In a nutshell
DYN@MO – funded by the European Commission between 2012 and 2016 – is the acronym for the project motto “DYNa믹 citizens @ctive for sustainable MObility”. Within the project, two leading cities, Aachen in Germany and Gdynia in Poland, as well as two learning cities, Koprivnica in Croatia and Palma de Mallorca in Spain, have strengthened their sustainable mobility by (1) promoting non-polluting lifestyles and engaging in a dynamic citizen dialogue for mobility planning and service improvement, (2) developing ‘Mobility 2.0’ systems and services through the application of new web-based technologies, (3) and implementing city and citizen-friendly, cleaner mobility solutions, using new electric and hybrid vehicles. DYN@MO is part of the CIVITAS Initiative, which supports cities in introducing ambitious transport measures and policies towards sustainable urban mobility. This brochure provides a brief overview of all DYN@MO measures that have been implemented, including the main results and achievements that were already available by August 2016, several months before the end of the project. The measures are presented for each of the three different topics DYN@MO focuses on.

**Topic 1: Sustainable Urban Mobility Planning**

Sustainable Urban Mobility Plans (SUMPs) are at the core of the project and represent a sound basis for mobility planning. The two leading cities Aachen and Gdynia have advanced their planning culture and existing SUMPs, while Koprivnica and Palma have developed ambitious SUMPs, all extensively involving citizens and stakeholders via web 2.0 applications. Furthermore, Gdynia and Koprivnica have enhanced mutual learning in their regions by establishing Competence Centres on Sustainable Urban Mobility Planning.

**Topic 2: Clean and energy efficient vehicles**

All DYN@MO city administrations and/ or their public transport operators have tested clean vehicles: hybrid and electric buses and cars in Aachen, trolleybuses with supercaps in Gdynia, hybrid and electric buses and cars in Koprivnica, and CNG and electric buses, trucks and cars in Palma. Sharing schemes have been introduced or extended in three of the four DYN@MO cities, with traditional and e-bikes as well as with electric and hybrid cars. A combination of instruments has been used to accelerate the wider uptake of clean vehicles among the cities’ fleets and households and to demonstrate the possibilities to other European cities.
**Topic 3: Deployment of ICT and ITS**

Information and communication technologies (ICT) together with intelligent transport systems (ITS) have been used throughout the project to improve the quality of public transport services, such as communication and maintenance of transport systems. New mobility 2.0 methods to involve stakeholders and citizens were applied via social media groups, interactive web-platforms, discussion forums, online polls and mobile applications, providing support for preparing, discussing and updating sustainable urban mobility plans.

**Implementing innovative mobility services in an integrated way**

The approach of implementing several measures simultaneously within one project with in total 28 partners striving towards a common goal helped the cities tremendously in advancing their sustainable urban mobility policies. The (further) development of each city’s SUMP would not have been possible without the individual sustainable mobility measures implemented in the project.

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**Key facts**

**DYN@MO – DYNamic citizens @ctive for sustainable MObility**

- 28 partners in four cities supported by Edinburgh Napier University, Union of the Baltic Cities, and Rupprecht Consult
- 13 M € project budget
- Main topics: Sustainable Urban Mobility Planning, Clean and energy efficient vehicles, Deployment of ICT and ITS
In 2012 Aachen started a SUMP process with the involvement of 140 local experts. Elements included a Vision Mobility 2050, a Mobility Strategy for 2030, a programme for five years and a monitoring report. At a regional level several meetings were organised with the aim of finding a practical solution for a regional SUMP approach and fields of common activities.

At three residential sites, cooperation between a public housing company, the city administration, an energy provider and mobility providers were established. The connection between renewable energies and electric mobility options was demonstrated at one of the sites and a promotional campaign was organised to gain more interest in developing and using the new mobility options.

Two universities in Aachen (RWTH and FH Aachen) have developed mobility plans to promote environmentally friendly mobility at the university campuses. Stakeholders in local mobility were involved in the process development and implementation of a range of mobility management measures to make the mobility of employees, students and visitors more efficient and environmentally friendly.

Results and achievements:
- Setting up of regional mobility data reports
- Two public participation events (500 participants) and online participation (300 participants)
- Unanimous agreement in the city’s mobility committee on the Vision Mobility 2050
- New open discussion culture on the Facebook page aachenclevermobil (400 followers)

Results and achievements:
- CO₂ emissions cut by 80% compared to standard car share cars due to implementation of 3 new car share stations with electric cars
- The option for 80 residents in the neighbourhood to test sustainable transport modes
- Faster rate of growth in utilisation of new electric car share cars than of standard car share cars

Results and achievements:
- Reduction of share of car trips from 58% to 44% at the University Campus
- Introduction of public transport ticket, parking fees, car- and bike sharing services and bike shelters
- New intermodal platform and new business trip regulations
- Mobility management handbook for investors
Sustainable urban mobility planning

Gdynia: Advancing towards a dynamic SUMP

The development of Gdynia’s SUMP was based on consolidation of existing urban and transport planning frameworks formed during the many years that the city had already been involved in sustainable urban planning. Also, modelling and information technologies were used for the development of the SUMP. Web 2.0 applications facilitated active citizen participation and involvement of relevant stakeholders.

Results and achievements:
• Acceptance of comprehensive SUMP with concrete action plan by the City Council of Gdynia in October 2016
• Gdynia’s SUMP process became a model for cities in Poland and the Baltic region
• Wider range of sustainable transport measures in new SUMP compared to old one

Gdynia: Community project studies from SUMP

As a basis for updating and expanding Gdynia’s SUMP, community projects were conducted on Personal Rapid Transit (PRT), road traffic modifications and public transport lines distribution. Also, cycling was promoted and pedestrian areas were developed. Citizens’ views, which were gathered via an internet platform and multiple stakeholder meetings, were taken into account.

Results and achievements:
• Development of a more advanced SUMP
• Significantly increased number of cyclists assumedly achieved through the organization of 6 bicycle promotion campaigns
• Conduction of studies and cost efficiency analysis on potential of PRT system implementation

Gdynia: Pedestrian areas and access management

Gdynia’s draft SUMP from 2009 contained a mobility management concept with the aim of reducing car traffic in the city centre. With support of data from the updated traffic model, consultative processes were initiated to temporarily or permanently eliminate car traffic on chosen parts of particular streets and – after DYN@MO – to establish the first pedestrian area in the city centre with broad political and public support.

Results and achievements:
• Introduction of traffic-calming through 30 km/h zones and elements of additional small infrastructure, such as benches
• Involvement of the local community for changes in the city centre
• Increased awareness about pedestrian areas in the city centre among stakeholders and citizens
Koprivnica: Development and adoption of sustainable urban mobility plan

In July 2015 Koprivnica’s SUMP was approved by the City Council, after an intensive process with stakeholders from regional and national level, including public participation and thorough cooperation between all municipal departments. 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.

Results and achievements:
- Adoption of a SUMP, meeting EU guidelines
- Increased number of sustainable transport measures and increased levels of monitoring of impacts of measures compared to previous transport planning culture
- Establishment of a SUMP competence centre for South-Eastern Europe

Koprivnica: Zero CO₂ University Campus

In Koprivnica a “living laboratory” has been established at the new university campus, aiming for a zero CO₂ emission campus by implementing e-vehicles for personal and freight transport, a virtual mobility centre and infrastructure for zero emission vehicles. Some of the 5,000 students themselves were also involved in the development and evaluation of the measures.

Results and achievements:
- Development of a mobility plan for the university campus
- Implementation of an e-bike terminal with 10 pedelecs, fully integrated with the city’s bike sharing scheme
- Implementation of a virtual mobility centre for students and staff with information about timetables and other information about public transport and bicycle schemes

Koprivnica: Planning public transport system

The basis for the development of a public transport system in Koprivnica was established by conducting an intermodality study on various combinations of sustainable transport modes.

Results and achievements:
- Design of an intermodal passenger terminal
- Feasibility study on intermodality of transport solutions
- Start of development of an integrated ticketing system
The new university in Koprivnica has been the first educational institute in South-Eastern Europe to offer a programme in clean urban mobility. The programme encourages cross-border cooperation in the region and provides a sound basis for the development of Sustainable Urban Mobility Plans in cities in the region as the curriculum is built around the city’s SUMP as a framework.

Results and achievements:
- Development of a curriculum on clean urban mobility development to which students can enrol from 2017 onwards
- Establishment of cooperation with 21 interested entities such as various companies, agencies and universities

Palma’s SUMP was approved in October 2014 and can be seen as a benchmark for the successful planning of Palma’s unique mobility situation caused by the large numbers of tourists who visit the island. In addition to the positive impact caused by the different measures, it is encouraging the establishment of an institutional and social awareness on promotion of sustainable mobility in the city.

Results and achievements:
- Compared to transport plans, Palma’s new SUMP better satisfies EU guidelines, includes more sustainable transport measures, is more accessible to public, includes more public consultation and is better integrated with health, air quality and land use
- The SUMP includes a target of 40% walking and 5% cycling among residents’ daily journeys

In Palma, improving walking and cycling options is considered a priority. Therefore the SUMP includes measures that give more prominence to pedestrians and cyclists: interconnection of different neighbourhoods by bike lanes, easier access with the expansion of BiciPalma, and promotion of walking as the main means of transport especially in the historic centre.

Results and achievements:
- Construction of 16 km of extra bike lanes and expansion of BiciPalma public bicycles service with 9 new stations, 175 anchor points and 150 bicycles, leading to increase in cycling above business as usual projections
- Implementation of 2 healthy walking routes and 7 school walking routes
- Introduction of car restrictions in the historic centre
Competence Centres on SUMP

For the purpose of helping cities in developing their sustainable urban mobility plans, two SUMP competence centres have been established in the CIVITAS DYN@MO project:

- The Baltic Sea Region Competence Centre on SUMP (http://www.bsr-sump.eu), led by the University of Gdansk in Poland
- South-Eastern Europe Competence Centre on SUMP (http://www.kc-sump.eu), led by the City of Koprivnica in Croatia

What the SUMP competence centres offer
Both competence centres provide city planners with assistance in developing SUMPs through updated information, direct support, exchange of knowledge and experience as well as training on the SUMP process itself. Good examples, guidelines and announcements of trainings and workshops on SUMPs can be found on both online platforms.

What the Baltic Sea Region Competence Centre on SUMP offers
- Conferences, events and training courses on SUMP development for cities in the Baltic Sea Region. Up to now, about 20 cities have participated in six events and have started applying the gained knowledge to their own SUMP processes.
- A list of experts who can be contacted by cities in the Baltic Sea Region when there are questions regarding the preparation of a SUMP. Many cities have already contacted these experts via the platform. The experts also participated in workshops on SUMP organised by the competence centre.
- A database of strategic documents related to SUMP that provides useful examples for what is required during the process of developing a SUMP.

What the South-Eastern Europe Competence Centre on SUMP offers
- Conferences, events and training courses on SUMP development for cities in the South-Eastern Europe Region. Up to now, about 10 cities have participated in five events and have started understanding the importance of urban mobility plans.
- Background information on SUMP in the region, including a database of good examples.
- Promotion of SUMP and SUMP guidelines in the region, e.g. through cooperation with the Croatian Ministry of Transport and the regional CIVINET.
- Education for the next generation of city planners on SUMPs by supporting the development of an urban mobility curriculum in cooperation with experts from University North.

Both competence centres have both a local language version (Polish/ Croatian) as well as an English one for cities in the respective neighbouring countries. The SUMPs developed in Koprivnica and Gdynia during the DYN@MO project serve as comprehensive examples for other cities in the region. Both competence centres cooperate with the local CIVITAS networks – the CIVINETs – for further bundling of resources and to reach a larger target audience. Cooperation with the Polish and Croatian national authorities has also started with the aim of creating national guidelines for the development of SUMPs.

Become involved!
Both competence centres will continue their activities after the end of the DYN@MO project. We welcome cities and stakeholders from the two regions to visit the websites and get in touch.
Clean and energy efficient vehicles

Aachen: Aachen goes electro – Electromobility strategy Aachen

Electromobility in Aachen is based on research, manufacturing and e-mobility offers for all modes of transport. In this measure a new pedelec-sharing scheme and a pedelec-delivery service have been supported, a pedelec-share study has been established and communication activities have been financed. An e-car pool has been set up at the city administration.

Results and achievements:
- A 3.5% share of pedelecs among residents’ daily journeys
- Funding of first 5 out of 100 pedelec stations
- Funding of 7 out of 15 e-sharing cars, leading to a 10% share of e-cars in the car share fleet
- Funding of first 3 e-cars for the administration’s e-car-pool
- 2 surveys showed strong support for Aachen’s claim as a model city

Aachen: From a diesel PT fleet to an electric PT fleet

Aachen’s public transport operator ASEAG tested different innovative environmentally friendly drive concepts for its buses on suitability for the public transport. In particular this included measurements of fuel consumption and noises. Due to the negative results of hybrid buses, light buses were purchased. An articulated hybrid bus was also converted to be fully electric.

Results and achievements:
- 5 hybrid buses tested
- A fully electric articulated bus and 5 lightweight buses put into daily operation
- Valuable experience with battery systems and electric drive concepts for buses
- Electric bus cut emissions as follows:
  - NOx: -0.241g/l
  - PM: -0.0027g/l
  - CO2: -2,138g/l compared to Euro 6 diesel bus

Gdynia: Innovative Li-Ion hybrid trolleybuses on new line

Trolleybuses in Gdynia are extremely popular and are even nicknamed by the people. In order to increase the attractiveness of this silent and local zero emissions transport system even further, Gdynia extended trolley lines into areas without wired infrastructure. The exploitation serves as an example for Polish cities in investing in a highly innovative transport system.

Results and achievements:
- Procurement of 2 new trolleybuses with Li-Ion batteries, allowing to drive without wired infrastructure on a range of 15 km
- Wireless extension of public transport service on two streets in city centre by using trolleybuses with Li-Ion power supply (1.8 km in total)
- 4 European Trolleybus Days
Clean and energy efficient vehicles

Gdynia: Supercaps for more efficient trolley system

Since the trolleybuses in Gdynia run on a dedicated electricity supply network, the transport operator has increased the energy efficiency of the system by making use of regenerative braking. Innovative supercapacitor technology supports to quickly store and release the energy from trolleybuses equipped with recuperative braking.

Results and achievements:
- Successful installation of a supercapacitor on one of the trolley bus substations
- Savings in energy consumption on the trolleybus network of up to 20%, 50000 KWh and 6000€ per year
- Gdynia’s development of trolleybus transport as a model for cities in Poland and Europe

Koprivnica: Electric municipal car-sharing scheme

Koprivnica’s introduction of electric vehicles in its municipal fleet by a car sharing scheme has been innovative with regard to both organizational as well as technical aspects, since electric vehicles had hardly been used in Croatia and very little information was available about the potential. Now the benefits can be measured and the system potentially transferred to other regional companies and cities.

Results and achievements:
- Establishment of a municipal car-sharing system existing of 5 electric, 1 hybrid and 1 plug-in hybrid vehicle with online registration system
- Establishment of 5 e-charging stations throughout the city
- Increased public awareness, encouraging the purchase of electric cars and introducing the concept of car-sharing into companies

Koprivnica: Low emission public transport

With the implementation of public transport with converted e-buses, the city of Koprivnica has been spearheading the establishment of a model of efficient public transport systems and became an example for other small cities in the region. Innovative technology implementation is the basic part of the whole scheme because the use of electric buses has never been applied in Croatia before.

Results and achievements:
- Establishment of the first public transport line in the city of Koprivnica serviced by 2 converted electric minibuses each with a capacity for 12 passengers, a range of 90–130 km and a maximum speed of 90 km/h
- CO₂ emissions reduced by 20% compared to conventional transport systems in Croatia and region
Clean and energy efficient vehicles

Palma: Biogas and CNG in municipal fleets

In Palma an evaluation of the introduction of lower-polluting vehicles in public service fleets of the public transport company EMT and the municipal company for water and sewerage (EMAYA) has taken place. This measure has been extended by building a CNG refuelling station and plans for a biogas plant were completed.

Results and achievements:
- Study of pollutant emissions from 12 CNG buses showed benefit to cost ratio of 4:1 over 15 years, compared to diesel buses
- Introduction of 5 CNG trucks and 3 biofuel vehicles (gas and diesel) into EMAYA’s fleet
- Conversion of 15 diesel trucks, 2 waste-collections trucks and 1 mini-van to CNG
- All studies for the introduction of a biogas plant have been done

Palma: Electric vehicles in municipal fleets

Before DYN@MO there were no electric vehicles in the municipal fleets of Palma. With the establishment of procurement guidelines and the progressive introduction of electric vehicles both in municipal fleets and in the concessionaires the project has fostered electromobility in the city. The undertaken initiatives have fulfilled an ambassadorial role for electric mobility in the city.

Results and achievements:
- Introduction of 6 electric vehicles and 1 electric scooter in Palma Municipality and 35 electric vehicles in concessionaires
- Implementation of 9 charging points in municipal departments
- Introduction of 5 electric vehicles, 1 hybrid and 12 self-sufficient charging points with solar panels in the municipal company for water and sewerage (EMAYA)

Palma: Promote the uptake of electric vehicles among general public and goods distribution companies

In order to incorporate electric vehicles in Palma’s private sector, a favourable environment has been established through offering incentives and installing accessible public charging points in different parts of the city. Also, several barriers for the use of electric vehicles have been taken away and promotional campaigns have taken place.

Results and achievements:
- Installation of 10 double on-street charging points in different parts of the city
- Installation of 15 charging points in municipal public parking areas
- Reduced road tax, free surface taxed parking, and access to restricted traffic areas for electric vehicles in the city centre
## Aachen: Mobility Alliance

A new multimodal information and routing internet platform has been introduced for the Aachen region. 100 test users have tried a simplified integrated access to buses and trains as well as the city’s car sharing and pedelec sharing schemes. Based on an evaluation of the pilot, adaptations will be made in order to meet the user needs even better.

Results and achievements:
- Completion of a mobility platform with a multimodal route planning system which is available from www.avvmulticonnect.de
- Strengthened cooperation of mobility service providers for further development of the mobility alliance to break down existing user barriers to use alternative transport modes

## Aachen: Travel assistance – individualised notification system

In Aachen’s multimodal routing platform a new function has been included providing real-time data and, in case of delays, alternative route suggestions for bus and train passengers. In addition, users with a Twitter account can share tweets and retweet about their trips.

Results and achievements:
- Introduction of social media to include user-generated content in the mobility platform
- A more attractive mobility alliance due to improved passenger information (real-time data, alternatives, event data and social media)

## Gdynia: Traffic model development to expand Gdynia’s SUMP

For the first time, 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 research and serves as an excellent visualization tool to present stakeholders and the public different urban mobility strategies and implementation options as part of the SUMP.

Results and achievements:
- More than 15 obtained simulations and analysis for transport planning in the city (PRT system, pedestrian areas, cycling and public transport infrastructure)
- Ability to calibrate local ITS based on the simulations
- Input to enhance and update Gdynia’s SUMP
In Gdynia traffic flow is regularly hampered by traffic accidents. They disturb the traffic flow, cause disruptions and congestion, and as a consequence result in extra costs. To tackle this, Gdynia has developed an automatic traffic incident detection system that will be implemented at two junctions which were identified as the most dangerous.

Results and achievements:
- Availability of a new tool for safety analysis of Gdynia’s crossroads including an algorithm for incidents detection, ready for further development
- Involvement of stakeholders responsible and interested in road safety

Gdynia has spent a lot of resources on road maintenance due to surface damage from intense traffic of heavy weight vehicles to and from the port area. To tackle this problem an innovative ICT system was developed that can identify overloaded vehicles “in motion” and allows for corrective enforcement measures through the authorities.

Results and achievements:
- Extension of the network of cameras recognising registration plates from 23 to 24
- Potentially 1000 exceeds of 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 be shared with other Polish cities

Gdynia set up an internet platform 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.

Results and achievements:
- Integration of Mobility 2.0 platform www.mobilnagdynia.pl with respective social media channels
- 179,895 views, 53,026 users between February 2014 and September 2016
- 7 online public consultations with citizens and stakeholders on various mobility issues
## Deployment of ICT and ITS

### Gdynia: Dedicated bus lanes/ HOV lanes control with the use of ITS

To increase the quality and the efficiency of public transport, three new lanes with priority for high occupancy vehicles (HOV) were implemented on two heavily congested arterial roads and one in the city centre. Also, a video camera system was installed on one of the HOV lanes detecting and enforcing drivers who use bus lanes without permission.

**Results and achievements:**
- Noteworthy improvement of the attractiveness of public transport on the specific corridors, due to the better punctuality of the service and reduced travel times, potentially of up to 15 minutes
- Successfully testing of a video detection system as part of the Tri-City Traffic Management System (TRISTAR)

### Palma: Mobility 2.0 services

The City of Palma created an online platform, MobiPalma, which integrates mobility-related information. It provides real-time information on buses, the Bicipalma public bike scheme, current and forecast traffic situation, available parking spaces and an intermodal route planner. In addition, new channels of communication with citizens were opened up through the use of social media.

**Results and achievements:**
- Implementation of the Mobipalma app with more than 28,000 downloads and a high satisfaction among users
- Static information about taxi stops in the app
- Dynamic information about charging point availability
- Continuous increase of number of tickets sold via the smartphone, totalling up to at least 15,000

### Palma: Parking Guidance System

Via a partnership between the City of Palma, the public parking company (SMAP) and seven private operators, a dynamic parking guidance system was established for underground car parks in the City of Palma. The system provides real-time information on parking availability and facilitates more efficient use of parking places, which results in a congestion reduction due to less time needed by car drivers to search for a parking spot.

**Results and achievements:**
- Increase of the initially planned number of implemented dynamic parking panels from 6 to 18, with partial private finance secured through public-private partnership
- Implementation of 44 complementary static signs guiding drivers to 14 car parks with a total of 5,402 parking places
- Integration of parking information in the MobiPalma App

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Sustainable Cities Commission

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Photos
Copyright
Cover page: Shutterstock
Page 3, Aachen: Jens Stachowitz
Page 5, G1.1: Katarzyna Sierpinska
Page 9, G2.1: Michal Stodolski, PKT Gdynia
Page 12, A3.1: Aachener Verkehrsverbund

Date of publication: September 2016

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