

# CiViTAS | 2MOVE2

Moving together for a better mobility



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# Key facts

## 2MOVE2 – Moving together for a better mobility

Eight partners in four countries (incl. cities of Stuttgart, Brno, Malaga and Tel Aviv-Yafo)

Practical focus – training workshops and 22 measures

9 M € project budget

Project duration: December 2012 - November 2016

Topics addressed: E-mobility, freight traffic, ITS & traffic management, Sustainable Urban Mobility Plans (SUMP), cycling, public transport, corporate mobility management, city logistics, mobility culture

STUTTGART 

B | R | N | O



Ayuntamiento  
de Málaga



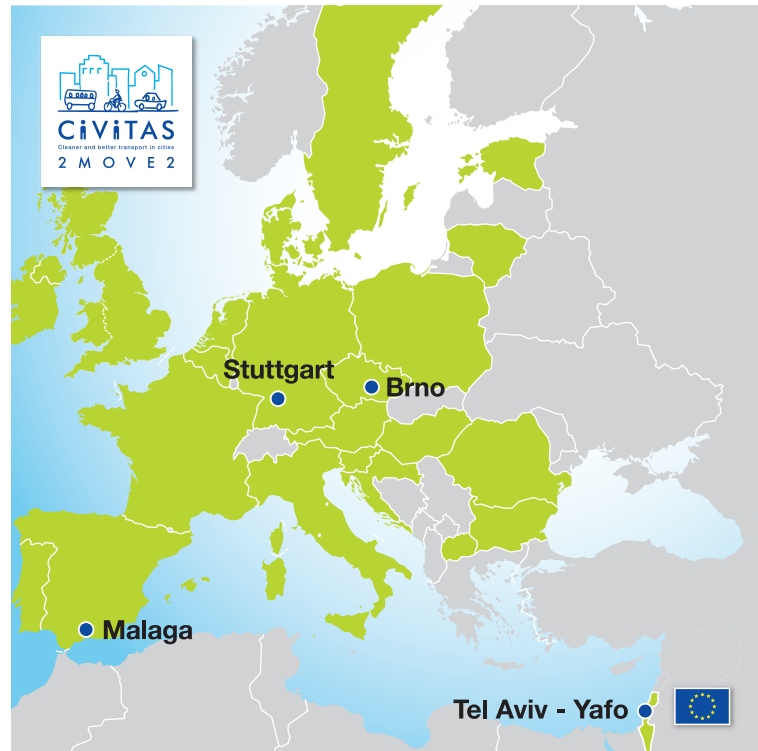
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הסניף ליוזר התחבורה



Source: CIVITAS Initiative

# CIVITAS 2MOVE2 – Moving together for a better mobility



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

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



# Theme 1: CLEAN ENERGY-EFFICIENT VEHICLES AND TRANSPORT SYSTEMS

## Stuttgart: Implementation of a strategic campaign for e-mobility

This measure promotes clean energy-efficient vehicles and transport systems in Stuttgart. Special focus is laid on awareness raising and training activities. To this end, information events in the field of e-mobility are offered in city districts and for specific target groups. The measure also provides a boost for the integration of e-mobility in the urban planning process by offering technical workshops to municipal experts to include e-mobility in the development of new urban areas in Stuttgart.



### Results and achievements

- Information and test events on e-mobility were successfully organized:
  - for 100 students and migrants of four language schools and one municipal enterprise,
  - in three city districts, and
  - a cargo bike event for citizens, municipal technicians and participants of International Cities for Mobility Congress 2016.
- A comprehensive concept for the inclusion of e-mobility in urban planning processes was developed.
- A network of stakeholders from private sector and research was created thanks to the information events.
- A workshop on the inclusion of e-mobility in urban planning and environmental processes will be organized for technicians of the municipality of Stuttgart in autumn 2016.

[www.civitas.eu/S5.01](http://www.civitas.eu/S5.01)

## Brno: Development of electro-mobility and introduction of electric minibuses

The aim of this measure was to introduce and promote electric technologies for private and public transport in the city. In a first step a feasibility study showed the possibilities to promote electric mobility in private and public transport. In the area of public transport there was a plan to replace one bus line operated with conventional diesel buses by electric minibuses as environmental-friendly solution. The line was proposed to operate in the city centre where the level of car density and pollution is high. Due to institutional and time barriers the aim of this measure was partially not fulfilled.



### Results and achievements

- A concept for the support and use of electro-mobility for private and public transport was developed.
- A feasibility study on e-mobility and the opportunities to improve sustainability in the city was carried out.
- Different types of electro buses were successfully tested in 2013 (AMZ, Stratos, Siemens Rampini, ŠKODA Perun). Thanks to the test the municipality learned that the operation of electro buses in the city is possible.
- Surveys (questionnaires) carried out during the test phase showed that more than 80% of Brno passengers support such electric minibus operation.
- Full support of political representatives is crucial as well as sufficient time and resources for the preparation and implementation of such a measure.

[www.civitas.eu/B5.02](http://www.civitas.eu/B5.02)

## Malaga: Strategic campaign on electric mobility and safe routes to school

The campaign encourages the use of more efficient and sustainable means of transport, through the implementation of monitored routes to school by bus, bicycle and by walking; open days have been organized for free testing of electric vehicles with the aim to break the “car culture” tradition, focusing especially on new generations and students.



### Results and achievements

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

[www.civitas.eu/MAL5.04](http://www.civitas.eu/MAL5.04)

## Tel Aviv-Yafo: Electro mobility – charging stations study and electro-motorcycles pilot

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



### Results and achievements

- 15 e-motorcycles were incorporated into the municipality's fleet as part of the pilot.
- The cost benefit analysis proved the e-motorcycles to be a financially viable option with a benefit cost / ratio of 2.6.
- The municipality gained greater understanding regarding charging infrastructure and deployment requirements if e-vehicle market takes-off.

[www.civitas.eu/TLV5.05](http://www.civitas.eu/TLV5.05)

## Stuttgart: Priority network for Heavy Good Vehicles (HGV)

A recommended road network for Heavy Good Vehicles (HGV) is developed in Stuttgart, guaranteeing shorter, more efficient routes for urban HGV and protecting vulnerable urban areas from HGV-related impacts. In a selected test corridor the existing dynamic traffic control system is upgraded to guide HGV traffic to alternative routes.



### Results and achievements

- A new road map of the recommended HGV network was produced (printed and digital versions). It serves as planning tool for authorities and companies.
- The traffic survey with dynamic guidance of HGVs showed that only about 4.5 % of HGVs could be shifted.
- The analysed travel times on all routes with dynamic guidance were shorter than without using the recommendation.

[www.civitas.eu/S5.06](http://www.civitas.eu/S5.06)



## Brno: Optimizing goods logistics in the centre

The city centre of Brno suffers under the permanently increasing traffic caused by supply of shops and business premises, as well as by transport of large shipments. A feasibility study for the optimization of the inner city logistic supply is developed in order to introduce a more efficient city logistic system with less traffic in the city centre while ensuring the supply of goods.



### Results and achievements

- A cost benefit analysis with environmental indicators was carried out suggesting the development of logistic centres in Brno and scenarios for their operation.
- The study shows that thanks to the implementation of the new city logistic system approximately 120,000 vehicle-km per year could be saved.
- Based on this study an optimized city logistic system will be implemented by the municipality.

[www.civitas.eu/B5.07](http://www.civitas.eu/B5.07)

## Malaga: Priority network for Heavy Goods Vehicles (HGV)

The measure aims to design and implement a heavy goods vehicles (HGV) priority network, in order to limit and regulate their presence within the city area. This measure allows HGVs to access the city via a specific route and at certain times of the day, reducing their presence on the rest of the Malaga road network.



### Results and achievements

- The first specific regulations to limit HGV traffic in the city have been developed.
- The restrictions successfully regulate the traffic of around 1,000 heavy vehicles per day within the urban area.
- In order to continue providing access to the commercial activity in the port of Malaga, HGV traffic is permitted during specific time slots.

[www.civitas.eu/MAL5.08](http://www.civitas.eu/MAL5.08)

## Tel Aviv-Yafo: Development of organisational and technical frameworks for facilitating an ongoing process of implementation of goods logistics strategies

Planning for mobility includes more than just moving people - it means moving freight and services as well. This measure focuses on encouraging the involvement of logistical stakeholders and developing effective partnerships in order to achieve more sustainable distribution and to reduce the environmental impacts of freight transportation.



### Results and achievements

- A Logistics Forum bringing together leading companies, suppliers and all relevant municipal bodies was established.
- The municipality gained valuable insight into goods logistics in the city.
- A roadmap of tools needed to create more efficient freight movement and goods distribution in the city centre was developed in partnership with the stakeholders.

[www.civitas.eu/TLV5.09](http://www.civitas.eu/TLV5.09)

## Theme 2: ITS FOR TRAFFIC MANAGEMENT

### Stuttgart: Emission-based traffic management

A dynamic speed limit (i.e. responding to weather conditions and traffic volumes) was installed to help to reduce air pollutant emissions. The City of Stuttgart developed and implemented in real life a traffic control model for the inner urban area. The measure improves traffic flow by reducing stop-and-go traffic, with particular focus on public transport, pedestrians and cyclists, avoiding any negative impacts on these transport modes.



#### Results and achievements

- Operation of dynamic speed signs along federal road B14 was successfully launched in April 2015.
- The measure got a wide positive response of the local press.
- The test site is in operation and the dynamic speed signs are one more useful tool for the daily operation of the Integrated Traffic Management Centre Stuttgart.

[www.civitas.eu/S6.01](http://www.civitas.eu/S6.01)

## Brno: P&R concept and implementation of city parking system

This measure introduces a new parking system in Brno (P&R) in the framework of the existing city parking system. A new P&R facility next to a public transport station was implemented as part of the municipal strategy to motivate more daily commuters to use P&R installations and to reduce traffic in the city centre.



### Results and achievements

- The P&R facility with 184 parking places (including seven places for disabled people) was built next to an important tram stop which connects with the city centre.
- Additional P&R facilities are foreseen in the “Strategy of parking in the City of Brno”.
- Nine locations for additional P&R facilities are being analysed by the City of Brno.

[www.civitas.eu/B6.03](http://www.civitas.eu/B6.03)

## Brno: Central traffic management control centre

A complete operating system offers information on technical infrastructure for all public transport modes in the Brno area on a city-wide level. Moreover, through a database that is accessible by emergency services and city maintenance crews, it takes less time to conduct clean-ups and helps to normalize traffic in case of accidents.



### Results and achievements

- The quality of public services is improved by shortening the time necessary for the maintenance of infrastructure.
- The travel time under ordinary and extraordinary traffic conditions is reduced in Brno by 2-20%.
- The repairs and maintenance of public transport infrastructure can be done faster without negative effects on other modes of transport.

[www.civitas.eu/B6.05](http://www.civitas.eu/B6.05)

## Malaga: Intelligent traffic control and software development for the Management Centre of Mobility (MOVIMA)

The measure aims to improve the traffic flow, by means of implementing advanced traffic control tools focused on reducing stop-and-go traffic, reducing and/or adapting average speed, and maximising the reduction of emissions through traffic control (NOx, PM10). The Automatic Incident Detection (AID) is the tool for processing information and creating an incident database.



### Results and achievements

- The standard AID system initially implemented was improved by adapting it to the local specific conditions that affect the detection of incidents.
- The reliability rate of the AID system was increased.
- The communication procedure (reception and registration of information) regarding mobility incidents was improved.

[www.civitas.eu/MAL6.06](http://www.civitas.eu/MAL6.06)

## Malaga: Dynamic air quality measurement through mobile sensors installed on top of public transport buses

Mobile sensors for air quality measurement have been installed on top of buses of the public transport fleet. The sensors provide reliable real-time information on the evolution of air quality in several areas of the city, which are not covered by the four fixed stations currently existing in Malaga.



### Results and achievements

- An innovative system for air quality measurement with reliable data from several areas in the city was implemented.
- Air quality levels were assessed before and after the implementation of the 2MOVE2 measures.
- The assessment of air quality proved to be an important source of information for decision makers for the development of new sustainable mobility measures.

[www.civitas.eu/MAL6.07](http://www.civitas.eu/MAL6.07)



## Tel Aviv-Yafo: Public transport priority traffic management strategy

This measure enables utilising innovative ITS methodology in the promotion of “Road User Hierarchy”. Traffic management strategies were implemented to achieve public transport priority while maintaining an appropriate level of service for other road users, in particular pedestrians and cyclists. A further aim consisted of increasing the attractiveness of sustainable modes of transport.



### Results and achievements

- A new public transport priority regime was successfully implemented and monitored in the Ibn Gvirol arterial.
- Key performance indicators (KPIs) were analysed showing that a balance was maintained between non-motorised preference and public transport priority.
- Reduction achieved in the variance of public transport travel time in the afternoon in the Ibn Gvirol arterial: 15% southbound travel and 47% northbound travel.
- Average travel time was also reduced in the afternoon in the Ibn Gvirol arterial by 3.2% southbound and 6.7% northbound.

[www.civitas.eu/TLV6.08](http://www.civitas.eu/TLV6.08)

## Tel Aviv-Yafo: ITS based transportation information provision

This measure provides a unified picture of traffic conditions incorporating data regarding events that may delay or slowdown traffic. An open-data platform, which is open and free of charge for all users, to provide this unified picture, and act as a decision support system for both the individual traveller and the traffic operator was developed.



### Results and achievements

- Route choice experiments showed that for routes indirectly impacted by an event there was a saving in time for those using the provided information of over 15%.
- The data provided regarding road closures and events is regularly incorporated into WAZE and other navigation apps.
- An urban transportation “hackathon”, a mobile app development event, was successfully held at the end of 2014, in light of its success a second “hackathon” was held in March 2016.

[www.civitas.eu/TLV6.09](http://www.civitas.eu/TLV6.09)

## Brno: Smart Parking in the city of Brno

This measure improves parking management in the city of Brno by providing public information on vacant parking spaces for the parking facilities in Brno and for a selected street in the city centre through advanced ITS and information technology. Real-time information on parking locations is provided into the vehicle to easily locate parking spaces close to its destination.



### Results and achievements

- 73 sensors on Rooseveltova Street have been installed which provide real-time information on vacant parking spaces to vehicles.
- The mobile application for the navigation to vacant parking spaces has been successfully developed.
- The time necessary for finding vacant parking spaces on Rooseveltova Street has been reduced (after implementation about 20% of drivers find easily vacant parking spaces).

[www.civitas.eu/B6.10](http://www.civitas.eu/B6.10)

## Theme 3: HUMAN-CENTRED MODES

### Stuttgart: Mobility Information and Service Centre Stuttgart

This measure offers a corporate mobility management assessment for companies and building ventures in Stuttgart in order to change the mobility behaviour of employees. It ensures the efficient, environmentally-friendly and socially responsible organisation of all traffic generated by a company. The City of Stuttgart supports such private activities by carrying out mobility surveys for employees, facilitating mobility management activities and connecting companies with mobility stakeholders. Additionally, the measure promotes activities of 'sharing' for citizens and commuters in the region through an extensive information campaign.



#### Results and achievements

- Mobility surveys have been successfully carried out in two automotive companies, the Marienhospital, and the Staatstheater Stuttgart reaching nearly 20.000 employees.
- Companies developed car sharing schemes, provided public transport information at the workplace, improved or built new bike parking facilities and offered job tickets.
- The City of Stuttgart increased the frequency of public transport (together with the public transport company SSB), optimised signalling equipment and participated in mobility days.
- Six building ventures received a mobility assessment.
- An extensive media campaign with the slogan “Travelling together” was successfully carried out.

[www.civitas.eu/S7.01](http://www.civitas.eu/S7.01)

## Brno: Extension of bicycle transport service in public transport

The measure helps to improve the service for public transport passengers who are interested in combining cycling with public transport. On one bus line connecting with a nearby recreation area, buses are equipped with a special backside rack for carrying up to six bikes. This helps also avoid conflicts with passengers who have baby prams or use wheelchairs as they have priority over other passengers.



### Results and achievements

- An analysis of possibilities to improve the service for cyclists in public transport vehicles in Brno was carried out.
- Five new buses have been equipped with backside racks – each one for six bicycles.
- The new service for cyclists has been implemented on one of the bus lines in the city connecting with a nearby recreation area.
- A report on “bicycles on board” in Europe shows the different innovative ways of regulating transport of bicycles in public transport.

[www.civitas.eu/B7.02](http://www.civitas.eu/B7.02)

## Malaga: Public bicycle scheme

This measure introduces a public bicycle scheme in the city of Malaga, combined with public transport. It contributes to increasing the share of bicycles in the modal split, by complementing the existing bicycle lanes and infrastructure. The system is available not only for citizens of Malaga, but also for tourists through special offers for short term use.



### Results and achievements

- In its first three years of operation, 38,000 people registered for the public bicycle system “malagabici”.
- Around 3,000 trips are made with public bicycles every day.
- Due to the success of the initiative, the City Council plans to extend the system to a total of approximately 123 stations and 1,400 bicycles.

[www.civitas.eu/MAL7.03](http://www.civitas.eu/MAL7.03)

## Tel Aviv-Yafo: Innovative transport solutions for high density employment areas (integration of urban and inter urban)

The main aim of the measure is to increase sustainable mobility through a change in the modal split in favour of collective transport modes. This measure involves the provision of tailor-made transport services to and from transport hubs to areas of high density employment. The measure helps to realise the potential such services have for solving the problem of the “last mile”.



### Results and achievements

- Tailored collective transit solutions were developed in consultation with the stakeholders.
- An improved shuttle service with both increased capacity and frequency was introduced.
- Leading to an increase in use of the shuttle service of 20% in the morning hours and 13% in the afternoon.
- The modal-split showed a decrease of 6% in the use of private cars and an overall increase of 7% in the use of the new shuttle service.
- The CBA carried out showed a benefit cost ratio of 4.9.

[www.civitas.eu/TLV7.04](http://www.civitas.eu/TLV7.04)

## Tel Aviv-Yafo: Raising the awareness to green arteries as part of a synergy of land use and transport planning and promotion of non-motorized transport modes

This measure focuses on raising awareness to green arteries and increasing their utilisation. It aims to make the public sphere a place of public activity that encourages walking and cycling rather than private vehicles. The measure used an awareness campaign and community event to promote a car-independent lifestyle and the use of a recently completed green artery.



### Results and achievements

- Average increase of 13% in the number of pedestrians in the demo area.
- Average increase of 6% in the number of cyclists in the demo area.
- 74% of the people surveyed at the community event stated they would use the green artery more.

[www.civitas.eu/TLV7.05](http://www.civitas.eu/TLV7.05)



## Tel Aviv-Yafo: The effectiveness of non-financial incentives in promoting the use of sustainable transport modes

This measure focuses on understanding the effectiveness of non-financial incentives as catalysts for attitude and behavioural change regarding the use of sustainable transport modes. A group of participants were given access to AlterNativ, a journey planner enabling the selection of desired transport mode based on travel time, cost, and calorie consumption or emission levels.



### Results and achievements

- An innovative algorithm for enabling the selection of transport mode based on various criteria was embedded in the journey planner AlterNativ.
- Another algorithm, separate to the journey planner, determined the transport mode actually taken based on geographic monitoring.
- Analysis of participants' activities within the Facebook group was carried out based on performance indicators that were developed for this task.
- Analysis was also carried out regarding reciprocity between level of engagement in the Facebook group & AlterNativ and the change in attitudes and travel habits associated with sustainable transport.

[www.civitas.eu/TLV8.02](http://www.civitas.eu/TLV8.02)

# Sustainable Urban Mobility Plans (SUMP)

Sustainable Urban Mobility Plans (SUMP) play in all four cities a key role to design the future transport system. While Brno develops a completely new SUMP the other three cities are improving and expanding their existing mobility plans by closing gaps identified in comparison with the SUMP guidelines of the European Commission. A careful analysis of the existing plans was done. The strong political commitment in all four cities is emphasized by the signature of the “Charta of 2MOVE2” on SUMPs by political representatives of all four cities during the CIVITAS Forum in Gdynia in September 2016.

- New SUMP developed in Brno.
- Improvements of existing mobility plans (e.g. SUMP Malaga) in Malaga, Stuttgart and Tel Aviv-Yafo.
- Self-assessment of the four 2MOVE2 cities based on the EU guidelines on SUMP, confirming that already the existing mobility plans in all four 2MOVE2 cities are equivalent to excellent SUMP.
- Cooperation and exchange on the development of SUMP and related topics between the four 2MOVE cities.
- Signature of the “Charta of 2MOVE2” on SUMP.





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# CIVITAS PLUS II – 2MOVE2

## Moving together for a better mobility

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