

CiViTAS
Cleaner and better transport in cities

CAPITAL



Catalogue of Pioneer Cities and measures

First edition, linked to the CIVITAS
Activity Fund Call February 2014

Polis
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This document is one of three documents supporting the 1st
call for proposals of the CIVITAS Activity Fund. The two
other documents are:

- The Application Form;
- The Terms of Reference.



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Part 1. Measures and their transferability potential

The CIVITAS initiative has developed a typology of 8 thematic categories of measures, combined with two horizontal categories (public involvement and Sustainable Urban Mobility Planning). For the first call of the Activity Fund, the focus is put on measures which currently have a high European policy relevance and which also have a high transferability potential.

1.1. Clean fuels and vehicles

Measure description¹

Cleaner fuels and vehicles decrease local air pollution and greenhouse gas emissions, both of which help to improve the quality of life for citizens. CIVITAS cities seek to explore innovations in these fields and share best practice. Many cities try to stimulate the spread of clean and energy-efficient public and private vehicles for passenger and freight transport.

Biodiesel or biogas vehicles are seen as an element on the path towards energy independence from fossil fuels and relief from unstable oil prices. CIVITAS cities test for example the use of biodiesel, biogas, compressed natural gas (CNG) and hybrid vehicles. They develop expertise in procurement and tendering and also explore opportunities to source biofuels locally.

Transferability potential

POINTER recommends that “cities wishing to implement more sustainable vehicle fleets should have access to relevant technical and operational expertise to help specify, implement and maintain the fleets, as such expertise is often outside the scope of the traditional competences of their staff. Additional expertise is needed to develop effective awareness campaigns, and how to help overcome barriers of slow uptake of incentive schemes.”

POINTER distinguishes between four types of measures:

1. Vehicle modification or replacement

Generally, the measures on the modification or replacement of vehicles are transferable to other cities, especially where the PT fleet accounts for a large part of the city transport and the fleet is in need of major maintenance and/or replacement. The receptor city should have access to expertise about the chosen technology. As many measures in this field require substantial financial investment, the fiscal situation of the receiving city is crucial.

¹ www.civitas.eu

2. Future possibilities for provision of alternative fuels

Research into the possibilities of introducing alternative fuels is transferable to every city, but political will is of paramount importance.

3. User attitude and behaviour towards alternative fuels

Measures with regards to user attitude should be treated carefully: politicians should really show belief in alternative fuels and in the case of fleets, reliable equipment to monitor the results should be available. Measures benefit highly from the 'easy' availability of alternative fuels and national standards.

4. Optimisation and strategy development

With regards to strategy development, the senior management's faith in the usefulness and effectiveness of a switch to alternative fuels is an overarching condition.

CIVITAS CATALIST in its 'CIVITAS Guide for the Urban Transport Professional' recognises additional relevant barriers that take-up cities need to take into account:

- High purchase costs. New technologies tend to be more expensive. Operating costs can be lower, but purchasing costs are in general higher than for conventional technologies. Special financial arrangements can overcome these barriers;
- Fuel (or charging) infrastructure. Alternative fuels or electric vehicles require a different energy distribution structure. Public authorities can, and sometimes must, play an important role in creating a basic level of service.

1.2. Demand Management Strategies

Measure description²

Demand management strategies can reduce traffic through a variety of economic incentives, regulatory measures and modern communication technologies.

CIVITAS cities experiment with a range of demand management measures to learn about the merit of different initiatives and share lessons learned. These include access restrictions, road pricing, parking policies and marketing campaigns.

Pricing strategies can work as powerful incentives to get people to try cleaner ways of transport and make the private car a less appealing choice.

Some of the incentives that cities have been testing are special parking tariffs for low-emission vehicles, financial rewards for avoiding peak times and a "mobility credits" scheme that attaches a financial value to saving or exceeding emissions.

Transferability potential

POINTER states that the "measures in the Access & Parking Management cluster provide many examples of transferable knowledge, that is, knowledge which other cities could use in planning and delivering their own parking and access schemes. Even where measures have not followed through to delivery, or have been carried out but with little measureable effect, lessons have been learned and the experience can be valuable for cities throughout Europe and the world."

² www.civitas.eu

The CIVITAS cities have been active in different contexts: “historic centres, regional centres, tourist attractors and smaller cities. Importantly, there are examples from cities with mature parking and access management schemes and existing LEZs, as well as from cities tackling parking and access issues for the first time.”

Another conclusion of POINTER is that “these projects have been carried out at a time of economic recession in Europe, including some countries which have been very hard hit by economic conditions, so it demonstrates that progress can be made in different circumstances. All of this makes it possible for cities of different sizes and economic conditions to make use of the lessons here.”

POINTER looked into 4 elements of demand management:

1. Parking and P+R
Important conditions for success are political support and clear dialogue and communication with the public. New P+R facilities are linked to the provision of land in a good location.
2. ITS
The ITS measures have a reasonable transferability potential: political support and technology are powerful drivers.
3. Access management and Limited Traffic Zones.
Important conditions for success are political support and a clear dialogue and communication with the public / target group. If ITS based, well-functioning technology is important. Moreover, the feasibility of these kind of measures is to a large extent dependent on local / national circumstances related to juridical aspects.
4. Research and Development.
The involvement of the right partners with the appropriate expertise is crucial. Data have to be sound, otherwise the research and model outcomes have little value.

POINTER has developed specific recommendations on consultation, innovation, design, communication and demand that can be used within the systematic transfer process.

CIVITAS CATALIST describes three challenges: technological challenges, acceptability issues and institutional barriers.

1.3. Urban Freight Logistics

Measure description³

The delivery of goods makes up a significant share of traffic in European cities and is a major contributor to deteriorating air quality, rising carbon emissions and congestion.

CIVITAS cities encourage the use of cleaner freight vehicles and are developing solutions to better coordinate freight logistics.

More efficient freight deliveries can reduce congestion, lower emissions and free up space for sustainable modes.

Transferability potential

³ www.civitas.eu

POINTER concludes from its transferability assessment that "the complex structure of urban freight transport with a lot of activities and stakeholders with different interests forms a network more than a chain. This is the main prerequisite for transferability of the measures because all subsequent measure activities have to be made from this perspective. If this perspective is missing, there is no possibility to implement the measures successfully. There will be no stakeholder involvement and consultation, no political support, no adjustments of legislation or regulation, etc."

POINTER introduced three categories of measures within the area of urban freight logistics.

1. New distribution schemes
POINTER sees no barriers for action in this area. An important issue is the geographical component (e.g. availability of waterways, specific street pattern etc.).
2. Access restrictions
It's obvious that for the implementation of this type of measures political support is absolutely necessary.
3. Other
Driver support is dependent on data availability and well-established IT-support. Freight Quality Partnerships should take into account realise the complexities involved, which can be stimulated by stakeholder involvement and communication.

CIVITAS CATALIST sees many benefits for urban freight logistics measures. If implemented properly (new) city logistics will be beneficiary for shopkeepers and local businesses in the areas concerned, the freight delivery services/carriers, the population and the public sector:

- Wholesalers and retailers profit likewise from consolidation and distribution centres.
- The number of individual deliveries between wholesalers and retailers can be reduced due to higher load rates of delivery vehicles.
- Consequently, the costs per good delivered decrease.
- As a by-product, the access to inner city shops is alleviated for the citizens, i.e. the attractiveness of a single shop increases, and in cases where the majority of shops subscribes to such a new delivery approach, the whole city centre and the image of the city gain sustainably.

Barriers for implementation are - according to CIVITAS CATALIST:

- Longterm coordination with the different stakeholders, especially shop owners and local freight deliverers.
- Important changes, such as the founding of an integrated urban freight distribution centre are more difficult to implement, if there is not already a history of cooperation and trust.
- City logistic measures can normally be implemented within the given legal framework conditions by using different legal premises, such as ordinary traffic regulations on parking and loading/unloading as well as specific transport regulations such as weight limits on specific routes. However, in the case of fundamental changes like the use of environmental zones within a city, new traffic regulation orders may be needed which should be based on the limit values on air quality set by the European directives (Directive 1999/30/EC).

1.4. Safety and security

Measure description⁴

Safety and security make sustainable transport options feasible and attractive. CIVITAS cities are looking into new ways to ensure the safety of urban travellers, especially cyclists, pedestrians and the most vulnerable groups such as children and elderly people. Initiatives include for example traffic calming, improved cycling infrastructure and anti-vandalism activities.

Transferability potential

POINTER concludes that "measures aimed at improving safety are generally well transferable. However, there may always be a strong opposition to measures with speed restriction goals. Thus, involvement, communication about 'speed and danger' and the use of 'local champions' are very important. Measures on driving and/or safety courses have a large transferability potential, although they need to be very target group specific."

Easily transferable measures for safety improvement aiming at increasing awareness include education programmes in schools, workshops about safety measures, a cyclists platform bringing relevant stakeholders together to exchange experiences, etc.

Measures on the improvement and proper maintenance of already existing provisions like traffic signals, zebra crossings, etc., are in theory relatively easy to transfer. In practice however, this requires maintenance plans and available money for the maintenance, i.e. strategic decisions to be made by city departments and / or companies.

1.5. Transport Telematics

Measure description⁵

Modern transport telematics systems offer opportunities to make urban transport faster, more efficient and to support travellers.

Communication technology can help to better coordinate traffic flows with the help of satellite-based applications, global positioning systems, wireless data transmission, automated traffic counting devices, and high-resolution cameras.

These new technologies allow transport management for example to give priority to public transport, improve parking management and better enforce road rules. They can also provide passengers with real-time information and mobile guidance.

Transferability potential

POINTER distinguishes between different areas of applicability of ITS to assess the transferability potential.

⁴ www.civitas.eu

⁵ www.civitas.eu

1. Monitoring and control

There is transferability potential for this kind of measures. However, to a large extent it depends on local / national circumstances (for instance juridical aspects, such as privacy legislation regarding the use of cameras and data). The well-functioning of the technical applications plays an important role.

2. Public Transport Priority

The transferability potential is there for technical solutions like synchronisation of traffic lights. However, again the quality of the technical applications plays an important role and the involvement of experienced companies is essential.

3. Public Transport Information and Ticketing and Fleet Management

There is a transferability potential for this kind of measures. However, the main condition is that the technology functions well and that, if needed, systems can be integrated. This implies well-conducted research, cooperation between stakeholders, and a realistic financial planning and time schedule within a stable organisation.

CIVITAS CATALIST adds that the challenge for services and applications focusing on passengers is to develop and implement user-friendly, understandable, and reliable systems which do not create a barrier to public transport but rather facilitate the shift towards public transport. In addition, operators and public authorities face organisational and financial issues when deploying transport telematics. They have to collaborate closely in dedicated working groups to define tasks and responsibilities during development and operation and to decide on technical equipment and services to come up with solutions that fit passenger requirements.

A general barrier to transport telematics is the lack of interoperability between existing and upcoming systems which are installed as stand-alone solutions for a given region or city; the key to further development is agreement and application of national and European standards.

1.6. SUMP

Measure description

(SUMP) offer a fully-fledged approach to sustainable plans in order to contribute to long-term mobility planning. The SUMP concept considers the functional urban area and proposes that action on urban mobility is embedded into a wider urban and territorial strategy. SUMP are about fostering a balanced development and a better integration of the different urban mobility modes. It emphasises citizen and stakeholder engagement as well as fostering changes in mobility behaviour.

Transferability potential

This topic was not explored by POINTER. There are several reasons to assess the CIVITAS Plus SUMP experiences as highly transferable:

- They are part of an EU policy process that promotes the uptake of SUMP practices.
- They are based upon the ELTIS Plus guidelines, which are referred to in the Urban Mobility Package as the European framework for SUMP development.
- The SUMP guidelines offer a flexible tool for SUMP development, leaving room for local conditions and circumstances, national legal framework etc.

- Anyhow, methods used for SUMP development can be exchanged and discussed (approaches to modelling, public involvement, vision building, measures selection etc.).

CIVITAS CAPITAL describes several benefits of a SUMP approach.

- Better quality of life – SUMP means planning for people rather than cars and traffic. It carries an emotional message expressed, for example, in the aim for higher quality public spaces or improved children’s safety.
- An improved image of the city – SUMP contributes to the perception of a city as attractive for living, working and visiting, innovative and forward-looking. Such an image is an important factor in attracting people to live in a city and for businesses to invest there.
- Improved mobility and accessibility – People-focused urban mobility planning ultimately results in improved mobility for citizens and it facilitates access to urban areas and their services.
- Environmental and health benefits – Working towards air quality improvements, noise reductions and climate change mitigation leads to positive health effects and significant savings in healthrelated costs.
- Potential to reach more people – SUMP offers opportunities to reach more people and better respond to the needs of different user groups.
- Citizen- and stakeholder-supported decisions – Planning for people means planning with people. Through citizens and other stakeholders, decisions for or against urban mobility measures can obtain a significant level of “public legitimacy”.
- Effective fulfilment of legal obligations – SUMP offers an effective way to tackle and fulfil legal obligations such as the European Commission’s Air Quality Directive or national noise regulations.
- More competitive cities and access to funding – SUMP can provide access to funding available for innovative solutions – potentially offering a decisive advantage over other cities when competing for public funding.
- New political vision, integration potential – SUMP offers a long-term and strategic vision. It encourages an effective planning culture which aims at the integration of policy sectors, institutions as well as cities and their surroundings.

1.7. Summary table

	Transferability potential	Areas of specific concern/interest
Clean fuels and vehicles	High, especially if city owns the fleet and when there is political will.	<ul style="list-style-type: none"> - Relevant technical expertise - User attitude - High investment cost
Transport demand management	High, examples in different contexts available, interesting technologies at hand.	<ul style="list-style-type: none"> - Availability of land and locations - Public acceptance and political will
Urban Freight Logistics	High, if perspective of logistics network is present.	<ul style="list-style-type: none"> - Geographical component - Stakeholder involvement - Technological complexities
Safety and Security	High	<ul style="list-style-type: none"> - Enforcement - Engineering - Education
Transport telematics	High, depending on local juridical aspects	<ul style="list-style-type: none"> - Well-functioning technical aspects - Stakeholder involvement to manage integration
SUMPs	Not assessed, but potentially there	<ul style="list-style-type: none"> - Use of common guidelines - Identification of common challenges

Part 2. Cities' offer

This catalogue provides guidance on which transferable and successful measures could be explored and which leading cities are ready to support take-up processes. Information is made available on 8 potential pioneer cities, indicating for each of them which level of exchange they can offer as well as the transferable measures they have implemented and are ready to explore with a potential take-up city.

This list is not exhaustive. Within the application form for the first call of the CAPITAL Activity Fund, applicants can indicate other (CIVITAS demonstration) cities to be pioneer cities.

2.1 Activity Fund offer “at a glance”

City	Increasing use of alternative fuels	Demand management strategies	Safe and secure road infrastructure	Urban freight logistics	Innovative telematics	SUMPs
Bologna	For PT and private fleets	Access restrictions and parking policies		Freight delivery plan	Enforcement at traffic lights, traffic control centre	
Nantes	Clean fleet, PT	Park and Ride	Low traffic zones		Smart ticketing	SUMP in place
Gdynia	Hybrid Trolley	Pedestrian area, weight in motion			Automatic traffic incident detection, bus lane detection	SUMP process ongoing
Bristol	Clean vehicle strategy	Residential traffic management		Freight consolidation	Intermodal trip planner	Local Transport Plan with neighbouring authorities
Utrecht		Parking	Road safety label for schools	Transport by boat, consolidation, pick up points	Bus priority	
Donostia-San Sebastian	Biofuels and clean vehicles for PT	Parking behaviour	Road Safety Strategy, safe districts and limited speed zones	Goods distribution scheme	PT fleet management, real time information	SUMP with specific elements such vertical mobility
Koprivnica	Electrical car sharing scheme, low emission PT					SUMP under development
Vitoria-Gasteiz		Demand management strategies	Superblocks			SUMP for better modal split and less greenhouse gas emissions

2.2 City fact sheets

Bologna (IT)

Located in the centre of Italy, Bologna is a city of 373,300 inhabitants covering 14,085 km². Because the city was built during the Middle Ages, it is characterised by very narrow streets with their famous arcades or porticoes. Despite this compact layout, the city centre is still the focus of much public, commercial and cultural life.

Bologna participates in [CIVITAS MIMOSA](#).



Bologna can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English/Italian
Availability of local politicians:	No

City Contact:

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Proposed CIVITAS measures for take-up:

Clean fuels and vehicles

Clean public transport vehicles.

Bologna wanted to improve the environmental performance of its public transport bus service. Based on a well-to-wheel analysis carried out under this measure, the public transport operator TPER decided to build up a small hybrid bus fleet tailored to the local context. Two serial-hybrid buses were introduced that were equipped with innovative super capacitors that replace conventional electric batteries.

Personnel training activities for maintenance staff were carried out.

The average daily consumption, measured in real service conditions and during summer, is about 80 litres for a daily service of 200 km. Compared to traditional hybrid vehicles, the new hybrid buses yielded considerable cost savings because they have no batteries, which need to be replaced every three years at a cost of EUR 15,000.

Cleaner private vehicles.

The city of Bologna wanted to boost its efforts to encourage private car owners to shift from petrol to liquefied petroleum gas (LPG) and compressed natural gas (CNG). The city provided financial incentives for clean(er) cars while exempting them from circulation restrictions under the Air Quality agreement. For its part, the municipality procured 41 methane and LPG vehicles, thus increasing the share of clean vehicles in its fleet to 50 percent. Together with the Emilia-Romagna Region (RER), the municipality promoted an innovative programme to promote electric vehicles, with financial incentives worth EUR 300,000. It also built two on-street charging points for electric vehicles.

The e-mobility programme was based on unprecedented agreements signed by the RER, the national electricity company Enel and the multi regional utility Hera which allowed for e-company interoperability and plug-in device standardisation. The city of Bologna launched an information campaign to spread awareness of the incentives available to shift to methane or LPG. The city made the promotion of private vehicle renewal a priority in 2007 as part of its urban traffic plan.

The measure increased the share of LPG- and CNG-powered vehicles in the city's private fleet to 16 percent in 2011. That was an increase of 87 percent from 2007. Approximately 900 electric bikes were purchased in one year and the measure got new funding in early 2013.

Demand Management Strategies

Flexible access restrictions to the city centre.

Prior to CIVITAS, the control of access to the limited traffic zone (LTZ) via electronic pillars had not been very effective. In order to decrease access by unauthorized vehicles to eight

semipedestrian zones within the LTZ, this CIVITAS measure updated the access control system with new software and mechanical features.

Under the new scheme, smart cards with different institutional categories allowed for differentiated access and prevented the illegitimate use of passwords.

A communication campaign was carried out in the form of letters sent to citizens (around 3,000 people including residents and parking space owners). These explained how the new electronic pillar system worked. The system was integrated with Bologna's new mobility multiservice smart card (named "MI MUOVO", see measure 5). The measure evaluation showed a 42 percent reduction in access to limited zones between 2009 and 2012. That equalled around 250 fewer vehicles entering the zones each weekday.

Road pricing policies.

In 2006, Bologna was the first city in Italy to implement a road pricing policy based on an intelligent transport system (ITS). As part of CIVITAS, Bologna conducted a study to develop an ITS that can identify and distinguish vehicles according to different parameters such as model, size and emissions level. To make the access control system for the limited traffic zone (LTZ, see measure 8) more flexible, the road pricing scheme foresees the possibility for occasional users to enter the LTZ by paying an access toll. Also, a new semi-pedestrian area was introduced within the LTZ.

Different stakeholders were involved in the process and many awareness raising actions, such as public events, conferences and media actions, were undertaken to increase social acceptance of road pricing. A training course on the new software was organised for users and new operators. The revision of the ITS finalised Bologna's road pricing strategy as part of the city's Urban Traffic Master Plan.

Measure implementation led to an 2 percent reduction of car and motorbike access to the LTZ and a decrease in all pollutant emissions (CO, CO₂, NO_x and particulates). Vehicle access to the new semi-pedestrian area dropped by 69 percent between 2006 and 2012.

Pricing and monitoring policies for parking.

Limited parking places and narrow streets led to many problems such as illegal on-street parking. With the support of CIVITAS, the city of Bologna worked on technological developments for more efficient information management, reservation and enforcement methods. This included new limited traffic zone (LTZ) access permits with bar codes, a complete revision of parking fees, an update of all parking meters, vertical signs and payment vouchers, and a new system to issue fines with portable devices (see measure 20). Bologna also became the first big Italian city that realised the complete centralisation of parking meters through the GSM-network.

The awareness and acceptance of on-street parking management by citizens was evaluated via a telephone survey with a random sample of 500 citizens.

The number of fines for double parking decreased from 869 in 2009 to 297 in 2011. About 56 percent of citizens had a positive opinion on paying for on-street parking as a way to reduce congestion of parking spaces in relevant areas.

Urban freight logistics

Urban freight delivery plan.

CIVITAS supported the third and final phase of the freight delivery plan, consisting of three main elements: an analysis of how freight distribution was evolving in the city, the promotion of a van-sharing system with a common electronic platform and the introduction of new access policies to the city centre (see measures 8 and 11).

Stakeholders were involved in different stages of the analysis and 21 operators were contacted to join a small-scale freight consortium.

Unfortunately only two new freight distribution operators joined the consortium despite the municipality's high expectations and efforts. The van-sharing system was not used much, as operators were afraid to lose market shares and revenue. Still, the measure highlighted the limitations of the initiative and yielded lessons for further developments on a city freight delivery strategy.

Innovative telematics

Automatic enforcement at traffic lights.

Italy's national plan for road safety stated that 83 percent of road accidents resulted from bad driver behaviour, and 35 percent of fatal accidents were caused by speeding and running red lights. CIVITAS supported Bologna in testing an automatic enforcement system to help detect traffic light offences and issue fines. The city installed system, called Stars, in 24 pilot areas with a dedicated information technology back office.

Publicity campaigns informed citizens of system and initial results were disseminated at mobility conferences. The measure was part of Bologna's Urban Road Safety Plan adopted in 2003.

An evaluation indicated that the Stars system was the most efficient, cost-effective technology dealing with traffic lights infringements. It led to a 21 percent reduction in accidents and a 28 percent reduction in injuries at the intersections where it was installed. The experience underscored the importance of proactive communications. After all, the aim was to improve road safety and not to boost revenue through fines as some drivers may have suspected.

Mobile gates to control reserved bus lanes.

Bologna used a mobile intelligent transport systems (ITS) to bolster an existing electronic system enforcing intrusion into bus lanes. The mobile equipment was moved between different stretches of bus lanes to reduce violations on the entire bus network and improve public transport service.

However, the national legal system did not allow the use of such mobile camera installations and this resulted in the termination of the measure.

New traffic control centre.

CIVITAS helped to realise a new traffic control centre called CISIUM that connected and integrated various intelligent transport systems to facilitate optimal real-time traffic management. This included displaying data from the traffic control centre on traffic flows on Google Maps and at the airport arrival terminal. Bologna was one of the first cities in Italy to provide a traffic service on Google Maps with information coming directly from the municipality.

A dissemination campaign informed road users about the new system and results obtained. Real-time traffic information was made available to citizens through different channels.

The measure improved traffic control in the urban area, and the traffic fluidity at intersections where waiting times were reduced by a few seconds. The enhancement in bus prioritisation at traffic lights led to shorter travel times for the bus routes, with a reduction in delays and an increase in slightly early bus departures. Bologna's CISIUM project was recognised with the CIVITAS Award in 2010.

Reducing illegal on-street parking.

Before CIVITAS illegal on-street parking badly impeded public transport circulation (see also Measure 12). With the support of CIVITAS, Bologna developed a unique electronic mobile enforcement system called SCOUT. It allowed traffic police to photograph illegally parked cars and to identify the owner through number plate recognition technology.

Together with the police, training courses on how to use the system have been organised for employees of the public transport operator, which is also responsible for the management of public parking.

The measure resulted in a 53 percent reduction in illegal street parking, improved regularity of public transport and a decrease in congestion on bus routes. From 2008 to 2010 the number of parking fines decreased 68 percent. Due to the photographic and GPS evidence that the SCOUT system provides, legal challenges to fines were reduced.

Bristol (UK)

Bristol is the largest urban area in South West England and is a centre of industry, commerce, education and culture. Bristol City Council is a local authority with responsibility for transport, planning and other public services covering an urban area with a population of around 400,000. Car ownership and car use in the city are among the highest in the country.



Bristol participated in [CIVITAS VIVALDI](#).

Bristol can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English
Availability of local politicians:	No

City Contact:

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Proposed CIVITAS measures for take-up:

Urban freight logistics

Freight consolidation scheme.

At the commencement of VIVALDI there was little co-operation between organisations involved in goods distribution at the local level within the city's Clear Zone. The freight consolidation scheme was designed to serve retailers in Bristol's core detail area, and a six-month trial involved 20 retailers. The service was the first of its kind in the UK to focus on a city centre.

From the early stages of the scheme, the city involved retailers and other stakeholders, who showed a certain degree of scepticism because of the absence of a UK model to follow. The measure was carried out as part of the Clear Zone concept introduced within the CIVITAS project.

The measure resulted in a reduction in delivery vehicle movements of over 50 percent from the third month of operation. It also led to emissions reductions of up to 600 kg of CO₂, 25 g NO_x and 300 g of particulate matter. The results of the initial phase of the scheme were so positive that Bristol City Council decided to extend the duration and scope of the scheme.

Clean fuels and vehicles

Clean vehicles strategy including new and retrofitted vehicles.

Prior to CIVITAS, the municipal fleet had 22 vehicles running on liquefied petroleum gas (LPG) whilst the remainder were diesel powered. Public transport used diesel buses, as well. To improve air quality, local bus operators retrofitted the exhaust of more than 60 diesel buses and introduced four hybrid-electric buses. Meanwhile, 50 vehicles running on liquefied petroleum gas (LPG) and five electric pool cars were introduced in several public and private fleets. The measure was innovative as it involved the development of a new hybrid diesel-electric engine for the local bus fleet. The City Council involved many transport and fleet operators in this measure, and received advice from the non-profit organisation Energy Savings Trust. The measure was carried out as part of the city's Air Quality Management Strategy and of the Clear Zone concept introduced within the CIVITAS project.

The LPG vehicles and the retrofitting of diesel buses led to a reduction in particulate matter, but there was a slight penalty in terms of increased fuel consumption and therefore CO₂ emissions. The electric cars showed admirable cost and emissions savings. In Bristol, CIVITAS contributed to the development of a market for clean and efficient vehicles, as 50 vehicles owned by residents, taxi drivers, City Council employees and three small businesses were converted.

Transport Demand Management measures

Residential traffic management (home zones).

Before CIVITAS, the residential area The Dings was blighted by a severe commuter parking problem that was likely to worsen as new developments on adjacent, vacant land were realised. With the support of CIVITAS, the City Council designed a master plan to introduce a

home zone in The Dings, redesigning the area as a space for social use. At the time, home zones were a relatively new concept in the UK.

The charity Sustrans provided advice on the development of the project and there was intensive involvement and close cooperation with the community (see measure 12). All CIVITAS measures were carried out as part of the Local Transport Plan adopted in the year 2000.

The new layouts created a unique local environment that not only kept cars moving slowly, but gave equal priority to motor vehicles, cyclists and pedestrians. The CIVITAS project showed that streets can be designed with unconventional street features without comprising safety, and demonstrated the positive impact that residents can have on local transport projects.

Transport Telematics

Intermodal trip planner

At the start of the CIVITAS project, Bristol City Council was involved in both a European and a national project on public transport trip planning, but within CIVITAS the city wanted to include walking and cycling into a truly multi-modal information service. The resulting intermodal trip planner was to provide users with full door-to-door itineraries in either text or graphic form, with the option of personalising search criteria, such as accessibility to people with reduced mobility. The trip planner was the first of its kind in the UK.

To acquire all of the relevant background information it was necessary to work with a number of different teams within the City Council, such as the Information Technology Team, the Public Transport Team, and the Walking, Cycling and Access Team. All CIVITAS measures were carried out as part of the Local Transport Plan adopted in the year 2000.

Donostia-San Sebastian (ES)

Donostia-San Sebastian has over 180,000 citizens. For the last twenty years, the city has been enforcing a strong integrated policy in favour of walking, cycling and public transport. Considering walking and cycling as modes of transport in their own right has led to the development of a non-motorised transport network promoting this type of mobility around the city.



Donostia – San Sebastian participated in [CIVITAS ARCHIMEDES](#)

DSS can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English/Spanish/Basque
Availability of local politicians:	No

City Contact:

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Proposed CIVITAS measures for take up:

Safe and secure road infrastructure

Road safety measures

After having published a Road Safety Strategy in 2004, the city of Donostia-San Sebastian wanted to commit citizens and mobility stakeholders to road safety. With the active involvement of 30 associations, the city drafted its Road Safety Pact. This called for awareness-raising campaigns, post-accident attention services, and an observatory for monitoring progress, co-ordination of traffic safety data from all stakeholders and the implementation of nine radar systems along arterial roads to enforce speed limits.

For this participatory approach, the city involved stakeholders such as associations of drivers, cyclists, motorists, people with disabilities and the elderly. The Road Safety Pact was in line with the European Road Safety Charter and was based on the city's Plan for Traffic Safety and Security from 2007.

The area covered by the radar system showed a 14 percent reduction in the number of deaths and injured people. Donostia-San Sebastian's lesson learned was that, although this kind of restrictive measure tends to get negative reactions from car drivers, the increased perception of safety among both pedestrians and cyclists manages to tip the balance in favour of those affected.

Safe districts and limited speed zones

Donostia San Sebastian wanted to reduce the average speed limit for motorised traffic and provide safe crossings for cyclists and pedestrians in selected areas called "safe districts". To this end, the city developed road safety plans for and implemented 30 kph zones in three neighbourhoods with dense car and bicycle traffic. This was an innovative measure that took advantage of the opportunity created by recent changes to the Spanish law regarding 30 kph zones.

The city organised an intensive promotional campaign in each of the three neighbourhoods. This measure was implemented as part of the city's Road Safety Strategy published in 2004, and was closely related to another CIVITAS measure that included the Road Safety Pact and the installation of speed radar control (see above).

In the 30 kph zones, a reduction of speed between 3 to 8 km/hr was measured during peak hours, depending on the area of implementation. Also, significant reductions in the number of deaths and injured people have been achieved: 11 percent, 7 percent and 1 percent respectively in the three 30 kph zones. Donostia-San Sebastian learned that ongoing dialogue with civic associations during the preparation and implementation stages is needed to build consensus on the approach and to achieve success.

Urban freight logistics

Efficient goods distribution

Before CIVITAS, there was no integrated action plan or coordination between the various stakeholders involved in urban freight transport. Creating a new and efficient system for goods distribution in the old city centre and the Ensanche area was the focus of this measure. The proposed actions included changes in the time windows for delivery and improved enforcement of time regulations using cameras. An urban distribution centre was established that operates with cargo bikes, night distribution for larger shops was introduced, changes were made to the directions of some streets, and a parking area for motorcycles was relocated.

CIVITAS gave the city the opportunity to increase stakeholder involvement in city planning and strategy development related to urban freight transport. A Freight Quality Partnership was established among representatives from shopkeeper associations, the transport sector, the municipal police and the mobility department.. This action aligned with the city's freight distribution policies which were described in the Sustainable Urban Mobility Plan.

The implementation of this measure contributed to increased efficiency in urban goods distribution in two highly populated neighbour hoods. The new last mile delivery service with electric cargo-bikes contributed to saving up to 26,849 kilometres per year. As a consequence, a yearly reduction of 23 percent in energy consumption was achieved and the transport companies reduced their operating costs by more than EUR 6,800 per year.

Transport Telematics

New fleet management system

Donostia-San Sebastian had set ambitious goals for improving the quality of its public transport system and, as a result, significantly increasing its passenger numbers. With CIVITAS, the public transport company CTSS introduced a new planning and fleet management system for its vehicles, personnel and public transport network. The measure was innovative, as it automated the time-consuming and highly specialised work of expert employees.

The existing CTSS planning employees were involved in the process of implementation in order to use the existing knowledge and make sure that the system would meet the labour conditions of the drivers.

As a result of the measure, drivers' planning timetables were optimised with less time loss during operations. Operating costs were reduced by 2.5 percent in relation to the total company costs, leading to annual savings of EUR 600,000 to 700,000. In Donostia-San Sebastian, CIVITAS brought a significant change in the way services are scheduled and drivers' hours assigned.

Real-time information for bus passengers

The quality standards for the high-quality bus corridors that the city implemented, required the provision of real-time passenger information. The city used CIVITAS support to make this available on buses, at bus stops, via SMS and on a new website that was also accessible to the visually impaired. The measure included the creation of new data sources, such as a passenger counting system and an automated vehicle location system.

Future plans include a discussion forum on the website for travellers related to the bus services.

The traveller information system is very successful, with more than 3,500 daily requests for real-time information via SMS or the website. The provided information is highly reliable, with 98 percent of all information requests assessed by the users as correctly answered. Surveys reveal that information issues are perceived as very important by the users, with an average score of 8.47 out of 10.

Sustainable Urban Mobility Plans

General approach

Municipality's awareness about citizens tendency regarding the way they manage their daily trips, have supposed a constant challenge with the objective to reduce the use of the private car. Initiatives and measures were developed during CIVITAS ARCHIMEDES project, covering individuals through initiatives like personalised travel plans and specific groups like schools with "walk to school" platform or business areas with "Work Travel Plans" project. Mobility needs generated by those groups have a direct impact in the urban mobility of the city, in both peak and lean hours of the day and the results obtained with this kind of measures (also known as soft measures) have reflected a general unknownledge of the urban public transport offer in the city, which have encourage the city council to analyse more in depth this kind of studies that offers a big amount of data regarding citizen behaviour in mobility therms.

Vertical Transport

Being part of an overall strategy to reduce the number of private cars entering the city and circulating within its neighbourhoods, this measure was part of a package of measures directed to increase the use of non-motorized modes

The hilly configuration of Donostia-San Sebastián poses significant physical barriers for walking and cycling, especially for elderly and impaired people, who are more sensitive to high slopes and long detours. This measure contributed to curve these barriers by providing an efficient vertical transport system that improves non motorized accessibility to hilly neighbourhoods, encouraging more people to walk and cycle.

The city of Donostia – San Sebastián (ADS) expanded the policy of vertical transport with 7 new elevators and 6 escalators/ramps to support cycling and walking inside and towards the city centre. The vertical public transport systems links the cycling and walking networks between the flat and the hilly city The offer of vertical transport facilitates made walking and cycling trips easier towards the city centre and hence encourage people to change mode.

Bicycle scheme

During last 25 years the city of Donostia-San Sebastián has worked with the aim to foster non-motorized modes among citizens, pedestrians and bicycles, commissioning different measures to avoid the abuse of particular vehicle and hence, to offer a more liveable and environmentally friendly city.

Since the first bicycle fostering plan in urban mobility was approved in 2001 by the municipality, the city has been continuously progressing around new bicycle policies, creating a cycle lane network throughout the city and new infrastructures to promote the use of bicycle not only for leisure but also for daily common trips.

One of the most important initiatives was the implementation of the public bicycle service. The first step developed within the CIVITAS Archimedes framework, offered 9 bicycle stations with 150 bicycles. The figures of the service showed a successful measure with more than 5.000 registered users and an average use of the service of 4.5 uses per day.

The second step goes a step further and it offers a service with 100% electric bicycles to cover not only flat areas of the city but also the hilly ones which represent around the 50% of the population of the city.

Gdynia (PL)

Gdynia is a port city with almost 250,000 inhabitants, situated in the northern part of Poland on the Baltic Sea in what is known as the Tri-City Metropolitan Area, comprising in total more than 1.2 million inhabitants. It is a young, vibrant, dynamic city and a Polish centre of economic growth. The city is continually making considerable efforts to reduce motor traffic demand in the area and has an SUMP in place since 2008.



Gdynia participates in CIVITAS Dyn@mo

Gdynia can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English/Polish
Availability of local politicians:	No

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Measures under development in the Pioneer city:

Sustainable Urban Mobility Planning

Gdynia has ventured into sustainable urban mobility planning since many years. This measure will consolidate existing urban and transport planning frameworks and use modelling and information technologies for developing a new generation Sustainable Urban Mobility Plan (SUMP). Web 2.0 applications will allow for active participation of citizens and enhance the involvement of relevant stakeholders in the planning process. The result will be a legalised comprehensive Sustainable Urban Mobility Plan which serves as a model case for Polish and Baltic Region cities.

As a basis for updating and expanding Gdynia's Sustainable Urban Mobility Plan (SUMP), Gdansk University of Technology will prepare a range of community project studies for priority actions identified in Gdynia's draft SUMP. Studies will be conducted on Personal Rapid Transit (PRT), road traffic modifications and public transport lines distribution and cycling promotion, walking and pedestrian areas. All studies will take considerations, proposals and comments from citizens into account, gathered via an internet platform and stakeholder meetings. The result will be a more advanced SUMP for the City of Gdynia. Some of the community projects studies will be also a basis for pilot projects implementation.

Gdynia will elaborate the first three-level transport model for both individual and public transport. The results from the traffic research will directly feed into the preparation of the SUMP. The result will be a macroscopic, a mesoscopic and a microscopic model, each addressing different transport and mobility aspects in the city and the region.

Increasing use of alternative fuels

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 emission transport system even further, Gdynia plans to extend trolley lines into areas without wired infrastructure. The transport operator PKT will convert and test battery hybrid trolleys, and deploy them in a residential area without public transport (PT) services. The exploitation will serve as an example for Polish cities in investing in a highly innovative transport system.

Demand management strategies

Pedestrian area

Gdynia's draft SUMP from 2009 contains a mobility management concept for the city centre with the aim to reduce car traffic. With the support of data from the traffic model, consultative processes will be initiated to temporarily or permanently eliminate car traffic on chosen parts of certain streets. The result will be the first pedestrian area in the city centre which has broad political and public acceptance.

Weight in motion and enforcement

Gdynia is a harbour city with considerable truck traffic. The burden on the city's environment and the cost of road damages caused by overweight trucks is considerable. An innovative ICT based weighing system will identify overweight truck "in motion" and allow for corrective enforcement measures through the authorities. It is expected to reduce road maintenance costs by 15% and reduce the number of overweight trucks on city roads by 90%.

Innovative telematics

Automatic traffic incident detection

Traffic flow in the city is hampered by traffic incidents and accidents - they alter the balance of traffic, cause disruptions, congestion, generate time loss and costs. Within this measure, Gdynia will implement an automatic traffic incident detection system for the two junctions, identified as the most dangerous. The result will shorten the time of road incident detection by 50% and accelerate rescue operation by 20%. By these, the time needed for the re-establishment of regular traffic operation and conditions after incidents will be much shorter

Dedicated bus lanes/HOV detection

The main arterial road in Gdynia is heavily congested during rush hours. To increase the quality and the efficiency of public transport, a dedicated bus lane and a high occupancy vehicle (HOV) lane will be tested and evaluated. Control and enforcement will be realised through ICT applications including automatic detection devices. The measure is expected to decrease the number of car trips on this corridor by 10% through enhanced public transport.

Koprivnica (CR)

Koprivnica is a city of 30,854 inhabitants in north-western Croatia. Well-known as the city of cyclists, Koprivnica is also the educational, cultural and industrial centre of regional importance. The city's active sustainable mobility policies have yielded a high percentage of cyclists and pedestrians in the city centre. The biggest current challenge for Koprivnica in making the local transport more sustainable is the lack of public transport.



Koprivnica participates in [CIVITAS DYN@MO](#)

Koprivnica can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English/Croatian
Availability of local politicians:	Yes

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Measures currently under development in the Pioneer city:

Sustainable urban mobility plans

Koprivnica has a long tradition of implementing sustainable mobility measures in the framework of the Local Agenda 21. The latest dynamics of the city call for more comprehensive mobility planning in a participatory process involving stakeholders and citizens directly. The Sustainable Urban Mobility Plan (SUMP) will respond to the new university campus development and promote new spatial and transport planning methodology in the city and the region. The result will be a legally adopted SUMP which will serve as an example for small and medium-sized cities in the region. An SUMP competence centre will ensure transfer of knowledge in Croatia and South-Eastern Europe.

Increasing use of alternative fuels

Electric municipal car sharing scheme

Koprivnica's ambition is to make one third of the municipal fleet electric by introducing a municipal car sharing system. The deployment of 6 electric vehicles, charging stations, the programming of a web platform to organise the sharing and a training scheme for staff are at the centre of the measure. It is expected to reduce CO2 emissions by 27% and the operating cost for the municipal fleet by 24%.

Low emission public transport

The City of Koprivnica plans to establish a public transport system within the city which is based on electric minibuses and an improved school and factory bus fleet. The City of Koprivnica will purchase two electric minibuses and set up electric charging stations for the buses. The expected result will be a reduction of CO2 emissions by 20% in relation to the current bus fleet operation.

Nantes (FR)

Located close to the Atlantic Coast, the Nantes conurbation with its 24 municipalities is the largest urban centre in western France. Since 2000, it has seen the second highest rate of population growth in France. The Nantes–Saint-Nazaire metropolitan zone combines strong economic assets with a quality of life based on a balance between the natural and urban environments.



Nantes participated in [CIVITAS VIVALDI](#).

Nantes can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	N
Systematic transfer	N
Languages:	English/French
Availability of local politicians:	To be confirmed

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Proposed CIVITAS measures for take up:

Increasing the use of alternative fuels

Developing a new clean public transport fleet.

The energy policy on the PT network in Nantes bus is currently based on the choice made in the late 90s in favour of CNG.

Currently, more than 80% of the bus fleet is CNG-powered. This choice allows the conurbation to meet environmental (reducing fine particles in particular) and economic (energy costs, investment costs) targets. To continue its policy of energy transition towards cleaner systems (Green House Gas reduction) and support citizen request to decrease the noise of public transport, Nantes Métropole and its operator SEMITAN are testing and integrating new technological developments in fuelling solutions (hybrid or electric vehicles for instance).

Demand management strategies

Introducing park-and-ride facilities and parking standards.

As Organizing Authority for transport and mobility, Nantes Métropole is fully aware of the necessity to have integrated planning strategies to reach its objectives. As such, the parking policy has been integrated as one of the main tools to serve this global mobility policy, being a way to have an impact on users behaviour by taking action directly on the demand side: car users.

Whatever on-street or off-street, almost the whole parking offer belongs to local public authorities. This situation grants Nantes Métropole a wide capacity to set its parking policy in the wake of its global mobility policy, combining public transport, traffic regulation, protection and vitalization of the centre of Nantes.

Between 2003 and 2005, CIVITAS supported a six-fold increase in park-and-ride facilities near tram lines, train stations and Busway line. In addition, parking standards were introduced for new buildings.

The conurbation now accounts for 48 P&Rs with 6541 parking spaces.

Safety and Security

The low traffic zones are areas where to specifically defined beneficiaries circulating at a speed equal to or lower than 30km/h.

Under the new traffic plan for the downtown area, the major axis Cours des 50 Otages and some of the adjacent streets have become a low traffic zone (LTZ) since October 1, 2012 . This new LTZ is dedicated to pedestrians, bicycles (creation of a bike path in a central position), public transport, but also to some authorized motor vehicles: residents, shopkeepers, delivery vehicles, taxis, hotel guests, etc.

The objectives of this measure are to:

- Give public space back to pedestrians in a dense and lively urban area
- Promote bicycle routes
- Increase the efficiency of PT routes
- Encourage the modal shift

Transport telematics

The smart ticketing “libertan” project

Libertan is a multimodal contactless smart card with a post payment system: users validate each time they board the PT network and are invoiced the following month on the basis of their real consumption. The system also calculates the best rate applicable up to the maximum limit of the price of a monthly ticket.

In a first phase, the smart card is opened to all public transport modes available in the urban area: buses, busway, navibus, and regional trains.

In a second phase, Libertan will be enlarging its scope to integrate other mobility modes:

- P&R under access control
- Marguerite, the carsharing service,
- Bicloo, the self service bicycle rental system.

The objective is to give users a “key” to alternative mobility solutions, encouraging them to go from one mode to the other or to combine them to find the better match for their trips. As such, the card will increase the integration and draw coherence between all the mobility options available in the conurbation and promote their use.

The Libertan smart card is developed within an Interreg IVB project called SITE, which objective is to work together on the development of smart ticketing products and to address the barriers to interoperability of tickets in the Atlantic Area. The ultimate goal is to be able to purchase in one region a smart ticket that can also be used in the transport networks of other regions of the Atlantic area, thus facilitating the use of public transport.

SUMP

The current SUMP (2010-2015, perspectives 2030) is Nantes’ 3d mobility plan.

The first two urban mobility plans strongly promoted public transport whereas the 3rd, while still proposing measures to develop it, aims at a strong increase in cycling services and cycling and walking habits. However, to promote these “local modes”, the shape of the city should be worked on. The objective is to make it more compact and to bring together various functions thus favouring short trips easily made on foot and by bicycle: the “short distance city”.

The SUMP current strategy is organized around 4 axes:

- Build a “short distance city” by reinforcing existing urban centres with diversified urban functions and a better balance between housing, services, jobs, shops, facilities.
- Encourage local trips by building high quality public spaces adapted for pedestrians and cyclists;

- Coordinate and develop mobility networks (public transport, roads, cycling routes) to organize the links between urban centers;
- Encourage people to change their mobility behaviour.

The objectives of the SUMP implementation are translated into an evolution of modal share:

Mobility modes	2008	OBJ. 2030	2015
Walking	24 %	30 %	25 %
Cycling	2 %	12 %	4 %
Public transport	15 %	16 %	15 %
Car as passenger	10 %	9 %	9 %
Car as driver	47 %	31 %	45 %
PTW	2 %	2 %	2 %

By 2030, the first 4 "alternative modes" should reach an overall share of 67% against 33% for the two motorised modes.

The share of walking and cycling is to be raised by 16 points by 2030 whereas the share of car-driver must be reduced correspondingly. This trend should be initiated as early as 2015 with an increase in walking and cycling by 3 points.

Utrecht (NL)

Utrecht is the fourth largest city of the Netherlands with a growing population of 300,000 at the time of the CIVITAS project. Given its central location and history dating from Roman times, it is a popular destination for tourists. The city attracted about 90,000 commuters a week, a figure projected to double in 20 years' time.



Utrecht participated in [CIVITAS MIMOSA](#).

Utrecht can offer the take-up level:	
Being inspired	Y
Structural dialogue	Y
Studies	Y
Systematic transfer	Y
Languages:	English/Dutch
Availability of local politicians:	No

City Contact:

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Proposed CIVITAS measures for take up:

Demand Management Strategies

Innovation of the system of parking permits and rates.

The city centre had a shortage in parking spaces. This CIVITAS measure consisted of an advanced digitalised parking system that would increase efficiency of parking management and enforcement. It promised to improve “payment behaviour”, decrease the number of visitors to the parking reception desk and generate parking data. Under this measure, new hardware and software was developed and implemented.

Lessons learned included the need for the establishment of a productive and continuous dialogue with local politicians and stakeholders during the entire process from the earliest stage.

Payment behaviour changed. The percentage of short-term parked cars with a ticket increased by 10 percent between 2010 and 2012 compared to the business-as-usual situation, while the number of enforcement officers decreased from 63 in 2008 to 45 in 2012. These personnel were replaced by a scan car. Furthermore in the first few months, almost 15 percent of paid parking by visitors was ticketed by mobile phone. The number of visitors to the parking reception desk decreased by more than 10,000 per year compared to the business-as-usual situation, and personnel costs at the Department of Parking decreased proportionally. One of the barriers encountered concerned privacy issues connected to the collected data.

Promoting the use of clean vehicles through an innovative parking policy.

As part of the new parking policy the city aimed to develop a tariff system that differentiates between vehicles according to environmental performance. This enabled the city to promote the purchase and use of less polluting vehicles. The measure was innovative as it required new national and municipal legislation. This action was part of the city’s Air Quality Action Plan. Research was conducted on how to classify vehicles based on environmental characteristics and how to enforce the parking rules. A national pilot with experimental legislation was stopped in 2011 due to lack of political support. This led to the suspension of the local pilot, as well. Differentiated parking tariffs based on environmental performance was clearly a politically sensitive idea. A lesson learned is that a city needs a strong, consistent political and legislative framework to implement such measures.

Transport Telematics

Improving bus service quality between the centre and the north.

The bus line between the central station and the north of Utrecht was the only public transport corridor in the city where buses did not have a separate, priority lane. This resulted in long travel times and unpredictable services. With the help of CIVITAS, traffic light prioritisation was installed and a series of medium- and long-term measures were suggested for implementation or continuation after the end of the CIVITAS project.

The traffic light priority system was part of the city's action plan for air quality.

The impact of the priority system was not measured due to the lack of efficient tools to collect data on travel times. Measuring the travel times would have been an expensive task considering the modest scale of this measure. Thus, impact evaluation was postponed until more of the proposed measures had been implemented. The city's lesson learned is that the objective of this type of project should be clearly embedded in policy documents beforehand. Secondly, the involvement of residents at the earliest stages of the process is essential for the measure's success. Thirdly, sufficient time and efforts should be devoted to compile an inventory of the interaction with other (infrastructural) projects for the area concerned.

Safety and security

School road safety label

Before CIVITAS, road traffic education had been given low priority because school curricula was already chock-a-block with other important lessons. With the help of CIVITAS the Utrecht Road Safety Label (URSL) was developed, offering schools the opportunity to set up and execute a structural traffic education plan at their own pace. It helped raise awareness of road safety through education and to improve road safety around schools.

A pilot study was conducted with eight schools in five school zones to test the concept and materials. It was a difficult task to get schools involved due to their many other activities. Getting parents engaged was also a challenge. But the measure was a huge success story in Utrecht. In October 2012, 38 primary schools received the label and another 32 schools were actively working to meet the criteria. Satisfaction about road safety around URSL schools increased and 54 of the 70 participating schools' environments were redeveloped with a school zone. The city would recommend: a pro-active approach to the school by a partner with a firm understanding of school practices; a consistent package of information that shows why it is in their interest to participate; and participation being free of charge.

Urban Freight logistics

City distribution by boat

Before CIVITAS, heavy vehicles damaged the historic and cultural heritage of the city and caused a nuisance in the form of accidents, noise and air pollution. These were enough reasons for the city to take advantage of the centre's good accessibility by waterways.

With the help of CIVITAS the city introduced a new zero-emission electric vessel, the beer boat, to transport goods to clients, shops, bars and restaurants in the city centre. Since 2010, the Beer Boat has operated six times per day on four days of the week, supplying more than 60 catering businesses. A multi-purpose vessel and an "eco-boat" were launched, as well. The zero emission vessel gave immediate emission benefits of 38 tonnes of saved CO₂, 31 kg of saved NO_x and 6 kg of saved PM₁₀ emissions during the CIVITAS period. Overall, the Beer Boat measure yielded a net present value of well over EUR 420,000 at a 3.5 percent discount rate. Due to the many positive effects of the Beer Boat it is considered one of Utrecht's most

popular CIVITAS measures, having garnered significant attention and recognition at the national and international levels.

Distribution centres for fresh and perishable goods.

Catering goods are usually delivered multiple times per week to guarantee freshness. This increases freight traffic in the inner-city. With the support of CIVITAS, the city explored the delivery of fresh products using urban distribution centres bundling fresh and perishable goods and using cleaner freight transport vehicles for the distribution. This was a measure in the Netherlands. Based on the results of two roundtables with retailers, wholesalers, transport companies and the Chamber of Commerce and desk research, a business plan for the bundling of fresh and perishable goods was finalised at the end of 2010.

Several meetings with stakeholders ensued to discuss a pilot project. However, the changes that were required in the organization of the catering providers turned out to be too complex. The success of such a measure depends on the ability of the stakeholders to change their behaviour which requires a step-by-step process over a long timeframe. However, the outcomes of the field research pointed out the challenges of creating a bundled delivery service. Caterers are nevertheless aware of the pressing necessity to shift the current freight transport towards a more sustainable system.

Merchandise pick-up points (MPuP)

In 2009, the proportion of customers driving their cars into the city centre for big purchases decreased from 20 to 9 percent. But car-driving shoppers still represented 13 percent of sales by innercity shops. The idea of this CIVITAS measure was to install merchandise pick-up points (MPuPs) at accessible locations such as park-and-ride facilities or railway stations. Based on a feasibility study, the city looked to combine the MPuPs with the existing “inner city service”: a bundling concept in which one transporter offers delivery of goods, the pick up and sending of parcels, and waste returns. This would be done to and from a hub outside the city centre. No shopkeepers, however, were willing to participate in such a pilot project.

The experience made it clear that the concept of the MPuP should be context-oriented and attractive for the different stakeholders. MPuP should offer direct benefits for the customers and shopkeepers to encourage them to change their mobility habits. A combination of services would increase the chance of success of the measure.

Vitoria-Gasteiz (ES)

With a population of 233,399 inhabitants, Vitoria-Gasteiz is the capital of the autonomous community of the Basque Country. Unspoiled by massive urban sprawl, the city has always been noted for its careful planning, human dimension and attention paid to balancing new developments with environmental concerns and social initiatives.

Vitoria-Gasteiz participated in [CIVITAS MODERN](#).



Vitoria Gasteiz can offer the take-up level:	
Being inspired	Y
Structural dialogue	N
Studies	N
Systematic transfer	N
Languages:	English/Spanish
Availability of local politicians:	No

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CIVITAS measures for take-up

Sustainable Urban Mobility Plans

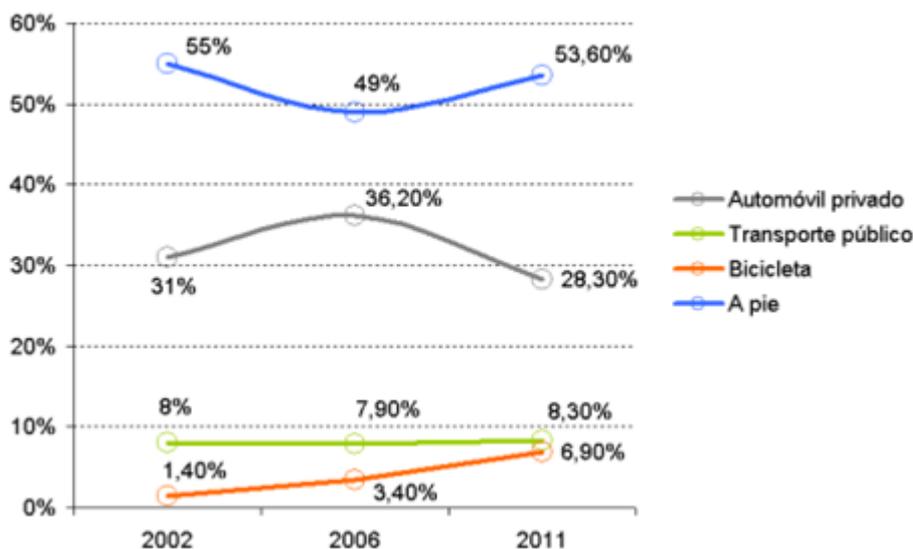
Vitoria-Gasteiz City Council, in the frame of its commitment to a sustainable development that let us to maintain our quality of life and turn cities and their surroundings in an ideal place to live, drew a Sustainable Mobility and Public Space Plan (SMPSP) that has been developed in the last years and that is starting to pay off.

An integrated model to regulate traffic, access and urban space organisation through the definition of superblocks is one of the strategies the city developed and is testing in the last years. The objectives of this initiative are to reorganise traffic to free up space, redefine the public transport network to improve accessibility and coverage, consolidate the network of cycling paths, set up a network of pedestrian walkways, and identify infrastructure required for parking and delivery of goods.

The scheme is targeting a reduction of at least 10 – 15 percent in overall traffic flows in the controlled areas, and 30 percent of travels to be made by bus or bike. Pedestrian areas are to be increased by more than 50 percent and bicycle lanes are being extended from 38 km to 140 km. A new traffic light system, already in use, gives priority to public transport, which has reduced travel times. Educational campaigns are sensitising citizens to safe and energy-efficient driving, which is projected to result in 15 percent savings in fuel.

One of the approaches the municipality tested to develop superblocks in 2013 was the concept called “traffic calming”. As funds are becoming scarcer due to the economic crisis, this kind of innovative actions will be more important to reach our objectives.

This whole new mobility scheme has already produced a noticeable shift in the city’s modal split, as can be seen in the following chart:



Since transport is the second sector to contribute to GEIs in our city (37% share), it is clear that the materialization of a mobility model less dependent on fossil fuels is a necessity. The next table shows the positive incidence in this matter, of the measures derived from the SMPSP over the last years:

GHGs emissions	2006	2011	Δ 2011/2006	2006	2011	Δ 2011/2006
	t CO2e			t CO2e/inhab		
Municipality			%			%
Domestic sector	269.927	254.632	-5,67	1,17	1,05	-10,60
Services	202.227	179.713	-11,13	0,88	0,74	-15,78
Mobility	243.971	219.722	-9,94	1,06	0,9	-14,65
Primary sector	79.422	78.551	-1,10	0,34	0,32	-6,26
City council	45.771	43.023	-6,00	0,20	0,18	-10,92
TOTAL	841.318	775.641	-7,81	3,65	3,19	-12,60

GEIs emissions trends in Vitoria-Gasteiz during the period 2006-2011

Besides the change of scale of the city due to its recent urban growth, some of the most difficult obstacles with which the Plan found along its development have been those relating to governance. One of the most challenging obstacle is the continued participation of all stakeholders in an ongoing process that has lasted more than seven years.

The Plan drivers have made considerable efforts to involve all the agents in a rich participatory process through the Forum calls and an intensive communication with citizens. Each of the undertaken mobility measures had a previous information campaign with illustrative material (brochures, posters), press releases, ad hoc content in the mobility page of the municipal website and even dissemination of information at street level by the local police service.

The last identified barrier was to obtain the support of the government team even after the political change occurred in the city after the last election in May 2012. The support of policy makers is required for technical decisions become a reality and was achieved demonstrating the technical feasibility and effectiveness of the measures and citizen involvement through the Citizens Forum for Sustainable Mobility.

It should be stressed the long-term vision which is always present in the mobility planning in the city, becoming a guide of great value to continue the path taken by the SMPSP in its first phase (2007-2011). Over this time, the Plan achieved a series of benefits for the city. Of the goals set at the beginning, we reversed the trend in the modal split, reducing the use of private car and increasing displacements in public transport, by bicycle and walking; we created functional networks for pedestrian mobility and for cyclists; and we gave value to the public space as a place for citizens living and coexistence. It is also noteworthy the progress reached in the public transport system, resulted primarily in reducing pollutant emissions and in saving travel time for users. All these achievements have also contributed to building Vitoria-Gasteiz as a greener city, our bet in recent years.

Among the challenges for the future, a priority workspace should be to reduce the number of trips to meet daily needs, a goal not achieved by the SMPSP so far. A specific lack is the mobility to work, where the private car is still the main mode of transport. The coexistence between pedestrians and cyclists is another issue we must face, however this topic is already being analyzed in the frame of the Citizen Forum for Sustainable Mobility. Finally, we must highlight the high degree of motorization in our city, like many others, which is a constant threat factor to reach a sustainable mobility scheme.

Despite these obstacles, we are confident that the planning of urban mobility in Vitoria-Gasteiz has a strong foundation and clearly defined guidelines to lead us along the right path. The design and implementation of this planning can be considered as innovative in many aspects; but, apart from this, our future success depends on the commitment and strong will of the technicians and all the social stakeholders involved, as well on the necessary institutional coordination.

Demand management strategies

Superblocks model

Regarding the implementation of these principles of sustainability in terms of mobility, the scheme chosen in Vitoria-Gasteiz is the superblocks model. To understand this concept, we must know that our cities were designed for cars rather than for the citizens. This starting point determined to a great extent the use of public space by pedestrians, cyclists and public transport. In order to reverse this trend and return the public space to citizens, Vitoria-Gasteiz sought a change in its structure related to the mobility model through the implementation of the superblocks scheme.

The superblocks are urban units of varying dimensions where motorized mobility is moved to the surrounding streets and, so that the inner streets are reserved for pedestrian and cyclist mobility, for the public transport, neighbors and services. Through traffic is removed and the interior roads become calmed streets.

Ultimately, superblocks are a measure of urban planning that allows ordering mobility with the aim of reducing public space for the cars and giving it back to the citizens. To deploy the superblocks model it is necessary to establish first a hierarchy among the various types of roads. This way we distinguish between basic streets (through streets) and secondary or inner streets (living streets). These last streets will be closed to vehicles that just want to pass through and will be open way for the others at certain times.



Urban planning scheme based on the superblocks model - Source BCN Ecología

Starting from this innovative model of urban planning, pedestrian and cyclist infrastructure in our city is integrated in and adapted to the superblocks scheme. This superblock model contributes this way to enhance the pedestrian condition in Vitoria-Gasteiz and, at the same time, to strengthen the bicycle as a mode of transport more effective and safe.

In the end, rather than defining a new hierarchy for pedestrian and cyclist infrastructure, this model envisages a mobility scheme that limits the space and the speed of passing vehicles. This scheme results in a public space and an urban landscape with more quality, which makes urban displacements more attractive, comfortable and safe, both pedestrian and by bicycle. Before CIVITAS, the traditionally strong pedestrian mobility culture in Vitoria-Gasteiz was threatened by the rise of the car and physical growth that was making pedestrian mobility less and less competitive. With the support of CIVITAS, the city planned the redesign of public space into 77 superblocks, reserving the space within each block for pedestrians and cyclists. It tested the implementation of one demonstration block and established 16 other blocks within the project period. The measure was highly innovative, as it radically banned public transport and most car traffic from the insides of superblocks and aimed to convert much of the inner space into pedestrian areas with playgrounds, benches, vegetation and wifi connection.

Regular meetings with technicians, politicians and citizens' associations assured a strong consensus for the measures to be implemented. The superblock model was proposed in the city's Sustainable Mobility Plan and was closely linked to other CIVITAS measures (see measures 4, 5, 6, 7 and 10). A big campaign targeting citizens helped foster favourable attitudes toward a new culture of sustainable mobility.

Pedestrian area in the demonstration superblock increased from 45 percent to 74 percent. Noise measured inside the superblock dropped from 66.5 decibels before the action to 61 decibels afterwards due to the reduction of motor traffic. Air quality improved with a 42 percent reduction in CO₂ and NO_x; and a 38 percent reduction in particulates. The measure affected the rest of the city in terms of reduction of motorised mobility and, to a lesser extent, an increase of cycling and pedestrian mobility. Citizens' satisfaction was very high. The CIVITAS project helped the municipality to secure additional funds for public works from the Spanish Fund for Local Investment.

Other case references within the CIVITAS Community⁶

Clean fuels and vehicles in Bremen

A CNG promotion campaign was implemented in Bremen in 2002. Prior to the launch of the campaign, Bremen had two CNG fuelling stations. As an incentive to switch to CNG and to make up for the lack of fuelling stations, the energy provider swb and the energy agency Bremer Energie-Konsens offered an incentive of EUR 1,000 per new CNG private car, and EUR 2,500 per company car. Commercial users received a higher incentive because they usually have higher inner-city mileage and tend to use conventional diesel cars, meaning their emission reductions would be greater. A public relations campaign with special events increased awareness of CNG. All partners along the clean vehicle supply chain – car manufacturers, car dealers, energy providers, energy agencies, motor clubs and local politicians – were part of a network supporting the policy. The campaign target was to introduce 250 new CNG vehicles within the project period (2002 – 2006).

By the end of the project period about 70 percent of approved applicants had purchased a CNG car (a total of 160). Some buyers had to wait to purchase their vehicle as several manufacturers were not able to deliver on time. Others decided to buy a different type of car. Monitoring of the promotional work showed that after 2.5 years, more than 25 percent of Bremen citizens knew about the campaign as well as the environmental and economic advantages of CNG. Although they were advertised much earlier, the planned purchase of four CNG freight vehicles had to be postponed because they were not available. 7-ton CNG trucks could not be delivered by the motor industry until February 2010. Also in 2010, there were four CNG fuelling stations and about 600 CNG cars in Bremen. The fleet of CNG vehicles in Bremen achieved a 23 percent reduction in CO₂ emissions (compared to petrol), a 77 percent reduction in NO_x emissions (compared to diesel) and a 99 percent reduction in PM₁₀ emissions (compared to diesel).

⁶ Taken from the CIVITAS Guide for the Urban Transport Professional.

Clean fuels and vehicles in Stockholm

Stockholm – the capital of Sweden – has a population of 870,000. It is located on 14 islands on Sweden's southeast coast. The public transport buses and private fossil-fuelled vehicle fleet is being replaced with clean vehicles that run on biogas and ethanol. Stockholm has the largest number of clean vehicles per city in Europe: As of 2012, Stockholm is fully serviced by clean buses – 800 bioethanol and 270 biogas buses are running on a daily schedule. In addition, there are over 160,000 clean vehicles operating in Stockholm, including 1,400 clean taxis and approximately 100 clean police vehicles – the majority of them running on biogas and bioethanol – and over 60 biogas-fuelled waste collection vehicles. Stockholm has a comprehensive infrastructure for alternative fuels, in accordance with the size of the growing clean vehicle fleet. Local biogas production facilities supply a portion of the alternative fuels.

The expansion of the clean fuel fleet is fostered along three axes:

1. Dedicated promotion of clean fuels
2. Increase in the number of clean vehicles in the public fleets
3. Improving the filling and maintenance infrastructure for clean vehicles

The use of biogas took off starting in 2004 when the public transport company introduced its first 21 biogas buses. As a response to the increased demand, biogas was purchased from the nearby cities of Linköping and Västerås. The number of filling stations increased from four in 2004 to eleven in 2007. The gas is transported by lorries to the gas stations, as there is no grid. Within the Biogasmax project another 105 vehicles were tested. Four new production plants have started operation (Himmerfjärdsverket, Käppala, Loudden and Scandinavian Biogas), and several new public biogas fuelling stations have opened. A local grid connecting the main biogas production plants with bus depots and filling stations was completed in 2011. Stockholm taxis adopted a clean vehicle policy where biomethane is the favoured fuel. In 2009 they ordered 350 gas fuelled cars. By 2006, the local measures had already proved that the introduction of biogas led to reduced emissions of fossil carbon dioxide by 86 percent and emissions of nitrogen oxides, small particulates and carbon monoxide by 50 percent, although hydrocarbon emissions were 20 times higher.

Maintenance costs for gas-fuelled vehicles are in general higher than for diesel vehicles. In order to give an indication: maintenance costs rose from EUR 0.033 per km to EUR 0.045 per km for the biogas petrol engines. Motor oil consumption was twice as high for biogas vehicles compared to diesel vehicles, and fuel consumption was 60 percent higher, yet prices are in general set much lower for gas. Noise levels fell by 50 percent. More than 90 percent of drivers would recommend driving biogas heavy vehicles to others.

As a result of continuing efforts beyond the CIVITAS TRENDSETTER project which ran from 2002 to 2006, 130 biogas buses and 500 ethanol buses had been put into operation by Stockholm Transport by 2010.

Limited Traffic Zone in Rome

In October 2001, Rome started running the LTZ system in the central area of the old town with 22 electronic gates restricting the access to traffic from 6.30 a.m. to 6.00 p.m.; some vehicle categories are exempted (taxis, buses, residents, disabled etc.). The project was supported and sponsored by the Ministries for Environment and for Public Works. During the CIVITAS MIRACLES project, the area controlled by the LTZ cameras was extended from 5 km² to 10.5 km². The number of electronic gates was increased from 22 to 50, and the actual LTZ areas from one to five. The time band banning traffic now also includes the evening/night hours (9.00 p.m. to 3.00 a.m.), and all the electronic gates have been equipped with Visual Message Sign Panels to improve communication on the traffic limitations. The main result is a traffic decrease by 18 – 20 percent. In addition, the technology used (cameras with ANPR – Automatic Number Plate Recognition) has further been used for delivering new services. The cameras have been implemented to safeguard the reserved bus lanes from improper use by private vehicles and the same kind of cameras have also been used by the Urban Travel Times system that calculates and predicts travel times on 100 kilometres of roads in Rome. Still today, in Rome a process is on-going to install new poles with cameras in an area now guarded by the local police.

Lower parking tariff for low emission cars in Graz, Austria

Owners of low emission cars can get tokens and park at lower rates. This raises awareness about emissions and motivates people to buy low emission cars. Other objectives were to reduce emission and noise levels in the city centre. The general parking rate of EUR 1.00 per hour was raised to EUR 1.20, but reduced to EUR 0.80 for low emission cars. Owners of these cars register and get a token that is recognised by the parking ticket machines. The thresholds were: 140 g/km CO₂ emission for petrol and gas cars, and 130 g/km + particle filter for diesel cars.

Integrated package of measures: clean vehicles and congestion charge in Stockholm

The City of Stockholm has an urban area of around 187 km² and a population of 870,000. The city has a very well-functioning, handicapped-adapted and safe public transport system producing around 4.3 million person kilometres annually. Stockholm was experiencing air quality problems in inner city areas (high concentrations of NO_x, particulate matter and high noise levels). Stockholm managed to establish a pilot infrastructure for alternative fuels, dimensioned for the present fleet. A large part of the municipal vehicle fleet was replaced, including public transport with clean vehicles driven by electricity, biogas and ethanol. Biogas production facilities deliver locally produced fuel.

Stockholm is also known for its city wide congestion charging scheme. Wide areas of the city centre are pedestrian zones, access to the centre is restricted for heavy vehicles and parking is expensive. The Stockholm congestion charging scheme combined with its clean vehicle and fuel strategy was facilitated through work within CIVITAS TRENDSETTER (2002 – 2006). Clean vehicles are exempted from paying the congestion charge; together with emergency vehicles, taxis and motorcycles, they comprise about 18 percent of all vehicles.

Following the scheme implementation, decreases in traffic by 22 percent and queuing times by 30 – 50 percent during rush hours as well as an increase of ~3 percent in public transport travel were observed. These improvements were maintained in the following years (see figure 2 below). The clean vehicle share increased to about 8 percent. There is political support for making the transport system even more environmentally friendly by (1) substituting conventional vehicles with clean ones, (2) making logistic services more effective and (3) making public transport more effective and attractive with ICT. Following a trial period from January to July 2006, Stockholm's citizens recognised the benefits of the congestion charge and, in a referendum in September 2006, 52 percent voted for a continuation.

Real-time travel information in Rome

One of the main tasks of the Mobility Agency of Rome is to supply updated and reliable real-time travel information to citizens. The idea of combining the information available on public and private mobility and providing this to citizens in a user friendly way was initially investigated during the CIVITAS MIRACLES project (2002 – 2006). In 2008 the “Atac mobile” application (renamed “muoversiaroma” in 2012) was launched. It was the first attempt at providing a set of open data using a common platform. The service is available in two versions: XHTML, accessible from all mobile phones with a web browser and the URL www.muoversiaroma.it.

The following information is available:

- Bus waiting times (information on arrival times by bus line at each bus stop)
- News – real time news on traffic, status of road works, demonstrations
- Access restrictions in place Traffic bulletin – allows to check a list showing the traffic conditions by zone
- Urban travel times – on 130 kilometres of main roads of the capital
- Journey planner
- Video cameras – four cameras display various traffic situations
- Bike sharing – users can check the availability of bikes
- Parking – users can check the availability of parking spaces in four city parking locations
- Ticket offices location