Shaping the future of e-mobility
Key facts

2MOVE2 – Moving together for a better mobility

Eight partners in four countries (incl. cities of Stuttgart, Brno, Malaga and Tel Aviv-Yafo)
Practical focus – training workshops and 22 measures
9 M € project budget
Project duration: December 2012 - November 2016
Topics addressed: E-mobility, freight traffic, ITS & traffic management, Sustainable Urban Mobility Plans (SUMPs), cycling, public transport, corporate mobility management, city logistics, mobility culture

Source: CIVITAS Initiative
2MOVE2 is a European mobility project under the CIVITAS Plus II programme with a total budget of 9 million Euros and four city partners, Stuttgart (Germany, project coordination), Brno (Czech Republic), Malaga (Spain) and Tel Aviv-Yafo (Israel). The cities are flanked by the transport engineers SSP Consult, the University of Stuttgart, the public transport company of Brno (DPMB) and the Technion - Israel Institute of Technology.

The main goal of 2MOVE2 is to exchange knowledge and experiences between project partners and to implement innovative measures (22 in total) which support and enable the setting up of more sustainable transport systems. Topics addressed by 2MOVE2 range from e-mobility, freight, ITS-based traffic management to Sustainable Urban Mobility Plans (SUMPs), cycling, public transport and corporate mobility management.
E-MOBILITY IN CITIES

Electric vehicles (EVs) such as electric cars or bicycles are expected to play an important role in the transition towards more sustainable ways of urban mobility.

Electric drivetrains don’t emit carbon dioxide and nitrogen oxides. Emission of particulate matter is considerably lower than from conventional vehicles and stems mainly from brakes and dust dispersion. Noise emissions are also considerably reduced in electric vehicles, especially below a speed of 30 kilometers per hour.

Aside from air pollution prevention, there are other benefits for cities if they engage in e-mobility. E-mobility can be easily combined with sharing concepts and paves the way for future applications like connected and automated driving. The increasing use of electric bicycles reduces the use of private cars in short and medium distances. This leads to less congestion, less pollution, and less stress.

But integrating e-mobility into the municipal practice is a cross-sectoral task. It works best when the different municipal departments (such as the offices for transport, urban planning, economic development, and environment) are coordinated by a strategic office near to the highest administrative level (Mayor). It is important to define the different roles of the administration and to assign the competences to municipal departments. Stuttgart for instance makes use of a broad range of competences and activities for the promotion of electric vehicles. The following table briefly summarizes the four roles of municipalities in implementing electric mobility:

The roles of municipalities

- Shaper
- Regulator
- User
- Promoter
Shaper

Local and regional authorities can take an active role in the development of e-mobility by the

• installation of charging infrastructure in public space,
• consideration of e-mobility in the planning process of private buildings,
• creation of designated parking signs for e-vehicles and
• development of a smart card allowing easy access to many mobility offers and municipal services.

Regulator

Cities can (depending of course on their legal competences), also act as licensing authority for the organization and implementation of

• charging infrastructure in public space,
• electric car sharing and scooter sharing concepts, e-bike rental systems
• dedicated areas for e-cargo-bikes in the public space and
• exclusive benefits for logistic companies using e-vehicles (e.g. delivery times and zones).
Promoter

Municipalities play an active role in the regional network for a stronger use of e-vehicles. There are many ways to communicate the need for more sustainable mobility with the local public:

- The city webpage and social media on the internet.
- Printed periodicals (i.e. municipal newspapers) and traditional newspapers.
- All kinds of “events” – from cargobike-roadshow to district festival – that include or actively promote mobility solutions (e.g. electric shuttle service during cultural events).
- Trade fairs and congresses.
- Working groups and personal exchange with companies, business associations, guilds, churches, nursing services, clubs and so on.

User

- Several municipalities already use electric vehicles in daily practice, including e-cars, electric scooters and cargo bikes.
- City administrations, with their diverse public-sector companies (from hospitals and waste management to energy suppliers), create mobility demand for all kinds of usages and vehicles.
- Many public transportation companies apply at least one kind of electric vehicle, from trolley buses over low-emission ferries to electric tractors on airports.
- The local public sector is an important user of car sharing-services, consumer of electric vehicles, both standardized and specialized.
- In the e-mobility context, the municipalities are also user of charging infrastructure and software solutions (roaming, mobility apps etc.).
This measure promotes clean energy-efficient vehicles and transport systems in Stuttgart. Special focus is laid on awareness raising and training activities. To this end, information events in the field of e-mobility are offered in city districts and for specific target groups. The measure also provides a boost for the integration of e-mobility in the urban planning process by offering technical workshops to municipal experts to include e-mobility in the development of new urban areas in Stuttgart.

Results and achievements

- Information and test events on e-mobility were successfully organized:
  - for 100 students and migrants of four language schools and one municipal enterprise,
  - in three city districts, and at
  - a cargo bike event for citizens, municipal technicians and participants of International Cities for Mobility Congress 2016.
- A comprehensive concept for the inclusion of e-mobility in urban planning processes was developed.
- A network of stakeholders from private sector and research was created thanks to the information events.
- A workshop on the inclusion of e-mobility in urban planning and environmental processes will be organized for technicians of the municipality of Stuttgart in autumn 2016.
The aim of this measure was to introduce and promote electric technologies for private and public transport in the city. In a first step a feasibility study showed the possibilities to promote electric mobility in private and public transport. In the area of public transport there was a plan to replace one bus line operated with conventional diesel buses by electric minibuses as environmental-friendly solution. The line was proposed to operate in the city centre where the level of car density and pollution is high. Due to institutional and time barriers the aim of this measure was partially not fulfilled.

Results and achievements
- A concept for the support and use of electro-mobility for private and public transport was developed.
- A feasibility study on e-mobility and the opportunities to improve sustainability in the city was carried out.
- Different types of electro buses were successfully tested in 2013 (AMZ, Stratos, Siemens Rampini, ŠKODA Perun). Thanks to the test the municipality learned that the operation of electro buses in the city is possible.
- Surveys (questionnaires) carried out during the test phase showed that more than 80% of Brno passengers support such electric minibus operation.
- Full support of political representatives is crucial as well as sufficient time and resources for the preparation and implementation of such a measure.
The campaign encourages the use of more efficient and sustainable means of transport, through the implementation of monitored routes to school by bus, bicycle and by walking; open days have been organized for free testing of electric vehicles with the aim to break the “car culture” tradition, focusing especially on new generations and students.

Results and achievements

- Free parking for electric vehicles in municipal car parks
- Purchase of a municipal fleet of electric vehicles
- Parents and students were given practical information through trials about the advantages of electric vehicles with over 100 people testing the electric vehicles in the yearly events “Plugged into the Campus”.
- 3 Safe Routes to School Campaigns carried out (1 each school year) involving over 500 students.
- The use of the mobile/web application TRAZEO to monitor the progress of the different safe routes and to actively involve the parents and teachers.

www.civitas.eu/MAL5.04
This measure encourages the adoption of cleaner modes of transport. Tel Aviv-Yafo took a two-pronged approach to e-vehicles: a feasibility study on deployment of charging stations and charging infrastructure; and adoption of e-motorcycles into the municipality’s motorcycle fleet. This was a top-down approach to raise awareness to the use of clean and energy efficient vehicles.

Results and achievements
• 15 e-motorcycles were incorporated into the municipality’s fleet as part of the pilot.
• The cost benefit analysis proved the e-motorcycles to be a financially viable option with a benefit cost / ratio of 2.6.
• The municipality gained greater understanding regarding charging infrastructure and deployment requirements if e-vehicle market takes-off.
Examples from 2MOVE2 cities about their role in enhancing e-mobility outside the project

**Malaga**

Electric vehicles receive several benefits such as the reduction of the municipal road tax for five years, a reduced rate for parking on public roads and free access to the restricted areas in the historic centre. Furthermore, by the year 2030, it is estimated that 100% of the municipal fleet will be made up of electric vehicles.

**Brno**

Thanks to the test operation of various types of electro buses under different conditions in the city environment, the municipality learned that the operation of electro buses in the city is possible and its environmental-friendly impact (zero emission, low noise) are considered as important. The results also show that the electro buses can substitute diesel buses on some lines and in some areas. The most suitable solution for the introduction of electro buses in the city of Brno is a system of electro buses which can be partly charging at the terminuses of the existing trolley bus network, which is large in Brno (54 km).
Stuttgart

In 2012, the federal government of Germany created the programme “Electric Mobility Showcase” aiming to test innovative elements of e-mobility through close cooperation between industry, science, and local governments. The biggest project was “Stuttgart Services”. Until summer 2015, more than 20 partners developed the “polygoCard” and an internet platform for information and booking. The “polygoCard” is the key to public transport (e-ticket), to electric car sharing and bike sharing (520 e-smarts and 100 pedelecs available), to Park+Ride, to 500 public charging points for e-vehicles and to many other services like the municipal libraries in Stuttgart. Until June 2016, more than 200,000 polygoCards were delivered to the users.

Tel Aviv-Yafo

As part of the municipality’s bylaw regulating green building a code was approved mandating preparation for charging points for e-vehicles. The number of charging points (preparation at the construction stage), will be a minimum of 5% of the parking spaces in each new build in the city. The regulations were published prior to a public hearing and came into force at the beginning of September 2016.
Box of advice from 2MOVE2 cities

**Malaga**
- Public participation is crucial in the policy of promoting electric vehicles with new regulations.
- The active involvement of teachers and parents is necessary for supporting the creation of new safe school routes in order to ensure the sustainability of the initiative.

**Brno**
- The test of various types of electric buses and a careful evaluation is indispensable for preparing the ground for the successful implementation of electric buses in public transport.
- For a successful implementation of such a measure the full commitment of political representatives is essential as well as sufficient time and resources for the preparation and implementation of the measure.

**Stuttgart**
- E-mobility should be included in urban planning processes. For this, it is necessary to introduce the specific requirements in a very early phase of the planning process. This is very important for a careful use of public space and the provision of the necessary technical infrastructure.
- It is recommended to coordinate and develop e-mobility concepts in a high level and central position of the administrative hierarchy. As there is still low experience in municipalities with electric mobility, it is crucial to convince the key decision makers about the advantages of e-mobility.
- A very positive experience was made by bringing e-mobility into the daily life of citizens by information and testing events, campaigns, and trainings.

**Tel Aviv-Yafo**
- The pilot with e-motorcycles showed that the distance between rejection of technology and its acceptance can be shortened within a relatively short period of time with the willingness and collaboration of all the relevant stakeholders.
- Without feedback surveys and the willingness of at least one of the e-motorcycle manufacturers to take on-board the comments of the pilot participants and to make the necessary adaptations to the motorcycles, the pilot would have failed.
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