CiViTAS | DYN@MO

Final brochure

2020 CiViTAS
Cleaner and better transport in cities
DYN@MO

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About CIVITAS DYN@MO

The CIVITAS DYN@MO consortium at the CIVITAS Forum conference in Gdynia, September 2016

DYN@MO – funded by the European Commission within the CIVITAS Initiative between December 2012 and November 2016 – is the acronym for the project motto "DYNamic citizens @ctive for sustainable MObility" which derives from the project's mission statement: "to strengthen sustainable mobility through promoting non-polluting lifestyles, through social interaction and collaboration on the basis of ICT/ITS and new social media tools [Mobility 2.0], and through integrated implementation of innovative transport services for active citizens of all ages".

Each city in the project implemented measures under three themes which served as common threads:

- Theme 1: Sustainable Urban Mobility Planning
- Theme 2: Clean and energy efficient vehicles
- Theme 3: Deployment of ICT and ITS

Within the project, with a budget of almost €12.5 million and an EC contribution of a bit more than €8.5 million, a total of 28 partners from two leading cities - Aachen in Germany and Gdynia in Poland - and two learning cities - Koprivnica in Croatia and Palma de Mallorca in Spain - have implemented altogether 30 measures. The DYN@MO in a nutshell brochure (available at: **www.civitas.eu/content/civitas-dynmo-nutshell**) provides a complete overview of all measures.

About the Final Brochure

This brochure showcases each city's main highlights in the project. A highlight may refer to a single measure, part of a measure, or an amalgamation of several measures. After a short introduction to each city, the highlights are elaborated per theme, including some of the main results, information on costs, lessons learned, success factors and future outlook.

Thereafter, the different Mobility 2.0 activities that have taken place in each city are described, followed by a reflection on the importance of evaluation and monitoring, including a description of the project's encouragement of citizen engagement with the lead user approach. The brochure concludes with a summary of lessons learned and policy recommendations.

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Introducing Aachen

Aachen is the most western city in Germany, located in North Rhine-Westphalia, close to the borders of Belgium and the Netherlands. It is part of the StädteRegion Aachen together with nine other municipalities in an area of approximately 700 km² and 560,000 inhabitants.

The city of Aachen, with its 250,000 inhabitants, unites tradition with progress. The cathedral and the Gothic City Hall in which 32 German kings celebrated their coronations still form the heart of Aachen's old city centre. Aachen's four major colleges and universities have in total 50,000 students.

A cooperative approach in Clean Air Planning and SUMP has been established and is the basis for a vision of a city with a smart and emission free mobility and high quality of life.

City of Aachen

SUMP event at Elisenbrunnen in Aachen

CIVITAS DYN@MO in Aachen

The mobility department of the City of Aachen has a long tradition in sustainable mobility planning. Over the years the following measures have been successfully implemented: traffic calming, parking zones, parking guidance system, pedestrian zones, extension of the cycling network, improvement of public transport. Aachen is a model region in Germany for mobility management and electromobility and has participated to several funding programmes.

In recent decades Aachen has also learned a lot from some failed attempts in implementing sustainable mobility measures, such as a 'no'-result from a public poll regarding the reintroduction of a tram, a city logistics approach without demand and regulation opportunities and costly traffic management approaches with marginal effects.

Many ideas for new approaches at the process level led to the decision to participate in the CIVITAS DYN@MO project and to extend the cooperative approach amongst local and regional mobility partners.

The City of Aachen (project coordination and site coordination) and StädteRegion Aachen took part as administrations with innovative claims. The municipal utility company, STAWAG, as the local pioneer and expert in electromobility, and the municipal housing company, gewoge, supported as partners by testing mobility offers for tenants.

The local public transport authority AVV and the local public transport operator ASEAG participated as partners striving for reliable, comfortable and multimodal public transport and cambio CarSharing Aachen as the oldest car sharing operator in Germany with 133 cars, 48 stations and 7,000 users in Aachen, initiated a shared mobility offer with very high customer satisfaction.

Finally, the two main universities RWTH Aachen and FH Aachen were important partners with experience in theory and practice of mobility management and campus GmbH as developer for the new campus areas.

Aachen's CIVITAS DYN@MO team

The project supported very well the cooperative approach and improved the understanding of opportunities and the partners' way of thinking about mobility issues. Further, Aachen's electromobility strategy has been extended with support of organisational and marketing measures and Aachen made a big step towards multimodality with a multimodal platform, business plans, a tariff model and the start of a city-wide pedelec sharing scheme. The usage of social media channels and public participation enabled modern dialogues with citizens and has been a significant contributor to the achieved successes in Aachen and the region.

Marcel Philipp

Mayor of the City of Aachen

"Aachen has the perfect conditions to be a European model city for electromobility. Based on the excellent know-how in the universities, innovative spin-offs and a cooperative planning culture, we are able to develop, produce and use electromobility in Aachen. Among other achievements, CIVITAS DYN@MO's support was vital to establish a city-wide pedelec sharing scheme for our hilly city. In addition to our public transport and the existing car sharing scheme, multimodal mobility is no longer merely a vision, but has been realised as an option in Aachen thanks to European funding. The City administration itself has been and continues to be a user and promoter of multimodal mobilty."

Aachen on its way to sustainable mobility

Development of a Dyn@mic SUMP

Description of the activity

In 2012, Aachen initiated its grand Sustainable Urban Mobility Plan (SUMP), developed by consulting transport stakeholders and through interaction with the public in the form of engaging events, surveys and social media. Eight thematic commissions have been established for developing the city's SUMP, comprised of experts and cooperative stakeholders.

As a result, a "Vision Mobility 2050" and a "Mobility Strategy 2030" were developed and presented to more than 800 citizens during one of the two public events or via an online opinion poll. The received feedback has already influenced the SUMP's draft text and will be further taken into account when planning the concrete measures. Furthermore, region-wide cooperation has been improved by bringing transport planners of planning departments of neighbouring cities together.

Main achievements

- Successfully bringing together representatives from different city departments and various stakeholders to jointly work on sustainable mobility
- Political consensus and public support for a long-term vision on sustainable mobility
- Wider acceptance of an intermodal approach and new mobility offers among politicians, stakeholders and citizens
- Availability of mobility indicators as an additional basis for political discussions

Future outlook

- City-level SUMP: Now that the long-term "Vision Mobility 2050" and the mid-term "Mobility Strategy 2030" have been developed, the next step will be to develop a short-term programme with concrete measures, targets and budgets
- Regional SUMP: Further steps will be taken to improve cooperation between the municipalities

Sustainable mobility plans for university campuses

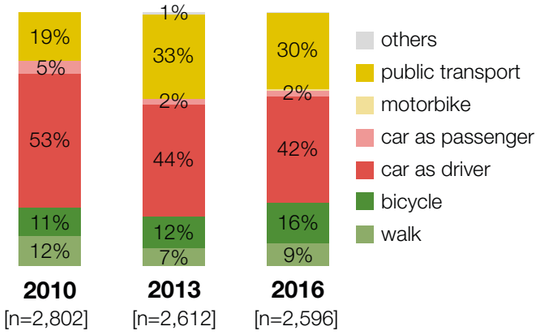
Future outlook

- A pedelec rental system is in the process of being established at the universities with support from the City – a test version of the scheme with six stations and 30 pedelecs has already been set up during DYN@MO
- The universities will continue to promote (e-)car sharing for business trips that require a car
- RWTH Aachen will continue to offer Job Ticket and parking management to promote public transport; FH Aachen is working on providing a similar offer to its employees
- RWTH Aachen is engaged to continuously monitor the mobility management measures to increase the target groups' acceptance of sustainable mobility

Description of the activity

RWTH Aachen University and FH Aachen have been developing mobility plans to promote environmentally friendly mobility at their university campuses. Mobility management has been more firmly integrated into the planning and administrative processes at RWTH and FH Aachen, and a range of measures – including extensive information on mobility options through brochures, fact sheets and online mobility portals – have made the mobility of employees, students and visitors more efficient and sustainable.

Modal Split at RWTH Aachen University
(employees on their way to work)



Costs

- One project coordinator was involved full-time, eight thematic group leaders contributed on average five hours per month, and one external moderator supported the process for about 20 to 40 hours per month.
- About €240,000 was spent on the internal staff, mainly the SUMP coordinator; €120,000 for the external moderator and about €100,000 for participation and dissemination

Lessons learned

- The agreement on a long-term vision on mobility is helpful when developing a SUMP
- Online surveying is a good method for gaining opinions of interested people, but the outcomes do not necessarily represent the general public opinion
- It is of vital importance to have the management's full commitment when implementing mobility management at companies, and when it regards governmental institutions, having legal frameworks in place would simplify the implementation of mobility management

Main achievements

- The mobility management measures have contributed to a shift of 9% of employees' trips to work towards sustainable modes of transportation between 2010 and 2016
- Results of the mobility surveys indicate an average annual reduction of 3.15 million car kilometres and 650 tons of CO_2 at RWTH Aachen, compared to 2010
- Improvement of business trip management by expanding the mobility services for employees (car sharing, bike sharing, discounted public transport ticket called Job Ticket, etc.)
- The demand for parking spaces at RWTH Aachen has decreased significantly since mobility management was introduced

Success factors

- Based on regular mobility surveys and periodic monitoring, in-depth impact analyses can be made, enabling the implementation of target group specific measures
- Cooperating with local partners who advocate the shared goal of sustainable urban planning, and involving all actors from an early stage, both from the university administrations as well as from external partners contributed to a successful implementation of measures
- Particularly the attractive Job Ticket has led to a modal shift for the RWTH employees' trips to work
- Ensuring financing of measures and ideas for measures through EU funding

Aachen goes electro!

Future outlook

- A “zero emission mobility coordinator” – established at the Mayor’s office – will, among other things, implement a pedelec scheme and make sure that in 2017 the city administration’s e-car pool expands to 22 vehicles
- The pedelec sharing company aims to have 100 stations and 1000 pedelecs in Aachen by 2022
- With the ordering of 15 additional pure electric buses by ASEAG, a big step has been taken towards a complete conversion of the diesel bus fleet
- Further cooperation, projects and events are very likely to take place

Pedelec sharing station velocity Aachen

Main achievements

- The transformation from ASEAG’s diesel bus fleet to an emission free bus fleet has started
- Establishment of a city-wide pedelec sharing scheme, an electric carpool fleet at the city administration and the first car sharing stations in Aachen’s neighbouring cities
- 10% of car sharing cars operate purely electrically
- Over 700 participants in two online surveys showed strong support for Aachen’s claim as a model city
- 80 companies have take part in pedelec testing weeks during the four years
- The share of electric bicycles in Aachen on workdays increased from 2% (2013) to 3.5% (2016)

Start of e-carpool in the city administration

ASEAG converted a hybrid bus to a fully electric bus

Costs

- Convincing a significant number of car sharing clients to regularly book an electric car requires at least a year of great personnel effort
- In urban areas with a dense grid of e-car sharing stations, the usage of electric vehicles in car sharing fleets can reach the same level as conventionally fuelled cars
- The purchasing costs of electric vehicles are 90% higher, whereas the revenues due to shorter driven distances are 20% less; this means that electric vehicles in car sharing fleets are still not profitable

“With the aid of the CIVITAS DYN@MO project, we were able to gain valuable experience in the field of electric mobility. We will use it to take further steps towards zero emission mobility in Aachen.”

Werner Wingenfeld, Head of Planning Department, City of Aachen

Description of activities

Aachen became a leading city for e-mobility in Europe in recent years. Development of batteries, cars, pedelecs and buses is ongoing and forms elements of the SUMP strategy for electromobility as a multimodal, emission free mobility concept. The city administration organises business trips with public transport tickets, pedelec rental, an e-carpool and the use of car sharing.

The local transport company ASEAG tested and purchased hybrid buses, converted one hybrid bus to a fully electric bus and purchased five lightweight buses.

Seven shared e-cars have been added to the cambio car sharing fleet. Cambio opened the first three car sharing stations in the StädteRegion.

The student initiative that developed a new pedelec sharing scheme in Aachen received funding for six stations. A local cargo e-bike delivery service has been supported by the project. The local energy provider STAWAG demonstrated a direct smart connection of solar power generation and charging of e-cars.

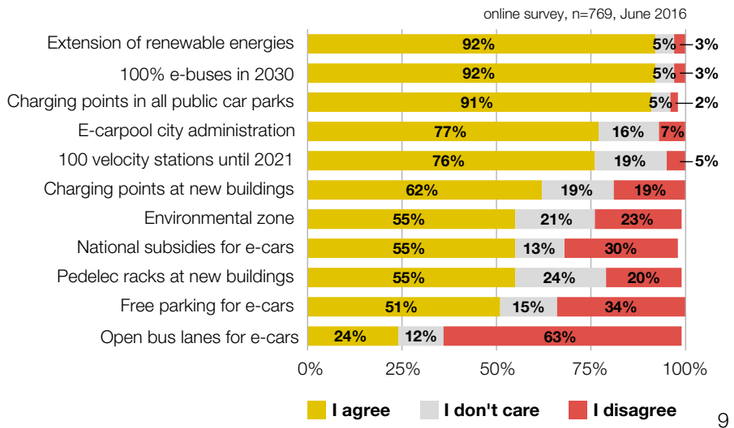
With yearly events, testing offers and online surveys, the City of Aachen and the project partners increased awareness of the project’s local activities.

Lessons learned

- Personal contact, test drives and trainings with electric vehicles, although time consuming, are helpful to arouse interest and to create confidence in driving in an e-car
- Without the commitment of buying an electric car, car sharing can lower barriers to entry for electromobility
- Study trips to show good practice examples are helpful to convince stakeholders of the advantages of electromobility

What do you think about these e-mobility ideas?

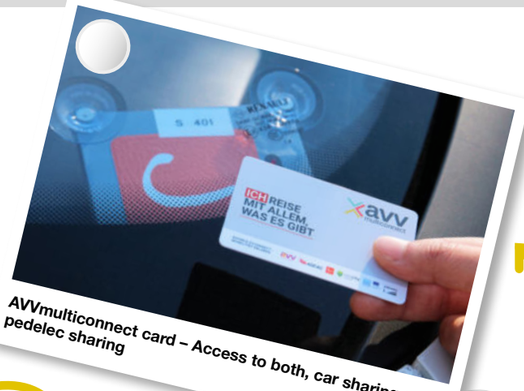
The survey participants say...



Mobility Alliance: towards cooperating mobility services in the region of Aachen

Main achievements

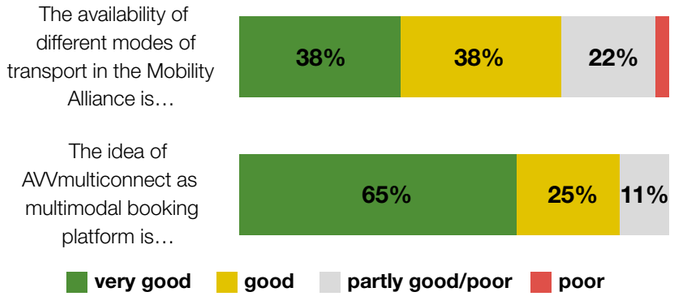
- Cooperation among mobility service providers strengthened
- Integrated combination of mobility services and tested in a pilot phase
- Mobility platform including multimodal route planning system, available from **www.avvmulticonnect.de**
- More attractive Mobility Alliance with improved passenger information (real-time data and routing, event data, social media)
- Results from survey with test users:
  - The multimodal trip planner is satisfying (80%)
  - Using different modes of transport in the Mobility Alliance is (very) good (76%)
  - The idea of one multimodal booking platform is (very) good (90%)
  - Joint access via chip card is key to behaviour change (78%)



AVVmulticonnect card – Access to both, car sharing and pedelec sharing

Using the Mobility Alliance?

The test users say...



AVVmulticonnect – the multimodal route planer

Description of activities

With the establishment of a Mobility Alliance in Aachen, local mobility providers of buses, trains, car sharing and pedelec sharing worked together in order to develop a mobility platform for the regional transport market and to offer multimodal and intermodal mobility options for citizens.

A market analysis was conducted as a first step. Based on this, an initial concept for the Mobility Alliance was elaborated, including various organisational, financial, technical and legal issues. A pilot with 100 test users was carried out from April to July 2016.

The test users were able to appraise the simplified integrated access to buses and trains as well as try out the city's car sharing and pedelec sharing schemes, including joint registration and chip card access to the shared vehicles. In addition, a new multimodal information and routing platform was introduced by the region's public transport association AVV. The system includes not only event and real-time data, but also real-time routing for bus and train passengers. Test users with a Twitter account shared tweets and retweets about their trips.

Future outlook

The technical tests of the multimodal routing system are being continued and the system is being developed further based on the experiences and survey results. It is planned that the regular information provided for bus and railway in the Aachen Transport Association (AVV) will be replaced by the multimodal routing system in summer 2017, including real-time data and routing for all transport companies in the area of the AVV. In parallel, the Mobility Alliance is being developed further. New mobility offers will be integrated, e.g. carpooling and long-distance coaches.

At the same time, electronic transport fare management will be introduced, i.e. initially all season tickets will be transferred to chip cards and mobile devices as of 2017, followed by all other public transport tickets and access rights for other mobility services from 2018 onwards. In addition to mobility information, booking and ticketing for other mobility offers will also be available on one online platform.

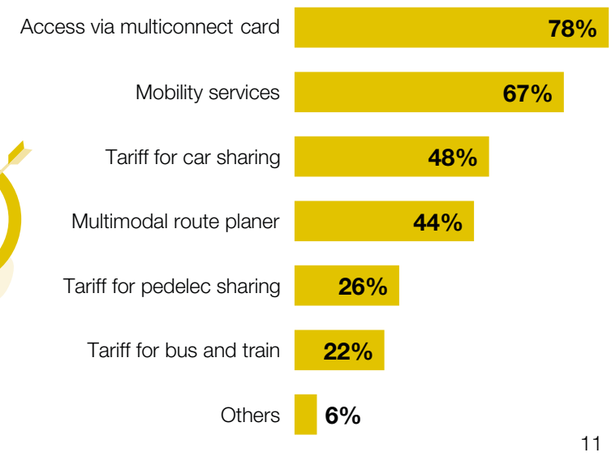
Quote from test user via Twitter: "Finally, a route planner which includes bus, train and car sharing. I'm excited. :)"

Success factors

- Good cooperation between committed partners working towards a common goal
- Benefits and synergies of cooperative work environment and therefore the will to invest
- Political support, both financially and towards the public
- Public awareness and increased popularity of multimodality
- Fast technological developments in multimodal electronic offers
- Successful gathering of required data, for example real-time data on buses
- Building the needed interfaces for exchanging data through CIVITAS funding and maintaining the interfaces continuously

Which aspects of the pilot phase will lead to mobility behaviour change?

The test users say...



Introducing Gdynia

Gdynia is a port city with almost 250,000 inhabitants situated in the northern part of Poland on the coast of the Baltic Sea in the Tri-City Metropolitan Area (with Gdansk and Sopot), comprising in total more than 1.2 million inhabitants. It is a young, vibrant, dynamic city and a Polish centre of economic growth.

In 2015 the modal split for cars was almost 58%, while the share of public transport was 40% and for cycling it was 2%. The public transport system in Gdynia is based on three main subsystems: buses, trolleybuses and suburban light rail, and compared to other cities it is relatively low carbon, efficient and accessible.

City of Gdynia

European Trolleybus Day organised annually in Gdynia

CIVITAS DYN@MO in Gdynia

Gdynia decided to participate in the CIVITAS DYN@MO project as its three core themes – sustainable urban mobility planning, clean and energy efficient vehicles, and intelligent transport systems and ICT – reflected exactly those fields of sustainable urban transport which the city regards as important.

At the core of Gdynia's activities was the development of a new generation SUMP, with strong involvement of the local community and stakeholders. For this purpose a range of community projects, workshops, debates and events were organised and a Mobility 2.0 internet platform was set up. Acquired experience and good practice were used to establish a Baltic Sea Region Competence Centre on SUMP, in close cooperation with the University of Gdansk.

With regard to clean and energy efficient vehicles, Gdynia decided to increase the attractiveness of its trolleybus system even further. Two Li-Ion battery hybrid trolleybuses were bought and allowed to extend one of the lines into an area without wired infrastructure. Furthermore, the energy efficiency of the trolleybus system was increased with innovative supercapacitor technology installed at one of the substations. These achievements wouldn't have been possible without PKT, Gdynia's local public transport operator responsible for Poland's largest trolleybus system.

Last but not least, Gdynia improved its Intelligent Transport Systems and increased the use of ICT. Apart from setting up the Mobility 2.0 internet platform, the city developed a three-level transport model for both individual and public transport, installed a weigh-in-motion system to identify overweight trucks on a heavily used road, and implemented dedicated bus lanes including an automatic detection system. All these activities were realised with support from Gdansk University of Technology.

Gdynia's CIVITAS DYN@MO team

Andrzej Bień

Head of Gdynia's City Council

"For Gdynia, the CIVITAS DYN@MO project has been a fantastic opportunity to put some fresh air to our thinking about urban mobility. It has been a complex project which involved our staff, politicians and inhabitants and other stakeholders in cooperation and dialogue. DYN@MO allowed us to exchange knowledge and best practices with our partner cities, to see how we can find solutions based on - sometimes antagonistic - opinions and points of view and interests. It has been a great experience which will continue to be fruitful for our future steps towards finding the best sustainable mobility solutions for our city. DYN@MO helped opening up our minds and learning how to look for solutions with respect to all citizens and stakeholders. Moreover, DYN@MO provided the means to deepen valuable interaction with our inhabitants about our common troubles related to mobility in the city, to increase citizens' awareness and to involve them in developing our city, and to make them better understand our thinking processes that lead to the decisions being made. Thanks to CIVITAS DYN@MO we can move forward in taking up new challenges towards a more liveable Gdynia. Finally, our participation in CIVITAS DYN@MO has contributed to the fact that we joined new projects, such as FLOW, ELIPTIC and Freight Tails, enabling us to take our next steps."

Main achievements

- Ratification of comprehensive SUMP with concrete action plan (incl. 55 dedicated measures) by Gdynia's City Council in October 2016
- Gdynia's SUMP process became a model for cities in Poland and the Baltic region
- Establishment of Baltic Sea Region Competence Centre on SUMP (**www.bsr-sump.eu**)
- Increase in share of cyclists from 0.8% in 2013 to 1.8% in 2015, as a result of six campaigns involving primary school pupils and citizens
- Increased accessibility and traffic calming in city centre

Costs

The total amount spent on preparing Gdynia's SUMP was €119,161, including:

- Staff: €110,442
- Software: €4,022
- Awareness rising, consulting and promoting campaigns: €4,697

Future outlook

The recently adopted SUMP requires the city to systematically adopt specific action plans to achieve its strategic aims. Continuous use of identified and developed tools (like the transport model or web 2.0 platform) will lead to the implementation of more sustainable solutions in the future.

Lessons learned

- New approach towards development of sustainable planning: the SUMP is the first official document based on such strong public participation
- Implemented campaigns allow to verify effectiveness of different methods of activating public involvement
- Raising awareness and acceptance among citizens is a time-consuming but very useful process

Mobility planning based on public participation

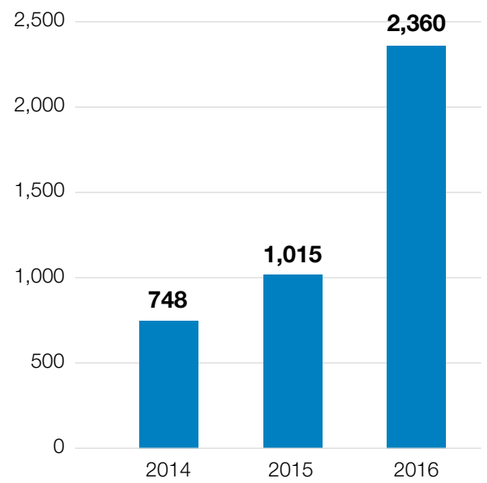
European Cycling Challenge, May 2015, 1,015 participants

Success factors

- Workshops, debates, events and surveys used in the process of SUMP development
- High involvement of many different stakeholders in SUMP elaboration
- Using ICT tools for cycling and walking campaigns
- Dedicated budget for campaigns
- Implementation of solutions devised together with citizens

European Cycling Challenge

Number of participants in Gdynia's team

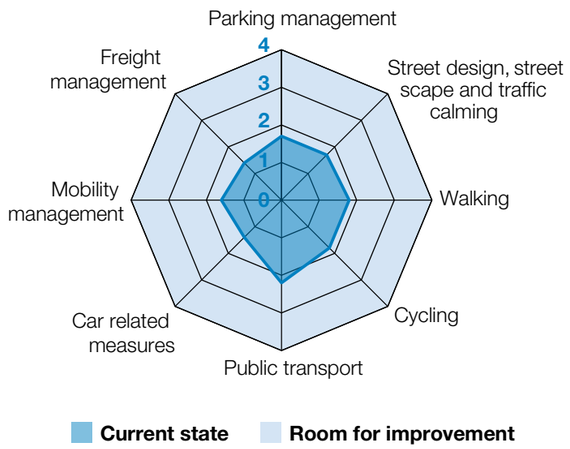


Description of activities

One of Gdynia's key activities was dedicated to the elaboration of an innovative, dynamic, advanced SUMP. With the involvement of citizens and stakeholders, by using standard tools and innovative web applications, this development process was rather complex. Yet, the city's inhabitants felt that they got the chance to participate in shaping a vision, with specific ambitions and an action plan for mobility in the near future.

Moreover, activities were organised to promote cycling as a means of transport and to increase awareness about pedestrian areas. This resulted in the start of a public discussion about the introduction of car-free areas in the city centre and contributed to a significant increase in the use of bicycles, whose share of the modal split increased by 1% during the course of the project.

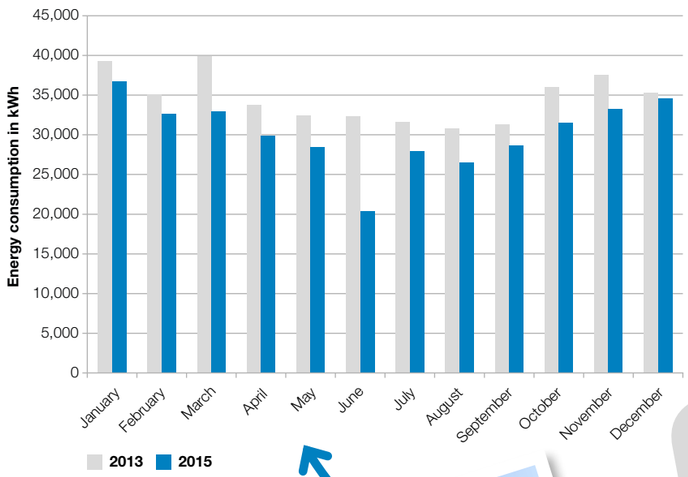
Action fields in Gdynia's SUMP



Temporary closure of Starowiejska Street, July 2014

Comparison of energy consumption

before (2013) and after (2015) implementation of supercapacitor (in kWh)



Costs

- Price of one trolleybus with Li-Ion battery: €400,000
- Total amount spent on the implementation of one supercapacitor: €75,000

Future outlook

Due to the huge success of the first two trolleybuses with Li-Ion batteries bought within CIVITAS DYN@MO, Gdynia's trolleybus company PKT will further expand the trolleybus network with wireless infrastructure. This will be carried out within the Horizon 2020 project ELIPTIC, within which one trolleybus line will be extended to an area with a large sports stadium located between Sopot and Gdansk for which a distance of 4-5 km needs to be covered without wires. PKT will also analyse the potential for replacing the entire existing diesel bus network with hybrid trolleybuses.

In addition, the City of Gdynia decided to further develop PKT's fleet: four new hybrid trolleybuses have already been bought (one with the same battery capacity as the trolleybuses purchased within DYN@MO and three more with a double battery capacity). There are also plans for purchasing another 30 trolleybuses until 2020, as well as replacing Nickel-Cadmium with Li-Ion batteries in 21 vehicles. This would ensure a sufficiently high number of battery trolley hybrid buses to cover additional extensions of lines without overhead wires.

Li-Ion battery trolleybus

Increasing the energy efficiency and attractiveness of Gdynia's trolley bus system

Main achievements

- Two new trolleybuses with Li-Ion batteries as additional source of energy, able to travel up to 15 km without wires
- Supercapacitor on trolleybus line to save energy up to 20%, 50,000 KWh and €6,000 per year
- Wireless extension of trolleybus line no. 21, operating the whole year (to Kosciuszko Square and John Paul II Avenue)
- New possibilities for further extension of trolleybus lines
- Gdynia's trolleybus system as a model for cities in Poland and Europe

Lessons learned

from installation of supercapacitor

- Better results are achieved when the supercapacitor is installed in a hilly area where vehicles have to brake a lot (which generates a lot of energy), but without very intensive trolleybus traffic on the section, which would lead to consumption of a great deal of recuperated energy on the spot, without the need of using a supercapacitor
- The successful implementation of off-wire extension of line 21 has started a completely new way of thinking about trolleybuses' range and usability

Description of activities

Gdynia is one of the few cities in Poland that has been developing a trolleybus system and successfully improved it throughout the last decades. Within DYN@MO Gdynia has increased the energy efficiency and attractiveness of this silent and zero local emission transport system even further. A supercapacitor was installed on the trolleybus network which allows recuperating energy from braking vehicles. Moreover, two new trolleybuses with Lithium-Ion batteries were bought which make it possible to drive up to 15 km without overhead wires. This led to huge savings as extending the network without wires is much cheaper than extending by constructing wires. In this way, it can also be avoided that overhead wires have to be installed in historical city centres in order to operate a trolleybus system.

Success factors

- Strong commitment from PKT to reduce energy costs and continue improving the trolleybus system to make it more environmentally friendly
- High level of public acceptance of trolleybuses in Gdynia
- The measure was a technological one and therefore not politically sensitive
- The measure was implemented only by two partners: PKT and its supplier. This simple structure helped avoiding problems with overreliance on other actors.

Supercapacitor at Wielkopolska substation

Digital tools shaping real life

Multilevel traffic model

Description of the activity

Gdynia elaborated a three-level transport model (microscopic, macroscopic and mesoscopic) for both individual and public transport. The model is based on a full scope traffic study and serves as an excellent visualisation tool to present stakeholders and the public different urban mobility strategies and implementation options as part of the SUMP. Since its development, the traffic model is used for verification of every planned road investment in the city. It is also useful for traffic management, i.e. preparing control strategies and adjusting routes and schedules for public transport lines during road works.

Costs

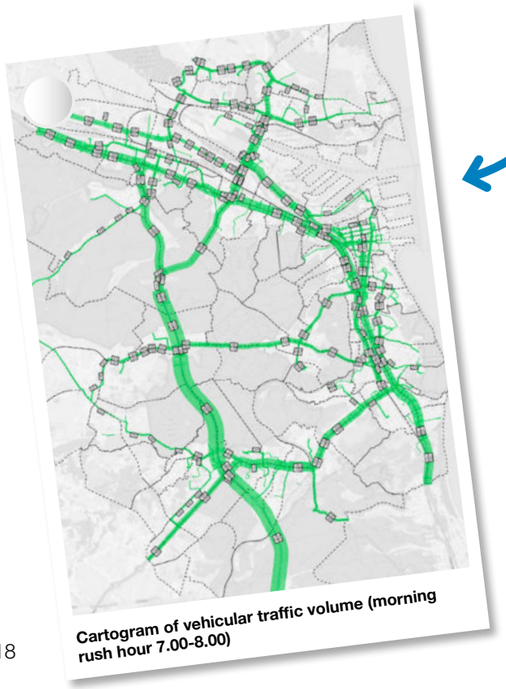
The total amount spent on developing the multilevel model was €175,650, including:

- Staff costs: €144,114
- Software purchase and depreciation: €28,223
- Workshops: €3,313

Future outlook

The multilevel traffic model and Mobilna Gdynia website have already become fundamental tools, used daily by the city, and will certainly continue to be used in the future.

The multilevel traffic model is also being expanded with bicycle transport and elements of walking within the Horizon 2020 project FLOW.



Cartogram of vehicular traffic volume (morning rush hour 7.00-8.00)

Main achievements

- Integration of the transport model with the TRISTAR system, the integrated traffic management system of Gdansk, Gdynia and Sopot
- More than 15 obtained simulations and analyses for transport planning in the city
- Ability to calibrate local ITS based on the simulations
- Input to enhance and update Gdynia's SUMP

Mobility 2.0 Communication

Lessons learned

- The traffic model is a very useful tool for the city's mobility planning, not only for decision makers and transport engineers but also as an awareness raising tool for citizens
- It has been proven that web 2.0 tools can be successfully used in endeavours to strengthen public participation

Success factors

- Close cooperation with Gdansk University of Technology led to the development of a functional traffic model, including private and public transport
- A dedicated team working on the attractive functioning of the currently running web 2.0 platform
- Synergy of the Mobilna Gdynia platform and the Facebook profile resulted in a wide group of receivers via both channels

Description of the activity

Gdynia set up a Mobility 2.0 platform, Mobilna Gdynia, to consult with the local community and stakeholders on mobility and transport planning issues. The website also presents traffic simulations with scenarios for planning approaches. Via polls and blogs, inhabitants' and stakeholders' opinions and proposals on mobility solutions are being collected. In addition, the website contains articles on recent activities and many examples of sustainable measures used all over the world. The platform perfectly fits the general communication policy of the city, and is supported by a Facebook profile ensuring that all publications are immediately and easily available for interested citizens.

Costs

The total amount spent on developing the platform were €54,704, including:

- Staff cost: €48,001
- Software and purchase of components: €3,195
- Promotion: €3,508

Main achievements

- High popularity of web 2.0 platform, Mobilna Gdynia, among citizens of Gdynia and other cities in Poland
- Mobilna Gdynia became a source of information for journalists and municipality mobility managers
- Integration of Mobility 2.0 platform and **www.mobilnagdynia.pl** with respective social media channels
- 179,895 views and 53,026 users between February 2014 and September 2016
- Seven online public consultations with citizens and stakeholders on various mobility issues

Intelligent tools optimising existing road infrastructure

Description of the activity

Gdynia has spent a lot of resources on road maintenance due to surface damage from intense traffic of overloaded vehicles to and from the port area. To tackle this problem an innovative ITS system was developed that can identify overloaded vehicles "in motion" and allows for corrective enforcement measures through the authorities. The measurements are done in normal traffic flow and do not require vehicles to stop. The implemented system is complementary to the regional Tri-City Traffic Management System called TRISTAR.

Future outlook

After the successful implementation of new dedicated bus lanes, their further extension in the city is assured. The particular additional sections have already been pointed out based on analyses made with the traffic model and suggestions from citizens that were gained via the Mobilna Gdynia platform.

Further extension of the video detection system on additional HOV/bus lanes and further expansion of the weigh-in-motion system can only really be considered after changes to the national legal system regarding the roles of different authorities related to enforcement. Currently, the city passes information on overloaded vehicles to the proper authorities but for legal reasons the data cannot be used to impose fines.

Costs

The total amount spent on developing the weigh-in-motion system was €126.850.

Weigh-in-motion system

Main achievements

- Extension of the network of cameras recognising registration plates
- Potentially 1,000 instances of exceeding the weight limit can be detected during a working day and over 200 during a weekend day
- Availability of technical documentation which can be used for expanding the system and can be shared with other Polish cities

Success factors

- Advanced technologies allowed the City of Gdynia to collect valuable data on overloaded trucks and unauthorised vehicles using HOV/bus lanes, allowing better facilitation of enforcement, leading to a substantial reduction of unauthorised vehicles using HOV/bus lanes and less overloaded vehicles to and from the port area, with more optimised usage of existing road infrastructure as a result
- A combination of technical studies and public participation provided a good basis for identifying the crucial sections of the road network for HOV/bus lane implementation

Description of the activity

To increase the quality and efficiency of public transport, three new lanes with priority for high occupancy vehicles (HOV) were implemented on two heavily congested arterial roads and on one in the city centre. Thorough communication measures were undertaken to inform drivers about the new rules related to the HOV lanes and to inform citizens about the improved public transport lines.

A video camera system was installed on one of the HOV lanes, detecting drivers who use bus lanes without permission. The system detects and reads the registration plate and also provides information on reliability of the diagnosis, vehicle category and model of the vehicle. The output data includes an image of the vehicle and a silhouette of the driver, as well as a short film showing the passage of the vehicle along the measurement point.

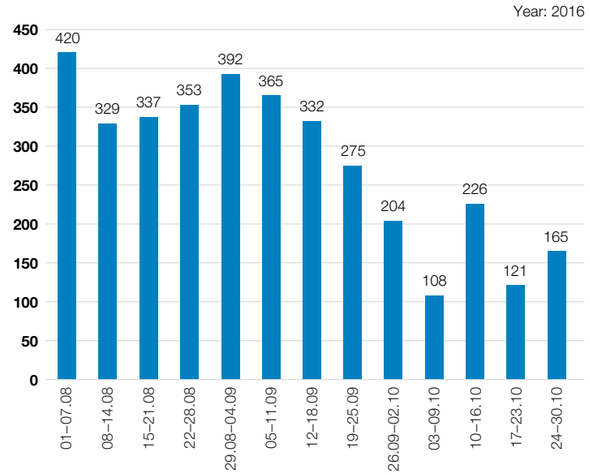
Costs

The total amount spent on developing two dedicated bus lanes was €42,820.

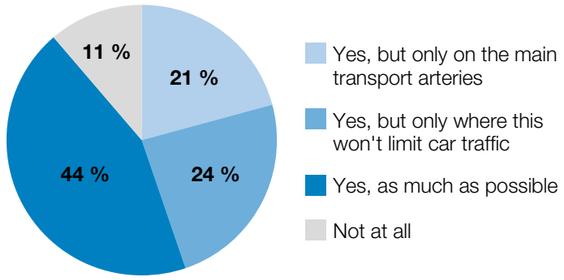
One of the three implemented bus lanes in Gdynia

Introduction of HOV lanes and a camera system for enforcement

Average number of unauthorised vehicles on the HOV/bus lanes



Do you support the implementation of further bus lanes in Gdynia?



Main achievements

- Noteworthy improvement of the attractiveness of public transport on the specific corridors, due to better punctuality of the service and reduced travel times, potentially up to 15 minutes
- Acceptance and support of bus lanes introduction has grown substantially among stakeholders and citizens since the first implementation
- Successful testing of the video detection system as part of the Tri-City Traffic Management System (TRISTAR)

Introducing Koprivnica

Koprivnica is a city of 33,700 inhabitants in north-western Croatia. Well known as the city of cyclists, Koprivnica is the administrative centre of Koprivnica-Krizevci County and the regional leader in economic development, traditionally based on agriculture and food production. The city is an educational, cultural and industrial centre of regional importance. Situated strategically on the crossroads of two important European transport corridors, Koprivnica serves the wider surrounding area in many ways, including trade, crafts and administration. An attractive network of bicycle and pedestrian paths, with energy efficient public lighting has contributed to an increase in the number of pedestrians and cyclists by almost 40% between 2001 and 2012. Koprivnica ambitiously pursues European environmental and mobility policies and has been actively involved in European projects and the launching of ambitious modern solutions, despite the city's small size.

City of Koprivnica

Electric vehicles in Koprivnica

Citizen participation in Koprivnica

CIVITAS DYN@MO in Koprivnica

Koprivnica participated in the CIVITAS DYN@MO project to extend its activities in strategically important fields of sustainable urban transport, focusing primarily on two themes: sustainable urban mobility planning and clean and energy efficient vehicles.

Koprivnica's local consortium consisted of five partners, each with a distinct role in implementing the project's measures, plus the city itself as the coordinating and evaluation partner. Komunalac, HŽ Infra and Čazmatrans took over important activities for developing electromobility in the city, introducing public transport and setting up a municipal car sharing system. Kampus was responsible for the research and analysis related to the measure zero CO_2 university campus. Development Agency North was responsible for the dissemination activities.

Being one of the smallest cities to ever be a partner in a CIVITAS demonstration project, Koprivnica was at the start of the project faced with the very distinct challenge of not having a public transport system and therefore incoming and outgoing traffic was largely based on private motorised vehicles. For this reason the elaboration and implementation of a Sustainable Urban Mobility Plan (SUMP) and the development of public transport were key objectives within the project. After four years of CIVITAS DYN@MO, new transport solutions cover the entire city and it is expected that a better connection between the centre and the suburbs via alternative modes of transport will further reduce use of private cars.

Koprivnica's introduction of electric vehicles in its municipal fleet and the introduction of a car sharing scheme have been innovative both from an organisational as well as a technical point of view, since electric vehicles had hardly been used in Croatia prior to the project and very little information was available about their potential. Now the benefits can be measured and the system potentially transferred to other regional companies and cities. With the implementation of public transport, the City of Koprivnica has been spearheading the establishment of a model of efficient public transport systems and has become an example for other small cities in the region. The successful implementation of innovative technologies proved to be the basis for the entire scheme due to the fact that electric buses had never been used in Croatia before.

The CIVITAS DYN@MO consortium in Koprivnica, June 2015

Mišel Jakšić

Acting mayor

"Because of CIVITAS DYN@MO Koprivnica has become a lighthouse city for other cities, we have increased the capacity of our administration and overall, it has become more sustainable. CIVITAS DYN@MO has changed the mobility in our city and the results of the project will remain visible for many years to come. By developing a Sustainable Urban Mobility Plan, Koprivnica is profiled as an example of good practice in the country and beyond and has become an attractive and sustainable city with a high quality of life, based on the historical and cultural identity and a modern sustainable economy."

Main achievements

- By preparing a SUMP, Koprivnica developed one of the first strategic documents of its kind in Croatia. Its aims are to provide a mobility policy that meets people's needs, to guarantee accessibility for all and to reduce the negative environmental impact of transport
- The SUMP also promotes new spatial and transport planning methodologies in the region, fostering cooperation at the regional and cross-border level, to jointly develop future sustainable mobility solutions
- The City of Koprivnica has implemented ambitious new mobility solutions based on the adopted planning documents and has included the needs of sensitive social groups in the long-term transport vision
- The South-Eastern Europe Competence Centre on SUMP is providing assistance to other city planners in the region in developing their own SUMPS

Costs

The total amount spent on preparing Koprivnica's SUMP was €271,116, including:

- Staff: €104,175
- Software: €72,130
- Awareness rising, consulting and promotion campaigns: €4,707

Smart urban mobility planning in Koprivnica – a great example for the region

Children learning about sustainable mobility

Children learning about sustainable mobility

Future outlook

The SUMP provides a solid foundation for further innovative planning practices in the municipal authority. It is expected that due to the CIVITAS DYN@MO measures, in 2 to 4 years the share of public transport in the City of Koprivnica will be increased to 15% and the share of walking and cycling will increase further as well. The main objective of the SUMP is to meet the mobility needs of residents now and in the future, while ensuring a higher quality of life, both in the city and in the surrounding area. The SUMP competence centre will promote the development of SUMPs further at the regional level and with the development of the curriculum in clean urban mobility the consolidation of city planning based on SUMP principles should be ensured.

Sustainable mobility promotion during the European Mobility Week

Description of activities

Koprivnica has a long tradition of implementing sustainable mobility measures in the framework of the Local Agenda 21. In July 2015, Koprivnica's SUMP was approved by the City Council, after an intensive process with stakeholders from the regional and national level, including public participation and thorough cooperation between all municipal departments. Before CIVITAS DYN@MO, the overall modal split in the town centre was 57% car vs. 43% pedestrian, but the commuter modal split leans more heavily towards car travel (70% car vs 30% pedestrian). The lack of public transport was seen as the main obstacle to reaching a significant shift towards sustainable mobility. In order to be able to introduce public transport in the city, improved planning and stakeholder engagement at the regional, national and trans-boundary level was a prerequisite.

The overall aim of the SUMP is to improve traffic safety while reducing noise and air pollution by promoting walking, cycling, public transport and electric vehicles. The establishment of the South-Eastern Europe Competence Centre on SUMP (**www.kc-sump.eu**) ensures transfer of knowledge in Croatia and its neighbouring countries. Cross-border cooperation on this topic is further encouraged by the development of the first study programme on clean urban mobility in South-Eastern Europe. The curriculum developed by the new university in Koprivnica will further advance the uptake of sustainable urban mobility policies in the region in the long term.

Citizen participation as part of Koprivnica's SUMP development

Success factors

- The most innovative aspect during the development of the SUMP in Koprivnica was the engagement of a wide community of stakeholders at the regional and national level and involving them already during the preparation process
- The SUMP development resulted in know-how that has been taken up for the wider international region by the SUMP competence centre
- For the successful implementation of the SUMP, it was first and foremost necessary to develop good strategic preparation documents and determine an action plan and implementation process of the agreed objectives
- The implementation of policy planning was achieved by systematically linking strategy and active participation of all stakeholders

Electric mobility in Koprivnica on the move!

Municipal car sharing scheme with e-cars

Description of the activity

The use of electric vehicles for citizens' daily travel has the potential to contribute significantly to the de-carbonisation of Koprivnica's transport sector. Electromobility allows people to enjoy all benefits provided by a private car, without the negative impact on the environment, provided that vehicles are charged with renewable energy. In order to accelerate the uptake of electric vehicles, Koprivnica has procured five electric vehicles and two hybrid vehicles, introduced these in its municipal fleet, and developed a car sharing scheme with an online registration system. In addition a system of five fast electric chargers has been implemented in partnership with the national electricity provider. This measure has been innovative in organisational as well as technical terms, since electric vehicles had previously hardly been used in Croatia and very little information was available about the potential.

Future outlook

The City of Koprivnica has overcome the challenge of having a small market for electric vehicles in Croatia. Now that the benefits can be measured, the system can be potentially transferred to other regional companies and cities. The innovative car sharing concept, developed for the first time in the national and regional context, will be widely promoted through local, national and international networks. It is realistic to expect that Koprivnica is becoming a best-case contact point for e-car sharing schemes in Croatia.

Costs

- The total costs for purchasing the two buses were €181,500
- Purchasing and setting up five fast charging stations cost €165,000 and was financed by the Croatian national electricity company HEP
- The costs for constructing two bus stations with appropriate equipment amounted to €43,000

Main achievements

- The City of Koprivnica has been spearheading the establishment of a model of efficient public transport systems and has become an example for other small cities in the region
- CO_2 emissions have been reduced by 20% compared to a conventional bus fleet operation
- The project has contributed to the development of the first public transport line in the city of Koprivnica, serviced by two converted electric minibuses each with a capacity for 12 passengers, a range of 90–130 km and a maximum speed of 90 km/h

Lessons learned

Breaking new ground in the development of electromobility in Croatia was challenging. The choice of vehicles on the market was small and local legislation had to be adapted. This measure provides an innovative and transferable example of electric vehicles implementation at the regional level.

Introducing a zero CO_2 public transport system

Description of the activity

In addition to purchasing the seven electric cars for the e-car sharing scheme, Koprivnica has also procured two electrically powered minibuses for the purpose of introducing public transport in Koprivnica. Public transport for smaller cities is uncommon in Croatia and is usually limited to connecting the outskirts to the central bus or railway station. Previous testing of public transport showed that a classic public transport system would not be applicable to small towns due to the low efficiency it would have in such a setting. However, Koprivnica successfully introduced public transport, being the first city in Croatia with a zero CO_2 system. The key to success was the use of electric buses – which had never been applied in Croatia before – which proved to be much cheaper for the mid- to long-term operation of the scheme.

Main achievements

- CO_2 emissions of the municipal fleet were reduced by 25% and the operating costs for the fleet of vehicles decreased by 28%
- The intense promotion of the measure contributed to a gradual increase of the use of electric vehicles by citizens and companies at the local and regional level, as well as to reaching national targets regarding the deployment of chargers for electric vehicles in Croatia, also affecting the increase of charging station facilities outside Koprivnica
- Other Croatian cities have been encouraged to start similar initiatives, and companies engaged in the production and service of electric and hybrid vehicles are encouraged to approach the Croatian market

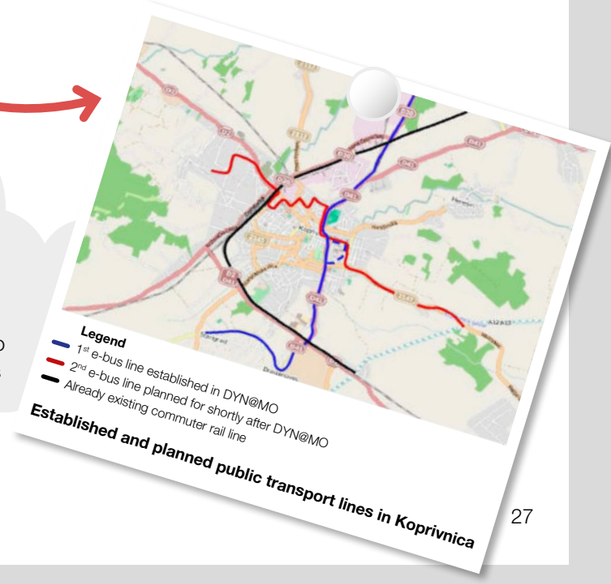
Costs

The total amount spent on the measure was €382,752 including:

- Purchase of seven electric vehicles: €174,910
- Regular maintenance of the vehicles and registration: €4,330
- Setting up of the car sharing scheme: €13,618
- Staff: €23,461
- Dissemination materials: €1,500
- Setting up of the charging stations: €164,933 (financed by the Croatian national electricity provider)

Future outlook

The implementation of this measure has contributed to a raising public awareness about e-mobility and the level of appreciation of the new service is rather high. It is expected that the new public transport service will reduce the amount of cars in the city centre as well as reduce air and noise pollution. There are already plans to open a second line in March 2017 in order to improve connections to all parts of the city.



Established and planned public transport lines in Koprivnica

Introducing Palma

The city of Palma, capital of the autonomous community of the Balearic Islands, has a population of about 430,000 inhabitants, although this figure almost doubles during the summer period, given that it is one of the main tourist destinations in the Mediterranean. Starting in the 1960s, its development was planned taking only private cars into account when considering mobility. That is why it has become essential to implement and coordinate, in cooperation with the rest of the island's administrations, a better mobility strategy that leads to a reduction in the use of cars and that promotes a change toward sustainable mobility that will automatically improve the liveability of the city.

City of Palma

CIVITAS DYN@MO's measures clearly visible on Palma's streets

CIVITAS DYN@MO in Palma

The City Council knew that an impetus was needed to develop its strategic mobility vision. The opportunity to exchange experiences with cities in other countries, while in parallel funding part of the planned actions, provided the ideal setting.

Six entities actively participated in Palma's consortium:

- Palma City Council: The Mobility Department as the promotors and coordinators of the strategy had a key role, managing the technical and political aspects of the measures
- Eurolocal: This small public project management office coordinated the administrative, financial and bureaucratic tasks, as well as the international dialogue, the site coordination and site dissemination tasks
- UIB: The University of the Balearic Islands was responsible for evaluation of the implemented measures and hosted three Summer Universities
- EMT: The public transport company, which developed measures on alternative fuels for public fleets and has been a pioneer in mobility 2.0
- SMAP: The public municipal car park company, which developed a process of vital importance for guiding drivers to car parks and promoting Park-and-Ride
- EMAYA: The public municipal water and waste company applied innovative solutions regarding the conversion of conventional vehicles into less polluting ones

The main objectives were to:

- Develop a Sustainable Urban Mobility Plan to be used as the foundation for the strategic framework in upcoming years; the SUMP had to be participative, as it was absolutely essential to take citizens' needs into account
- Foster the use of both public and private bicycles and expand bike lane infrastructure
- Foster pedestrianisation through healthy walking routes and create safe school routes
- Incorporate sustainable vehicles in the municipal fleets and promote among private operators

Palma's CIVITAS DYN@MO team

- Acquire and convert waste management vehicles to use alternative fuels
- Stimulate intermodality by the development of the MobiPalma app
- Implement a guided parking system to eliminate congestion in specific areas of the city

Joan Ferrer

Mobility Councillor City of Palma

"For the city of Palma the implementation of the measures within the CIVITAS DYN@MO project opened up a new era of mobility planning. The CIVITAS Initiative has enabled us to define and agree on the development of our Sustainable Urban Mobility Plan. Concrete measures have been pushed forward through CIVITAS and the city will continue this trajectory through other projects that will be carried out in the future in a similarly well-planned manner. This will enable Palma to become a healthier and more liveable city. In order to achieve this, the city is in the process of redefining its policy priorities, and making citizens the true protagonists of the city. The objective is to leave behind planning that only considers private cars, to make more sustainable mobility become a reality by further improving public transport, expanding the safe pedestrian network and integrating zero polluting modes, such as bicycles and electric vehicles."

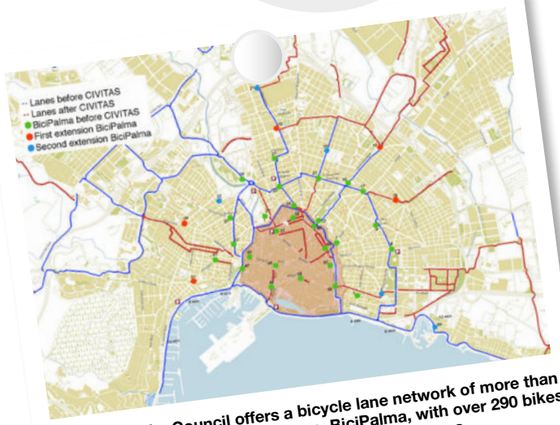
Future outlook

Cycling:

- Further extension of the bike lane network by at least 35 km; according to the SUMP, in the near future the total length of the city's bicycle network will be 125 km
- Further extension of the public bike scheme and improvement of its management in accordance with demand
- Start of a new project complementary to "routes to school", adapting them also for bikes
- Further extension of bike parking facilities

Walking:

- Pedestrianise main avenues
- Give further priority to pedestrians on main roads
- Regulate new modes for occupation of public spaces as terraces and shops in pedestrian zones
- Implement additional "safe routes to school"
- Accessibility plan for people with disabilities



The Palma City Council offers a bicycle lane network of more than 81 km, and a public bicycle system, BiciPalma, with over 290 bikes and 28 stations, designed for short distance journeys.

Walking and cycling: decisive for a more sustainable Palma

Main achievements

- Implementation of six concrete measures for pedestrians and seven for cycling of the in total 72 measures described in the SUMP
- Implementation of two "healthy walking routes" and six "safes routes to school"
- Giving more priority to pedestrians on the centre's ring road has not led to extra congestion on this main road, the opposite has actually taken place: car traffic on this road has decreased
- As a result of the extended and improved car-restricted traffic zones there was a decrease from 5,000 to 1,000 cars per month at one of the main entrances to the old town
- Implementation of 18 km of new bike lanes
- BiciPalma bike sharing scheme with nine new stations, 175 new anchor points and 225 new bikes
- Considerable increase of cycling in modal split: from 6% in 2014 to 11.5% in 2015

"We are all pedestrians and many of us could be cyclists. These are the modes that Palma's SUMP proposes as priorities for a city designed for people. Let's do it!!"

Josa Arola, Director of Mobility in Palma

Description of activities

Palma is a perfect city for pedestrians and cyclists. Walking and cycling have always been the traditional means of transport, especially in the historic city centre, where streets were not designed for the huge increase in automobiles seen in recent decades. The aim of the DYN@MO project was to restore a more rational model that is better suited to the city's structure.

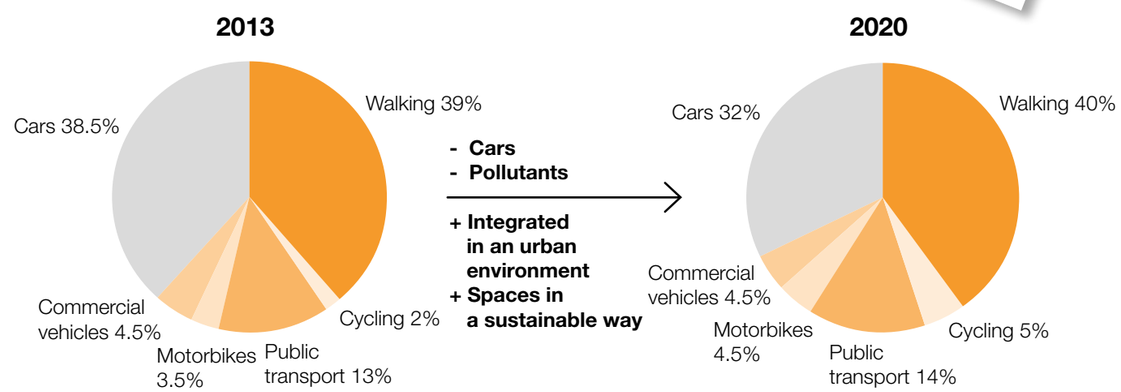
Thanks to the project, measures to calm traffic in the city centre have been taken up in the SUMP, facilitating access to bicycles, making the centre more pedestrian-friendly, and restricting car access.

Cycling has been promoted by considerably expanding the bike lane network. This has led to a total of 81 kilometres of bike lanes in Palma, partly in a cross-cutting design, and not only directed to the city centre but also interconnecting the different neighbourhoods. The public bicycle scheme, BiciPalma, has also been expanded. The objective of the cycling-related activities was to make it easier for citizens to switch to cycling as an alternative transport mode.

Walking has been promoted by the introduction of two new concepts: healthy walking routes with points of departure and arrival from public health care facilities, and safes routes to school, providing security for children walking to school and promoting a habit for walking from early ages.

Car access has been restricted mainly in the city centre; speed limits of 20 and 30km/h are now a general rule, and almost the entire city centre has car restrictions for non-residents.

Projected change in Palma's modal split by 2020 as envisioned in SUMP



Electrification of municipal fleets, promoting e-mobility to the public

Description of activities

Before DYN@MO there were no electric vehicles in Palma's municipal fleets and only 15 electric cars in Palma owned by other entities. With the establishment of procurement guidelines and the progressive introduction of electric vehicles both in the City Council's fleets and in those of its concessionaires, the project has fostered electromobility in the city. Electric and hybrid vehicles as well as charging points have been introduced in the municipality's fleets via car sharing schemes. Supported by various promotion campaigns, Palma fulfilled an ambassadorial role, not only to citizens and other cities in the region but also to the private sector through taking away barriers, offering incentives and installing accessible public charging points in different parts of the city, encouraging the purchase of electric cars and introducing the concept of car sharing to companies. As a result, infrastructure has been created to remove barriers and scepticism and promote electric mobility by favouring its users.

Meeting with the city councils of Mallorca, initiated by the Palma City Council, to motivate the uptake of electric vehicles in municipal fleets

Future outlook

Electric vehicle sales tripled in 2016 and the trend is likely to continue. This is due to the growing commitment of both vehicle dealers and tourist rental car companies on the Spanish islands. Additionally, the proven efficiency of electric vehicles in the municipal fleets contributed to the increased popularity of electric vehicles in Palma. In the future, Palma will support electric vehicles as the best option for those occasions when using a car is unavoidable.

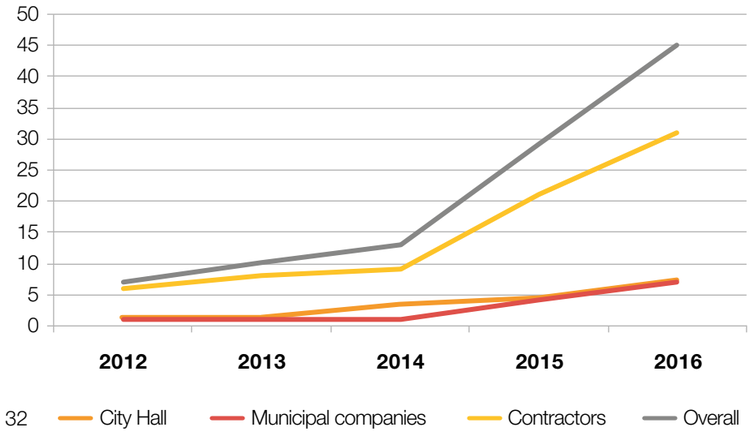
The installation of five more double charging points is planned for the first quarter of 2017 and an agreement is being prepared between the Palma City Council, the Council of Mallorca, and the Balearic Government to promote electric mobility on the other Balearic islands.

Charging points for electric personal vehicles and small e-vehicles

"The introduction of electric mobility in Palma aims to promote this new alternative, especially for the distribution of goods and other types of transport that cannot opt for more sustainable mobility options such as public transport, walking or cycling. (Nowadays you can already see some e-bikes and small e-vehicles around the city.)"

Mateu Maimó, Measure Leader

Total number of electric vehicles in Palma (accumulated)



Leaflet displaying the 30 electric vehicle charging points with public access, from July 2016

Electric vehicle fleet of the Palma City Council and its subsidiaries

Main achievements

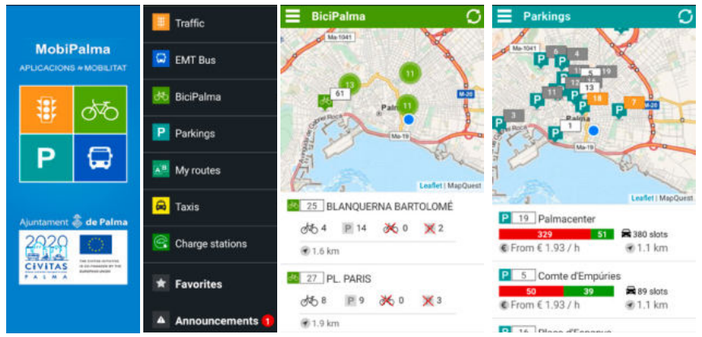
- Introduction of seven electric vehicles at the Palma City Council and 35 vehicles in concessionaires
- Seven vehicles at municipal companies
- Implementation of nine charging points in municipal departments
- Implementation of 25 recharging points: 15 at public SMAP stations and 10 around the city
- Introduction of a single card for recharging electric vehicles at municipal charging stations throughout the autonomous community (150 charging points)
- Parking benefits for electric vehicles in some areas of the city
- Reduced road tax and access to restricted traffic areas for electric vehicles in the city centre

Description of activities

Palma used new Mobility 2.0 technologies to provide citizens access to integrated information on urban mobility, making sustainable mobility more attractive and optimising the use of alternatives to private vehicles. MobilPalma provides real-time information on buses, the Bicipalma public bike scheme, the current and forecast traffic situation, available parking spaces, taxi services and other functions such as an intermodal route planner. The online platform, which is particularly being used via the phone app, has been developed through extensive collaboration between Palma's Mobility Department and public companies EMT (public bus operator) and SMAP (operator of car parks and public bicycle system).

Smartphone-based payment of bus tickets has also been developed and new websites were created for the Palma City Council Mobility Department, **www.mobipalma.mobi**, and for EMT, **www.emtpalma.es**, facilitating access to information and representing an increase in contact with citizens, who can now communicate more easily with the City Council, not only via these websites but also through the different social media profiles that were established during DYN@MO.

Palma received the third prize in the CIVITAS 2015 awards, in the category of technological innovation, as recognition for their MobiPalma app to promote urban transport and attract a significant number of citizens



Screenshots of the MobiPalma App

All of Palma's mobility options at your fingertips

Future outlook

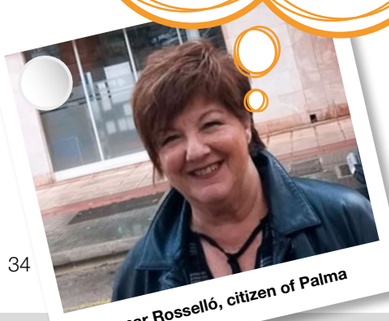
The content of the mobile application MobiPalma is continually being improved based on user feedback, and thanks to its open design, it is possible to incorporate new elements related to mobility such as location of taxis and information on charging points for electric vehicles. In addition, MobiPalma is more than a mobile app: it is also an extendable, networkable and a scalable digital platform with an open architecture, which allows to collect information from all components involved in urban mobility (big data). This platform could potentially facilitate the exploitation of data, analysis of usage patterns, statistics and define the concept of Smart City for the city of Palma, in all matters related to mobility, for better decision making for public officials. But it might also lead to the development of new applications arising from potential new services demanded by citizens.

Geographically, the platform can overcome administrative barriers (municipal boundaries), incorporating information on the traffic of other municipalities, integrating train, metro and intercity buses.

Costs

The total costs for the development of the MobiPalma app were €406,205, including €114,000 for staff costs within the City, €120,000 for the subcontract for the company that developed the app, €81,000 for licensing and software development €30,000 for promotional materials and €61,000 for other costs.

"As a citizen of Palma, I consider the app MobiPalma very useful. A convenient way of finding the nearest bus stops, lines and schedules, and also available parking places in car parks."

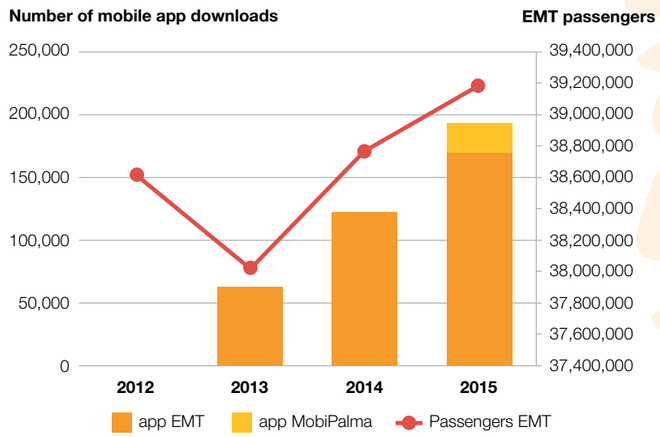


Inés Aznar Rosselló, citizen of Palma

Main achievements

- The MobiPalma app is available since January 2015, and at the end of the project in November 2016 it had more than 22,000 users and a high satisfaction rate among users
- Inclusion of dynamic information about charging points availability in the MobiPalma app
- Continuous increase of the number of tickets sold via the smartphone, totalling up to at least 15,000
- EMT launched a new website in October 2016 and had at the end of 2016 almost 2,700 followers on Twitter and 3,000 on Facebook
- A survey conducted in 2015 with public transport passengers revealed that 68% plan their trips based on information obtained from the new Mobility 2.0 tools (app, social networks, websites)

Evolution of EMT passengers and mobile mobility applications



Success factors

- The political interest in the topic of Smart City created a favourable environment for Mobility 2.0
- In times of economic crisis, an additional budget like DYN@MO makes it easier to convince local partners to cooperate in an integrated approach since they would not have the budget to develop something on their own
- EMT decided to hire an outside company to develop all issues related to its web 2.0 activities; this favoured good management of their social network profiles, providing good service that facilitated the expansion and consolidation of social networks
- Different campaigns were conducted to raise awareness about mobility applications developed during the project; besides via social media this promotion was carried out through posters, brochures and stickers (e.g. on public bikes and parking ticket vending machines)

Monitoring and evaluation – why is it important?

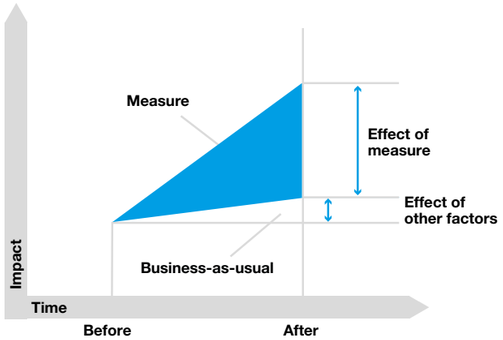
In cities' mobility policies and activities, new measures are implemented all the time – new bike paths, new crossings, new roads, new bus routes, and new mobility management plans for schools and offices. Often the focus is on doing that implementation – getting the measure in place so a politician can cut a ribbon to open it and everyone can see that the city has done something. But in the sustainable urban mobility plans that framed all the measures in the DYN@MO cities, measures were implemented for a reason: to achieve a number of objectives, such as cutting air pollution, CO_2 emissions, operating costs, or road casualties. Without monitoring – observing what has happened as a result of a measure – and without evaluation – understanding why what you observed occurred – it is not possible to know whether and why objectives have been achieved (or not). This is why monitoring and evaluation, although not often carried out by cities, is so important.

Let's not forget either that DYN@MO, like other CIVITAS demonstration projects, is a research project. That means that the European Commission and other end users of the project reports want to know answers to questions such as:

- What were the objectives to be delivered by each measure in the project?
- Were these objectives actually achieved? For example, by how much were CO_2 emissions reduced?
- How much did it cost to achieve the measure objectives?

Also, it is really important that the story of the measure is documented so that cities that in the future might want to do something similar can learn from the experience of DYN@MO cities. They need to know, not only what was achieved, but how it was achieved, and what the barriers and enablers were in so doing. And if a measure did not deliver on its planned objectives, follower cities and the Commission need to know why, so that they can recommend doing something different in future. This is called process evaluation and it was as important a part of evaluation in DYN@MO as the evaluation of the impacts that the measures delivered.

DYN@MO's evaluation methodology followed that of previous CIVITAS projects in order to ensure as much comparability of results as possible. The basic concept is shown in the figure below. This shows that before and after data are gathered but the impacts are also compared to a "business as usual" scenario, which is a prediction of what would have happened to this measure during the project timescale but if the measure had not been implemented. For example, if DYN@MO had not funded an electric bus in Aachen, the bus fleet would nonetheless not have remained the same over the project period – some new conventional buses would have been bought, and it is these that form the "business as usual".



Basic concept of DYN@MO's evaluation methodology

However, there were unique elements in the DYN@MO approach: in particular, the evaluation team gathered detailed information on the costs of each measure (not just the costs paid for with CIVITAS funds, but total costs); process evaluation was carried out by detailed interviews with both project partners and non-project participants, rather than by means of an Excel sheet as used in some previous projects; and a user-friendly cost-benefit analysis spreadsheet tool was developed to work out the benefit cost ratio of measures. The latter can be found at **civitas.eu/dynamo-tool**.

A dedicated session took place at the CIVITAS Forum conference 2016 where Lead Users of three of the four cities shared their experiences from applying the lead user approach for citizen and stakeholder involvement in planning sustainable urban mobility

Transferability activities and Lead user approach

Transferability activities

Activities and analysis on the transferability of measures between cities has been an important part of evaluation within DYN@MO. In particular, the process evaluation approach and analysis of process evaluation data has been developed specifically to aid the transfer of measures from one city to another by highlighting the barriers and enablers to measure implementation in as specific a way as possible, such that potential followers can easily assess the suitability or otherwise of a measure for their own context. The project's final evaluation report (available from the CIVITAS website) includes an assessment of the transferability of measures against a policy transfer framework first developed by academics Dolowitz and Marsh in 2000. This includes factors such as the need for a measure in the country to which it is to be transferred, and the role of different actors in any potential transfer of a measure from one place to another. In addition some seven workshops were held with local evaluation managers and measure leaders to ensure the transfer of evaluation methodologies from one city to another to ensure a consistent approach to evaluation across the project.

Lead user approach

In DYN@MO the lead user methodology was originally to be applied to improve the quality of services and "products" developed within (selected) measures in the cities during the planning and implementation phases. The objectives of the lead user concept, as applied to DYN@MO were:

- to obtain "informed" specialist (lead) user feedback on measures,
- to add value to the process evaluation of measures,
- to publicise/ promote the measures,
- to lead to further improvements to the measures stemming from the feedback provided.

Each city in the end selected one DYN@MO lead user, other than in Gdynia, where it proved impractical to find a lead user. They were people with a particular interest in and/ or knowledge of the measure(s), and who were also to some extent users of social media. Their interest and knowledge meant that they were in a position to provide informed user feedback on the measure – potentially its design, but also its functions once it was implemented. However, the evaluation conducted at the end of the project revealed that in the end their principal role was rather in publicising the measures, such as the new bus service in Koprivnica, or electric bikes as a form of transport in Palma. It was difficult for them to play an active role in defining and providing feedback on the measure as they took up their roles at a stage in the project when many aspects of the measures were already decided.

Summer Universities

To promote European level exchange and learning about sustainable urban mobility, the CIVITAS DYN@MO project offered three DYN@MO Summer Universities. The target group were students and young professionals, as well as mid-career employees and selected decision makers working on sustainable urban mobility.

The three-day Summer Universities were organised by the University of the Balearic Islands with support from all Consortium partners in 2013, 2014 and 2015. Each of them focussed on one of the three main themes of the CIVITAS DYN@MO project:

- **Summer University 2013:** Engaging in a dynamic dialogue for Sustainable Urban Mobility Planning (SUMP)
- **Summer University 2014:** Implementing city and citizen friendly electric vehicles
- **Summer University 2015:** Developing "Mobility 2.0" systems and services

Documentation is available from:
gitmot.uib.es/calendar/default.html

University of the Balearic Islands organised three Summer Universities

The Mobility 2.0 approach in CIVITAS DYN@MO

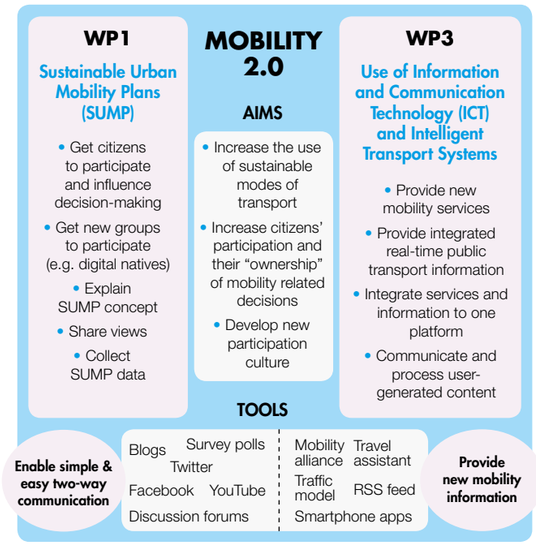
Mobility 2.0 themes can be described as an overarching element in the DYN@MO project. DYN@MO has been targeting dynamic citizens of all age, and especially the "digital natives" in response to an emerging new mobility paradigm. Throughout the project, new "Mobility 2.0" systems and services have been developed by applying web-based technologies and tested by the four DYN@MO cities with the aim of reaching their communities and engaging the public in order to meet the increasing mobility demands. The activities related to Mobility 2.0 in DYN@MO can be divided into two elements:

1) Mobility information based on ICT and ITS
Within DYN@MO, three of the four cities have implemented ICT/ ITS measures to improve access to information about mobility for its inhabitants, also by including user-generated content. In Aachen and Palma real-time mobility information platforms have been developed – accessible via a website and mobile devices – providing information on routing, public bike sharing schemes, charging points for electric vehicles, and parking, comprising also interaction with users, e.g. about delays. Gdynia has built a multilevel transport model in order to better plan, optimise and verify envisaged changes before being implemented. A more detailed description about the respective measures can be found on pages 10 (Aachen), 18 (Gdynia) and 34 (Palma).

2) Services/tools providing interactive citizen dialogue related to SUMP and the use of social media tools for project dissemination and communication
All four DYN@MO cities have tested and implemented new participation 2.0 tools, especially to support the preparation and implementation of their Sustainable Urban Mobility Plans.

In **Aachen** the website **www.aachen.de/clevermobil** provides actual information on road constructions and the multiple mobility options that are available in the city, also via the linked Facebook page. The Facebook pages "Unser Aachen" and the one from the "AVV" with approximately 20,000 and 16,750 likes respectively and Aachen's Twitter account (with approximately 7,000 followers) are not only used to provide information but also to initiate public discussions about various mobility issues.

In **Gdynia** **www.mobilnagdynia.pl** is the main Mobility 2.0 platform, actively used for communicating with citizens



Mobility 2.0 in CIVITAS DYN@MO – aims, methods and tools

and gathering opinions on different mobility measures. At the end of the project the website had been viewed 189,587 times by 56,144 users. The related MobilnaGdynia Facebook page had over 4,300 likes at the end of the project.

Koprivnica's online communication with citizens takes place mainly through two Facebook pages: CIVITAS DYN@MO Koprivnica with 1,427 likes and Koprivnica - Dinamičan grad, which covers all kinds of topics related to sustainable mobility (not only DYN@MO activities), with 1,121 likes. In addition, news items and information on mobility are also publihsed on the website of the South-Eastern Europe Competence Centre on SUMP (**www.kc-sump.eu**).

In **Palma** **www.civitaspalma.com** provides dedicated information on the mobility measures related to the DYN@MO project and links to different social media channels. It also provides an overview of the YouTube videos that were posted by Palma's Lead User (see page 37) about his experiences on travelling with an e-bike. The most active communication with citizens took place via the public transport company EMT's Twitter account (2,700 followers) and Facebook page (ca. 3,200 likes).

Conclusions and policy recommendations

In addition to the document you're holding in hand, the CIVITAS DYN@MO consortium published at the end of the project a report entitled Lessons learned and policy recommendations from CIVITAS DYN@MO. A short summary is provided below. The full report is available for download from: **www.civitas.eu/content/dynmo**.

The forest and the trees: Reviewing each DYN@MO measure

At the end of the project, the DYN@MO team was able to reflect on each measure on an individual basis as well as within the greater context of the project and beyond. The report provides an overview of the activities implemented by the DYN@MO cities and research organisations and draws lessons and insights from their processes and outcomes that may be useful to other cities and EU policy-makers. Viewed on their own, each measure provides valuable insights on how to achieve similar results; viewed collectively, the measures provide indispensable wisdom on the methodologies and results that cities can aspire to implement and achieve at measure, organisational, and policy levels. The varied contexts and circumstances of the DYN@MO cities ensure that their recommendations are applicable to a wide swath of local authorities.

Lessons learned and policy recommendations

While each measure in DYN@MO presented distinct challenges from which specific knowledge was gained, common themes emerged. Aachen, Koprivnica, Gdynia, and Palma each undertook measures to advance SUMPs in their cities. Parallels became apparent in the lessons learned: the importance of support from key politicians and involvement of key policy-makers, the requirement of sufficient personnel resources, the benefits of good qualitative and quantitative data, and the necessity of public involvement, to name a few. Measures involving other pillars of DYN@MO – clean vehicles, ITS, and Mobility 2.0 – yielded further insights regarding, for example, the importance of sufficient resources, infrastructural considerations, and political will.

One of the key recommendations that transcended measure type was to make every effort to ensure good cooperation. Cooperation is key when involving stakeholders from disparate departments or organisations. For instance, Koprivnica's measure to design an innovative e-bus-based public transport system for a small city of 31,000 inhabitants required close cooperation between several departments of the city administration and multiple public transport companies.

Another recommendation than spanned across all types of measures was to heed the value of citizen engagement. Identify and target specific user groups, learn about the groups to tailor communication and dissemination, and offer training to help end users understand how the system works. In Gdynia, for example, a new mobility web platform was established to inform citizens about sustainable urban mobility news and measures within the city, explaining the importance of developing a SUMP already during the preparation phase, and highlighting the advantages for citizens. And in Palma, for example, a large public participation process was organised once the first draft of the SUMP had been developed. 29 concrete suggestions were received, of which six were incorporated into the final version of the SUMP.

Furthermore, the course of many measures illustrated the importance of test phases and trial periods. Testing new technologies (in the local context) is an essential component of the implementation process. In Aachen, for example, different buses (hybrid, electric and light-weight) were tested by the public transport company, conclusions from those experiences were drawn, and new vehicles were subsequently integrated into the public transport fleet. The fact that Aachen's public transport operator had the resources and was willing to test in detail vehicles with alternative drive system technologies was the impetus to the change of the existing fleet towards a fully-electric and sustainable PT fleet.

The DYN@MO team at work during its last meeting in Gdynia, September 2016

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