurship and the representative of HEP ELEN, Mr Ivica Skorić.

Figure 3: Opening of new charging station at MUC Komunalac

Figure 4: Journalists and many guests at the opening of new charging stations at MUC Komunalac

Figure 5: Five new electric cars Mitsubishi Imiev

The national TV channel N1 produced a video on the event, available at the following link:

http://hr.n1info.com/a8177/Video/U-Koprivnici-pet-punionica-za-elektricna-vozila.html

Charging stations in working mode

Figure 6: Process of charging electric car

Figure 7: New ABB charging station, model Terra CJG 53

Training of charging stations users

ABB certificate

The City of Koprivnica, MUC Komunalac d.o.o. and ABB organized a training workshop for future users in how to use the fast-charging stations for electric vehicles. The theme of the training was “Electromobility - ABB infrastructure for electric vehicles”. ABB organized the theoretical and practical part of the training workshop and issued training certificates for the municipal companies’ employees attending the training workshop.

ABB

CERTIFIKAT

Igor Strnad

je pohađao školovanje na temu
ELEKTROMOBILNOST- ABB INFRASTRUKTURA ZA ELEKTRIČNA VOZILA
te je obučen za upotrebu

ABB - TERRA – BRZE PUNIONICE ZA ELEKTRIČNA VOZILA I PROGRAMSKOG PAKETA “GALAXY”

A B B d.o.o.
Ul. grada Vukovara 269
HR - 10 000 Zagreb

PREDAVAČ: ALEKSANDAR RADOSAVLJEVIĆ

DANA: 03.09. 2014.

Figure 8: ABB certificate

3.2 Setting targets for savings and reduction of CO_2 emissions

The main objectives of this measure are:

- to increase the share of electric vehicles in the municipal fleet to 30%
- to establish a demonstration example of efficient use of electric vehicles
- to implement a municipal electric car-sharing system and scheme which will be a reference for smaller communities
- to build private charging points for electric vehicles, breaking the market barriers
- to reduce CO_2 emissions of the municipal fleet by 27% (total number of vehicles is 23). By keeping the same number of vehicles and replacing six of the obsolete conventional vehicles by electric vehicles, the reduction of CO_2 emissions by 27% is realistic.
- to direct citizen awareness of the importance to protect the environment via sustainable transport solutions, i.e. to further follow the commitments of the Covenant of Mayors signed by the City of Koprivnica
- to optimise the efficiency of the use of the municipal fleet by reducing the number of vehicles of the current fleet and establishing a system of their constant occupancy. The current usage rate must be taken into account and improved through the car-sharing scheme.
- to reduce the operating costs for the municipal fleet by 24%
- to rejuvenate an obsolete car inventory

During the preparation phase targets were set for possible savings and reduction of CO_2. The goal is to reduce the operating costs and CO_2 emissions by using a “smart” car-sharing system and e-vehicles. A benchmark value is to be established that would show the changes resulting by the measure.

Regarding evaluation, CO_2 emissions will be measured regularly, data analysed and recommendations taken into account for further improvements.

3.3 Purchase of the vehicles

Unlike the bigger European countries that have a large demand and offer of electric vehicles, Croatia, as a small market does not have the capacity to attract car manufacturers to offer their electric vehicles, due to the expected low volume of sales. There was a possibility of purchasing the vehicles in other European countries, but the lack of servicing network in Croatia would result in high maintenance cost because the vehicles would have to be serviced in nearby European countries, such as Austria or Italy. Therefore a limited number of producers who could offer electric vehicles with the appropriate servicing network were available in Croatia. It gave the possibility to purchase such a vehicle, but because the availability of such vehicles on the market is not high, the price of the vehicles could not be lower due to the lack of competition.

While working on the implementation of the DYN@MO project, other financing sources were explored, in order to limit the financial burden on the municipal budget. A possibility was perceived in the support of the national government, through the e-mobility programme of the national Fund for Nature Protection and Energy Efficiency. CIVITAS DYN@MO being the first and only attempt to introduce electromobility in an organized way at the national level, the Ministry of Environmental protection expressed its support for this project and guaranteed to disseminate the results of the activities and present it as a best practice case.

The research required a considerable amount of effort. Work in research and evaluation was divided between two partners, MUC Komunalac d.o.o. and the City of Koprivnica.

In November 2013 the decision was taken to purchase five electric cars, one hybrid and one plug in hybrid vehicles. The choice of vehicles was based upon the available evaluation data and the requirements of the participants that would be the end users of the car-sharing scheme.

Following the decision on the purchase of these vehicles, a tender was launched for the procurement of these vehicles in February 2014.

The tender was set up for all three groups of vehicles, namely electric, hybrid and plug-in hybrid. On this tender, only the group for electric vehicles received eligible submissions. Therefore the tender for the hybrid and plug-in hybrid vehicles was repeated in March 2014. After the second tender, eligible offers were accepted for the rest of the two groups. The first vehicle was delivered in June 2014, while the remaining vehicles were delivered in late July and mid-August 2014. The City of Koprivnica and the MUC Komunalac d.o.o. cooperated in the procurement process.

3.4 Setting-up the e-car-sharing scheme

When the plan for measure K2.1 Electric municipal car-sharing scheme was developed, the municipality and its municipal companies (City Museum, City library, TRG, Koprivnicki poduzetnik, Koprivnica sport, three general primary schools, Kindergarten “Tratincica”, “Centar for integrative education “Podravsko sunce”, Open University and Campus), all municipal company were using small and mid-sized gasoline powered personal and delivery vehicles. These were shared internally inside departments, institutions and companies with no operational contact among them. This situation was not optimal, as vehicles were not used in an efficient way.

A local meeting for all partners of CIVITAS DYNAMO was held in Koprivnica after the DYN@MO kick-off meeting in Aachen on 28-30 January 2013. During this meeting, the tasks were assigned to the partners according to each company’s capacities and interests.

MUC Komunalac d.o.o. started to plan the development of the car-sharing scheme in order to minimize costs incurred by the current inefficient way of municipal vehicles management. Komunalac d.o.o. is also developing a plan for the largest local industry, employing over 3,000 people. The plan will incorporate the model for the industry and several other companies in the city.

Since there are no car-sharing companies operating in Croatia that can offer complete solutions to the end user, the City of Koprivnica had to undertake additional efforts in finding

a company that was capable of developing such a programme tailored to the city's specific needs. A number of software companies were contacted that provided necessary data that were used to develop the main design of the car-sharing scheme.

The design of the car-sharing scheme was finalised in January 2015 and comprised the following elements:

- The design of the software system
- The design of the hardware system
- Online system

This design was approved by the team working on measure K2.1 based on a web-based application that allows the end users – employees of the City of Koprivnica employees and connected institutions – the usage of the purchased electric vehicles. The development started in January 2014 and lasted for approximately 60 days. The lead partner in this activity, Komunalac d.o.o., coordinated the activities and took part in the research activities, while the second partner, the City of Koprivnica, also participated in research and the modelling of the system.

As part of the development of the car-sharing scheme three meetings with representative of companies were held which had appropriate products to offer. The meetings and the outcomes of the meetings were used to set up the technical specifications needed for the completion of the tendering documents. The procurement procedure was started in July 2014, while the implementation was in late August 2014, after the electric vehicles had been delivered. The testing phase of the system took three weeks, a period in which all basic parameters of the system were set up. The City of Koprivnica and the MUC Komunalac staff cooperated in the development of the car-sharing scheme.

The car-sharing scheme has proven to be more complicated than expected. The main reasons for that have been the technical requirements of the system that arose from the fact that the car-sharing scheme would have three sharing locations (City administration office, Kampus premises and the Komunalac premises) Therefore, in July 2015 DYN@MO project staff decided to run a test period of the car-sharing scheme, with an offline reservation system. This period should provide the necessary data on how to set up the final scheme and how to avoid the usual mistakes of such a system, such as the collisions of the reservation process, the lack of discipline of the users, like not returning the keys, not doing the reservation process, taking the car outside the normal practices and to see if further education is needed. At this point in time, November 2015, the vehicles are distributed at three locations: at the City administration location (five vehicles), the Komunalac location (two vehicles) and the Kampus location (one vehicle). Each location has a person responsible for the vehicles and the offline reservation system. The responsible person is recording the booking requests and managing the system.

The procurement procedure for the online version started in December 2014, and upon the final decision it is anticipated to be online by February 2016. The City of Koprivnica and the MUC Komunalac staff cooperated in the development of the online-based car-sharing scheme.

From an organisational point of view, at the beginning of the development of the car-sharing system, the City of Koprivnica decided to appoint a team to prepare and implement the

procurement of the car-sharing system. In this document, the procurement value was defined and an expert committee appointed. The measure has two main goals: to remove barriers for successful implementation and establish a system of commonly shared electric vehicles. The estimated procurement value for the car sharing system (hardware and software) is 110,000.00 HRK (ca. 14,500€). The invitation to tender for the development of the electric car-sharing system with all the details was sent on 2 April 2015 to the following organisations: MOBILISIS d.o.o., DEKOD d.o.o., AVALON d.o.o.

The tender list contained the basic information about the bidder, the description of the project assignment and expenses.

The financial offer of Mobilisis d.o.o:

- 104,105.00 HRK (13,617.75€) (without VAT)
- 130,131.25 HRK (17,022.19€) (with VAT)

The offer included:

- Key locker: **22,000 HRK (2,877.77€)**
- Key locker installation: **3,500 HRK (457.83€)**
- I button system (GPS system for car tracking control, system for driver identification, system for the monitoring of car engine performance): **14,450 HRK (1,890.17€)**
- Installation of I Button system in cars: **3,675 HRK (480.71€)**
- Development of Internet application “Car sharing”, including the development of the programme solutions: **48,600 HRK (6,357.26€)**
- User fee: **11,880 HRK (1,553.98€)**

Since only one offer was received, the appointed committee requested the submission of the tax administration certificate that MOBILISIS d.o.o. does not have any unpaid debts, before unanimously deciding to confirm that the tender was won by MOBILISIS d.o.o.

Below some pictures show the elements implemented as part of the car-sharing scheme:

Figure 9: Key locker

Figure 10: I Button

Figure 11: Adapter for I button in the car

4. Evaluation activities

Since the first day of the test implementation phase regular evaluation activities haven been undertaken. Most of the evaluation activities were directed towards the behaviour of the user and the replication of the common mistakes. The basic indicators, total number of km, consumption of the vehicles and the total costs of the whole operation are being monitored daily and will represent valuable data at the end of the implementation of the measure.

5. Dissemination activities

The original dissemination aims as defined in the measure dissemination plan (K2.1-WD3) are the following:

- Promotion of the scheme among employees of the municipal companies (direct users)
- Promotion of the scheme among businesses at the local level in order to foster interest and attract future implementation replicators
- Promotion of the innovative car-sharing solution for other local authorities
- Raising interest of citizens for buying electric cars by providing infrastructure
- Providing support for the national promotion of electromobility
- Public promotion of electromobility at the national and international level

The innovative aspect of the measure as well as the timing of the measure implementation required a redefinition of dissemination aims. Electromobility was, and to some extent, still is an exceptionally innovative mobility solution in the Koprivnica region. Therefore the primary aim of the dissemination has been to promote this solution developed in Koprivnica at the local, national, regional and European level. The construction of the electric charging system and the process of vehicle procurement have been intensely promoted since autumn 2014. The citizens and local businesses have also been involved intensely, while the car-sharing scheme was then promoted among the direct users.

6. Communication timing, tools, activities and dissemination outputs

6.1 Timing

The majority of activities started in December 2014, but have been very intense since the beginning of implementation. The delays have been overcome by the intense production of dissemination materials and quickened pace of dissemination, much more intense than planned.

6.2 Dissemination activities and tools

Press releases

a) Public procurement process for electric vehicles launched, 9 January 2014.
b) Signing of the contract for the construction of charging stations, 14 February 2014.
c) Press conference: signing of the contract for the construction of electric charging stations, 19 February 2014.
d) Press conference on signing the contract for electric vehicles purchase, 17 March 2014.

Electric car-sharing scheme leaflets

a) HEP conference leaflet 8 May 2014.
b) Leaflet on the implementation of the scheme, 21 March 2015.

Figure 12: E-car-sharing scheme leaflet

Newspaper articles, radio and television

a. National media: daily papers: 8 articles
b. Local media: 12 news articles
c. TV news: regional: 6 news items, national: 2 news items
d. Internet portals: 26 items
e. City almanac: 3 issues, November 2013,2014 and 2015
f. DYN@MO newsletters in the local language: 2 issues

Figure 13: E-car-sharing scheme launch, November 2014

Mobility 2.0 activities

a) Facebook
   - Civitas Dyn@mo Koprivnica: 7 posts
   - Koprivnica Dinamičan grad: 17 posts
   - e-auti: 28 posts

b) b. blog: 3 posts

Figure 14: E-car-sharing scheme on Facebook

International promotion

a. Case study: ELTIS, 17 August 2014.
b. CIVITAS Newsletter MOVE: 1 issue, October 2014.
c. CIVITAS brochures: 2 issues, Cleaner and better transport in cities:
   - Implementing electromobility in DYN@MO cities for low carbon mobility
   - Establishing sharing schemes in DYN@MO cities to reduce individual transport
d. d. CIVITAS.eu
   - News item on the tender for electric vehicles, 16 January 2014.
   - Smart city award, 12 November 2015.
e. CIVINET Slovenia-Croatia e-newsletter: 7 issues

Presentations at local events

a. Contract signing event for e-chargers, 19 February 2014.
b. CIVITAS CAPITAL Activity Fund event, 17 July 2014.
c. Presentation of e-charging stations, 4 November 2014.
d. City fair, 8 November 2014.
e. Presentation to visitors from Skopje, Macedonia, municipality, 9 June 2015.

Presentations at national events

a. Zagreb Energy Week, 19 May 2015.
b. Clean Fleets national conference, Zagreb, 28 May 2015.
c. Energy efficient transport, Zagreb, 25 September 2015.

Presentations at international and EU events

a. EU Parliament presentation, 4 March 2014.
b. CIVITAS study tour in Graz, presentation, 12 March 2014.
c. CIVINET Slovenia-Croatia study tour, presentation, 9 April 2014.
d. Palma Summer University, presentation, 15 May 2014.
e. International innovation meeting, Zalaegerszeg, Hungary, 10 December 2014.
f. CIVITAS Forum presentation, October 2015, Ljubljana, Slovenia
g. Towards a Humane city, keynote presentation, Novi Sad, Serbia, 5 November 2015.

Figure 15: Palma Summer University 2014

Dissemination outputs

a. 1,000 leaflets published, 800 distributed (2,000 planned) (a second leaflet will be published after the first evaluation results have been confirmed)
b. 3 ppt presentations of implementation and results (1 ppt planned)
c. 55 Mobility 2.0 contributions (20 planned)
d. 71 articles and news items in various media, including internet portals (20 planned)
e. 15 presentations at local, national and international events (8 planned)