



ARCHIMEDES

AALBORG • BRIGHTON & HOVE • DONOSTIA-SAN SEBASTIÁN • IASI • MONZA • ÚSTÍ NAD LABEM



CIVITAS



Innovative cities

Before and after CIVITAS



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Foreword

The CIVITAS ARCHIMEDES project brings together the six European cities Aalborg (DK), Donostia-San Sebastián (ES), Brighton & Hove (UK), Iasi (RO), Monza (IT) and Ústí nad Labem (CZ).

During the last four years we have been visiting all the six cities. In some ways, they are quite similar. They are approximately of the same population size and another similarity is that all the cities seem to have a large population of young people. Finally, the cities are all facing challenges in mobility that they want to address to make the city a better place for the citizens.

During the lifetime of CIVITAS ARCHIMEDES we have worked together on implementing 83 projects to make the cities more sustainable. And we have succeeded.

In a troubled period of financial crisis where budget cuts have shadowed the cities we have still been able to fulfil our own goals. Sometimes we have had to compromise a little on how far we would go, but sometimes we have also experienced that we could go further than originally planned.

This brochure pin points some of the remarkable results that we have achieved, but it will also focus on some of the challenges a four year project will obviously encounter. We are working in living cities, and we are working at the edge of development trying to highlight solutions for the future. This is not an easy task, yet an important task.

Through the CIVITAS ARCHIMEDES project, we believe that we have contributed towards a cleaner Europe in the future. We have proved that technologies and services which in 2006 seemed unrealistic in near future actually can be implemented with the help of European funding.

We have stepped forward building on previous CIVITAS projects and paved the road for even further development in the field of sustainable transport. And finally, we have taken the six CIVITAS ARCHIMEDES cities to be amongst the pioneering cities of sustainable transport in Europe and hope this report will inspire others to follow our steps towards a more sustainable Europe. Even though Europe consists of a lot of different cities, the objectives, just as proved in the CIVITAS ARCHIMEDES project, remain the same.

The broad range of solutions that we have implemented with the support of the CIVITAS initiative, hopefully will be used to reach the objectives for more sustainable and energy efficient transport systems in Europe.

Mariann Nørgaard
Alderman, City of Aalborg



Introduction



This brochure for CIVITAS ARCHIMEDES tells the story of how six cities have worked together in a large-scale demonstration project in the EU CIVITAS programme to address problems and opportunities for creating environmentally sustainable, safe and energy-efficient transport systems in medium-sized urban areas.

CIVITAS ARCHIMEDES consisted of an ambitious blend of policy tools that have resulted in the introduction of innovative, integrated and ambitious strategies for clean, energy-efficient, sustainable urban transport. The overall aim of CIVITAS ARCHIMEDES was the implementation of an ambitious set of activities to increase energy efficiency of the cities' transport systems, providing safer and more convenient transport for all, and thereby having a significant impact in improving energy, transport, and environmental sustainability.

The cities have implemented a strong and coherent package of 83 activities to make transport more energy efficient, safer and more convenient. An increased share of clean engine technology and fuels will significantly contribute to achieving this goal. The project contributes towards better road safety, a greater share of bio-fuels and other alternative fuels, as well as a reduction in CO₂ emissions.

ARCHIMEDES helps to improve efficiency and effectiveness of urban transport and increase the modal share of sustainable modes. As a result, citizens will benefit from an enhanced urban environment with less noise and air pollution.

The partner cities anticipate that awareness and understanding will generate greater acceptance of new tools, services and technologies, which will in turn make urban transport more sustainable. At the same time, the ARCHIMEDES partners are keen to learn from each other. They want to exploit opportunities to exchange knowledge and have provided training sessions and technical seminars on different themes tested in the project.

Robust evaluation and the large-scale nature of the project will make impacts visible, measurable and promote the take-up of an integrated package of innovative measures. The project's focus on dissemination of results will give ARCHIMEDES an impact well beyond the participating cities. Results will be disseminated to promote continuous improvement of sustainable transport policies from the local to the global level.

Welcome to



AALBORG

Denmark



Aalborg is an industrial and university city in the north of Denmark with a population of 130,000. The city joined CIVITAS ARCHIMEDES to consolidate its role as a leader in local sustainable development with a particular emphasis on cycling mobility and ITS solutions.

Aalborg emerged where the Limfjord was narrowest and easiest to cross. This location made Aalborg an important trading post in the Middle Ages and, later on, an industrial centre that is more and more shifting towards a knowledge economy.

The municipality expanded in 2007 through the inclusion of neighbouring areas to include more than 200,000 inhabitants on 1,100 km². Aalborg is now the third largest municipality in Denmark.

The City of Aalborg is striving to make the city a place with an outstanding quality of life. Aalborg has for many years been a pioneer city in the field of sustainable development. In 1994, the city made efforts to put local sustainability on the European agenda. This resulted in the creation of the Aalborg Charter that has been signed by over 2,500 municipalities across Europe. In 2004, this was followed by the Aalborg Commitments, a more binding statement through which cities commit themselves to work diligently for local sustainable development. It has been signed by 640 municipalities.

Besides its extensive experience in European cooperation, Aalborg has also participated in the CIVITAS I generation. In the ARCHIMEDES project of the current CIVITAS Plus phase, the city wants to develop its expertise in sustainable mobility solutions. Aalborg has particularly concentrated on becoming a Cycling City.

A cycle motorway including traffic lights, dedicated cycle lanes, signposts, shortcuts and safety provisions have been introduced.

ITS solutions have been important measures for the city of Aalborg in the last two decades. In the CIVITAS ARCHIMEDES project, the city and public transport authority has further strengthened the work with ITS in public transport, and the city has also taken action to monitor and reduce congestion through advanced ITS solutions. In terms of alternative fuels, Aalborg has introduced 100 vehicles that use at least 10 percent biodiesel, developed local biodiesel supply infrastructure and ten electric cars are also being tested.



Ambitions

Aalborg wanted to maintain its position as a leading city in terms of sustainable mobility in Europe and entering the third round of CIVITAS was a good opportunity. Building on already achieved results through other projects, mainly CIVITAS VIVALDI, has allowed moving a real step forward. The co-operation between the public transport authority and the City of Aalborg, who were also partners in the VIVALDI project, has also been enhanced in the CIVITAS ARCHIMEDES project.

The ambition for Aalborg has been to introduce innovative measures within each of the eight thematic categories in CIVITAS and to use already gained experiences to guide less experienced cities as well as possible through all aspects of the CIVITAS project. Aalborg is the only city of the ARCHIMEDES project that has participated in an earlier round of the initiative.

Furthermore, it has been the ambition of Aalborg and the ARCHIMEDES project as a whole to do a strong and coherent evaluation of the project's measures and to disseminate the results nationally and internationally in order to encourage other Danish and European cities to follow these examples.

The City of Aalborg has been represented in the CIVITAS Political Advisory Committee since 2009 by Alderman Mariann Nørgaard, who is also the leader of the CIVITAS ARCHIMEDES Political Advisory Group.



Spotlight

The SPOT system installed in Aalborg in 2011 is a network based Adaptive Traffic Signal Control System.

The system is continuously measuring incoming traffic at eight intersections, predicts the total traffic flow for the next two minutes, and calculates a new network optimization for all intersection every 3 sections. The calculations are based on monitoring the traffic flow at 80 loops in the roads.

Traveling through the network is now 5% faster in averages. The system reduces the travel times most efficiently during peak hour, where the improvement is up to 19%. As the amount of traffic is largest during peak hour, the real benefit from the system is larger than the average of 5% improvement.

The SPOT system also has a positive impact on fuel consumption. The average decrease in fuel consumption is 2.4%, thanks to smoother driving and less low- and high speed driving.

Each year, the road users save 35,500 hours of transport time and 33,000 liters of fuel per year. When calculating the economical benefit from these savings, this measure has been a sound investment for the society.

Challenges

In Aalborg, challenges arising naturally when working on innovative solutions have been of both technical and contextual character.

One of the planned projects was to introduce a methanol fuel cell car. This technology, however, proved at the moment of the planned introduction to be too ambitious. The work started in autumn 2008 to ensure that both demonstration and evaluation could take place within the timeframe of the project. At this time, the technology was too immature to ensure a fruitful experiment, and the risk of a useless demonstration was not worth the required high investment. Aalborg chose instead to participate in an electric car trial which started in spring 2011.



The car sharing scheme in Aalborg has also been a challenge. It was initially introduced as part of the CIVITAS VIVALDI project and the goal of the ARCHIMEDES project was to adapt this scheme to companies, replacing company-owned cars by car sharing scheme cars. Following the successful implementation of this scheme in Copenhagen, the City of Aalborg itself introduced it in 2004.

However, the conditions in Copenhagen and Aalborg were too different, and the benefits that the companies got in Copenhagen were not the same as in Aalborg. For example are there much more money to save giving the opportunity to park for free in Copenhagen than in Aalborg. Car sharing schemes should be deeply investigated with regards to benefits and drawbacks to ensure it is a suitable sustainable solution in a city.



80 loops are placed in the road in eight intersections along Østre Allé.



Innovative solutions



Aalborg has introduced 15 innovative solutions to cover all eight CIVITAS themes. There has been specific focus on solutions about clean fuels, ITS and cycling. Measures related to public transport have therefore played an important role; ITS and Public Transport measures have been of high relevance based on former experiences in this field.

In Aalborg, 100 vehicles have been testing bio-diesel in blends between ten and twenty percent. A research study was carried out in the first months of the project to investigate the possibility of using 2nd generation bio-diesel and, in this case, a specific Danish product made from animal fat. This particular product enables a high reduction of CO₂ emissions without any larger impacts on other emissions compared to conventional diesel. Each week during the project, around 4,000 litres of pure animal fat diesel have been consumed without technical problems for the involved vehicles.

Aalborg has also been a front runner in introducing the national travel smart card in all the city buses. Information monitors have been installed in all city buses, making it easier for the traveller to know where she is. A mobile travel application has also been developed to always give real time information to the moving passenger.

Finally, Aalborg is working on being a cycling city: a commuter cycling route has been designed and constructed, offering 200 easy accessible city bikes to visitors and students. Children have been encouraged to cycle to school through competitions.

Report



Cycling in Aalborg enjoys tailwind

A young man in a yellow reflective vest stops a cyclist on her way up the final hill before the university. It is early in the morning and time to find out, how people perceive the commuter cycling route from the city centre to the university. The route with all its features, such as improved cycling lanes, safer passing of bus stops, a short-cut shunt, green light priority, an air pump and a cyclist counter has been established in 2010 and 2011.

Now, says the man in the vest, I would like to know about your knowledge about the different features that have been installed along the route. The cyclist looks as if she is already ready to list all of the features she remembers. The shunt has already today shortened her travel time and when the air pump was installed last year, she instantly wanted to try it. Almost 65 percent of respondents in the survey know the shunt, and find it important.

After having told the man in the vest about the air pump and the shunt, the cyclist now lets him know, that the initiative that she thinks is the most important is that bike lanes have been placed behind the bus bays. This makes it safer to use the route. The cyclist is again in line with other cyclists on the route. The importance level is measured to 8.9 out of 10 and nearly 50 percent give it a score of 10.

The interview has delayed the cyclist a little. The man in the vest ensures her that he has only one question left about the general satisfaction. The cyclist replies that she is generally satisfied with the cycle commuter route. 84 percent of all cyclists asked are satisfied with the route. The cyclist takes off and continues on her way to the university.

Scaling up

As part of the CIVITAS ARCHIMEDES project, 50 buses have been operating on a 10 percent 2nd generation bio-diesel blend since October 2010. The bio-diesel is mainly produced from animal fat of slaughterhouse waste.

The trial has been so successful that the partners have decided to double the amount of bio-diesel in the blend in the period between May and October 2012. The new blend has been tested and proved feasible through a test run of a 30 percent bio-diesel blend on the CIVITAS ARCHIMEDES shuttlebus in 2011. During the summer of 2011, 50 postal delivery vehicles were also operating on a 20 percent bio-diesel blend without any problems.

Since October 2010, the 50 city buses have saved around 270,000 litres of fossil fuels through the use of fuel made from waste products. The buses have thereby helped to save the scarce resource of fossil fuels, while decreasing CO₂ emissions by 710 tonnes.

Also following the positive experience from the CIVITAS ARCHIMEDES project, the region of North Denmark and the regional public transport authority decided to serve the route between Aalborg and Frederikshavn with coaches running on second generation bio-diesel. The bio-diesel will be the same product that 50 of the city buses in Aalborg have been using since October, 2010. The positive experience with this fuel in Aalborg has led to the technology now being exploited outside the demonstration project.



Travel at the Speed of Light

Cyclists travelling on the commuter route between the university and the city centre of Aalborg is now getting through the Hadsundvej/Humlebakken intersection much faster. During the day, cyclists can follow a series of green lights lanes in the cycle path. In the evening, the cyclists themselves activate green lights at the intersection.

The City of Aalborg has installed LED-lights in the cycle path on a part of the road south of the Hadsundvej/Humlebakken intersection. The concept is simple: If you follow the green lights lane, you will reach the green light at the intersection.

The LED lights have been installed between 50 and 140 meters from the intersection and they are located with approximately ten metres between them. Behind the simple concept is an advanced technological system, which has not been demonstrated before.

The lights on the lane are controlled by the traffic lights programme in the intersection. In the evening and at night, cyclists will activate their own green lights when passing a detector in the cycle path approximately 200 metres before the intersection. If the cyclists follow the green lights lane at 18 kilometres per hour, they will get a green light at the intersection.





Future vision

For the last four years, the City of Aalborg along with the Public Transport Authority of North Denmark have carried out a series of innovative measures to reduce CO₂ emissions, to increase safety and create better urban environment with fewer cars, more cyclists and public transport users.

The approach is not new to Aalborg, who since the early 1990's have been working in the field of sustainable transport both on the local level, the national level and in many projects across Europe. And the city will continue this work. As the CIVITAS ARCHIMEDES project is ending, the City of Aalborg will be developing a long term mobility plan, putting even more focus on sustainable modes of transport and the integration between them.

Most of the measures will continue after the end of the CIVITAS ARCHIMEDES project, but might never had existed without the starting help of the project. At least it has been possible to make more innovative projects and faster than maybe planned.

Aalborg will also continue to be a member of the CIVITAS family, exchanging experiences and results with other cities across Europe and the European Community. The sharing of good practices and result should help to obtain the common European objectives of sustainable transport in the future, and Aalborg will continue to help to do this.

Contact information and local partners

Partners

The Public Transport Authority of North Denmark
www.nordjyllandstrafikselskab.dk

City of Aalborg
www.aalborgkommune.dk

Key persons

Site Manager: Jens Mogensen, +45 9931 2329, jms-teknik@aalborg.dk
Dissemination: Gustav Friis, +45 9931 2335, guf-teknik@aalborg.dk
Evaluation: Anne Marie Lautrup Nielsen, +45 9931 2307, aml-teknik@aalborg.dk

For more information, please visit www.civitas.eu/archimedes

Welcome to

BRIGHTON & HOVE

United Kingdom



The historic seaside town of Brighton & Hove in the south-east of England has a population of 256,000 and an area of 83 km². The growing city wants to meet its mobility needs through a sustainable urban transport system.

The City of Brighton & Hove is a thriving “city by the sea” covering an area of 83 km² and is the largest urban centre on the south coast of Britain lying approximately 50 miles south of London with an excess of 8 million visitors a year. The City has an estimated population of 256,000 and is a popular base for London commuters; and benefits from excellent communication links: east/west, north to London and by direct rail links and internationally via Gatwick airport, which lies 25 miles to the north.

The City is a major tourist, leisure and conference destination. Tourism alone contributes £407m to the local economy and supports nearly 12% of the City’s Full Time Equivalent jobs.

Brighton & Hove has two universities with 32,000 students and 7,000 graduates a year, many of whom stay to live in the City following graduation. As a result Brighton & Hove has a young, well-educated, working age population. In contrast it is estimated that over 15,000 adult residents (9.3%) do not hold any qualifications.

These facts, together with key regional road corridors coming into the city on a Victorian road network and constraints of Regency-era buildings, the natural boundaries posed by the South Downs and the sea-front, bring specific challenges, namely high levels of traffic congestion and air pollution.

The vision for the city as a place with a co-ordinated transport system that balances the need of all users and minimises damage to the environment is key. The transport strategy to deliver that vision was developed within the framework of a Local Transport Plan.

The CIVITAS ARCHIMEDES measures were therefore developed to support this vision and have a collective aim to reduce road traffic, address congestion and improve air quality by using innovative tools and techniques. For example;

- The introduction of the first on-street electric vehicle charging points outside London.
- The nurturing of a Clear Zone – creating a more equitable use of space between modes has enhanced the city centre.
- The introduction of real time bus/train information and journey planning via smart phones.

As winners of National Transport Authority of the year in 2005 and 2010, Brighton & Hove City Council has a reputation for innovation and delivering leading edge solutions.



Ambitions

Brighton & Hove City Council wanted to build on its existing successes and continue to improve and learn during the period of the CIVITAS ARCHIMEDES project.

The objective was to implement an ambitious blend of policy tools and measures in order to increase energy-efficiency in transport. The City council sought to provide safer and more convenient transport systems for all, using a higher share of clean engine technology and fuels. It was hoped that this would make the City of Brighton & Hove a better place to live and work in and a more attractive place to visit: with less traffic congestion, less air and noise pollution and a higher quality urban environment.

Along the way Brighton & Hove City Council sought to trial new and innovative transport technologies, policy measures and partnership working and to combine this with targeted research to support even more new ideas for the future.

By working within a consortium of partner cities in ARCHIMEDES and across the wider CIVITAS Forum Network, the City council hoped to learn and share best practice on a wide range of Urban Mobility policies.

Each of the individual projects is hoped to have an impact in the CIVITAS corridor.

The City council's focus on the dissemination of results and education helped to ensure that individual project objectives made an impact which reached well beyond the CIVITAS area, providing lessons for citizens, practitioners and policy makers in similar small and medium-sized cities.



Spotlight

New Road is a street in the heart of the cultural quarter of the city and was previously busy with traffic. It has now been transformed with physical improvements into a popular shared space where pedestrians and cyclists have priority over vehicles. Thorough consultation and design workshops helped to develop a place that the city could be proud of. Since its completion in 2009, traffic has dropped by 93%, while cycling and pedestrian numbers have soared by 162%.

The Social and Emotional Benefits of Good Design is a research study undertaken as part of the CIVITAS ARCHIMEDES Clear Zone project. It focuses on New Road, and adjoining Church Street, using new innovative methodologies for assessing and evaluating the social and emotional benefits of balanced street design.

The study showed that 97% of respondents either agreed or strongly agreed that schemes like New Road are a good thing and 96% of people asked either agreed or strongly agreed they would like to more schemes like New Road elsewhere in the city.

Traditionally, the social and emotional benefits of successful streets are difficult to quantify, not least because of the intangible nature of emotions. The rationale was to apply objective criteria to otherwise subjective evaluation. As a consequence a fuller understanding of the consideration of these benefits is critical if we are to make fully informed decisions on the cost / benefit values of investing in well-designed streets.

Challenges

There were a number of challenges that presented themselves during the life of the CIVITAS ARCHIMEDES project, and were core to all the separate projects:

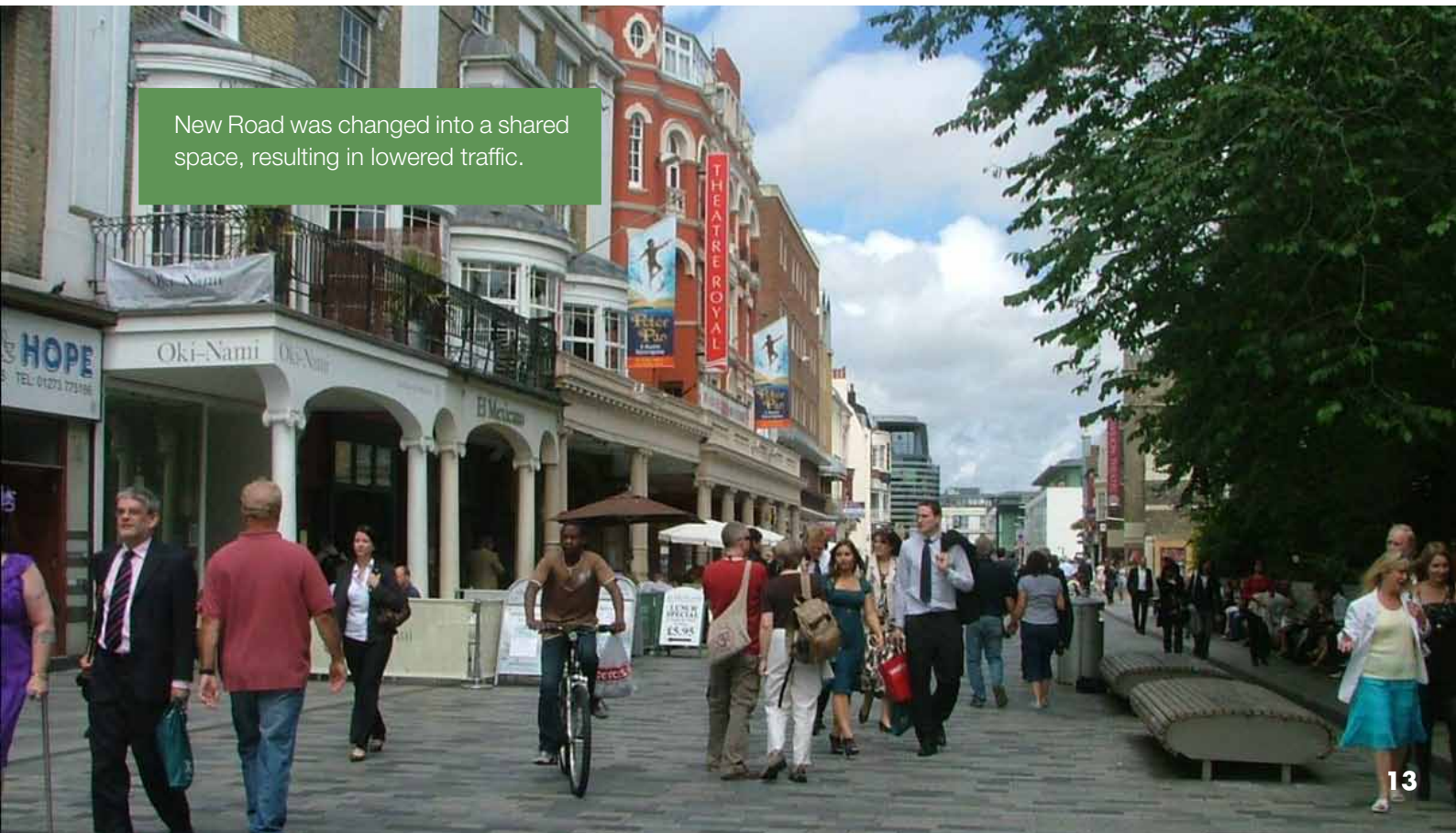
- Economic instability.
- Political changes nationally and locally.
- Reduced transport funding from Central Government.
- Explaining modal shift.



Another significant factor affecting the implementation of the CIVITAS ARCHIMEDES project was that the UK, along with many other countries, both in Europe and beyond, was going through a period of economic instability. A change in UK central government from Socialist to Conservative in 2010, led to a tightening of public spending in order to reduce national economic debt. A direct result of this was a series of budget cuts to local councils. Brighton & Hove had a commitment to match-fund CIVITAS funding from its Local Transport Plan (LTP) budget. When the LTP budget was cut, this had a direct impact on the ability to match fund the CIVITAS projects.

Brighton & Hove now has a Green administration (the first Green Local Authority in the UK) who seeks to promote “sustainable transport modes”. Additionally, the City has secured £4.2 million funding through the national “Local Sustainable Transport Fund” and £3.5 million through the national “Better Bus Area” fund.

New Road was changed into a shared space, resulting in lowered traffic.





Innovative solutions

Participating in CIVITAS ARCHIMEDES gave Brighton & Hove City Council the opportunity to explore and trial new and innovative projects such as Electric Vehicle Charging Points, Emissions VMS and Clear Zone. Each of these pilot projects found new ways of either: working in collaboration (Emissions VMS), establishing new research criteria (Clear Zone); and the introduction of new infrastructure (Electric Vehicle Charging Points). For example:

Electric Vehicle Charging Points

The council became the first outside London to install on-street public electric vehicle charging points in February 2009. The on-street system has been designed with many innovative features which make it easy to use, monitor and maintain. Usage data can be gathered, including who has used the unit, when and how much power has been supplied. This information can then be used for carbon reduction calculation, billing purposes, statistical analysis on electric vehicle usage and efficiency and maintenance calculations.

The technology can be upgraded and expanded upon as demand for electric vehicles increases and the scheme is available to all UK residents in order to encourage uptake. Scheme registration, parking and electricity used whilst charging are all free. The registration scheme began in February 2010. Initially we had 2 registered users which, over the last two years, has grown steadily to 33 registered users.

Report



Travel Planning

Brighton & Hove City Council was aware that the creation of travel plans had become a paper-based process which schools and businesses found difficult to implement. Likewise, it was acknowledged that the provision of generic travel information to individuals didn't necessarily mean that residents would use sustainable transport.

Recognising schools, businesses and / or individuals needed practical support to implement and sustain their travel plans, Brighton & Hove City Council was keen to offer schools, businesses and residents the opportunity to start considering just one form of travel they thought could become more sustainable based on their particular travel patterns.

This innovative approach was very practical. The travel plans included tailor-made information for that individual, school or business providing detailed and personalised information in order for them to explore and trial different options available to them before deciding on one form of travel.

Brighton & Hove also explored community-based social marketing techniques to engage with people both via their social and community groups and also on-line within their internet communities. The objective of this was to create a 'buzz' about particular topics in order to generate conversation between peer groups in the hope that more sustainable transport use will be encouraged by word of mouth.

There was a 13% reduction in car trips to and from schools in the CIVITAS Corridor during the lifetime of the project (5% better than the rest of the city).

Scaling up

On-street EVCPs

Following the installation of on-street EVCPs in the city, there was interest from neighbouring Local Authorities. In July 2010, representatives from 10 Local Authorities in the South East (SE) region together with the technology partner Elektromotive and the Sussex Air Quality Partnership met to discuss forming a South East partnership. This partnership is led by Brighton & Hove City Council, Hampshire County Council and West Sussex County Council and is working to develop a joint working arrangement to allow mutual access to charging points and further encourage use of electric vehicles.



Talking Bus Stops

Participating in CIVITAS ARCHIMEDES gave Brighton & Hove City Council the opportunity to fund additional investment in existing innovative transport projects such as Talking Bus Stops. An RNIB 'React' system links into the city's Real Time Passenger Information signs allowing blind and visually impaired people to hear announcements at bus stops telling them which bus stop they are at, which buses are coming and when they are due to arrive.

Further Talking Bus Stops will be installed in adjacent Local Authorities in East and West Sussex County Council when funding is available. This will improve accessibility and public transport provision for people with visual impairments in Brighton & Hove.

This measure is integrated with the Personalised Travel Information website project. The objective being to make it easier for people to use the public transport system and improving accessibility in accordance with Brighton & Hove's Local Transport Plan. The measure is also promoted through another project: Personalised Travel Planning in order to publicise the system to potential new users.

Emissions VMS

'Testing the Air' is a short film made by pupils from Elm Grove Primary School about a groundbreaking science project where they have monitored air quality. They've been helped by Brighton & Hove City Council, Imperial College London, Dugas Technologies and the Open Air Laboratories (OPAL) project. The project has developed pupils' interest in science and increased understanding about the effects of transport activities on local air quality.



Pupils carried out experiments with a portable unit that they could move around the playground to see how emissions travel. The air quality results were displayed on a big screen inside the school to help children learn about the environment. The educational programme included lessons on the impact of air pollution, the local significance of biodiversity and visits to the ReachOut laboratory at Imperial College London's South Kensington Campus and the nearby Science Museum.

Physicist Dr. Mark Richards from Imperial College London, who helped develop the device that measures air quality, said: "Data from this programme will help us understand how people might experience vehicle emissions at the roadside and how such localised air pollution propagates around our urban environment. We hope to assess the impact this has on human health, particularly on vulnerable groups like people with asthma or other respiratory diseases".





Future vision

During the lifetime of CIVITAS ARCHIMEDES, Brighton & Hove City Council trialed technologies and policies that reduce carbon, improve air quality and support mobility; learnt and applied best practice from the European Community and in partnership with other similar EU cities. The outcomes of both CIVITAS smarter choices and infrastructure measures and lessons learned will inform future policies and proposals for the city. The hope is that we can influence future national and European policy too.

The experience and opportunities CIVITAS has provided gives a continuing legacy that is carried on through the Local Transport Plan. Here we have a long-term Strategy for delivering transport improvements looking ahead to 2026. A 3-year Delivery Plan contained within Local Transport Plan outlines how funding will be spent, including maintaining roads, pavements and street lights; increasing the range of transport choices and aiming to reduce congestion and improve air quality.

Brighton & Hove will continue to strive to maintain its reputation of being at the forefront of transport policy development and scheme delivery, both in this country and in Europe, and believes the wide range of schemes covered over the four years of CIVITAS ARCHIMEDES give strong foundations to build on. This can be achieved through continuing to be innovative and using technology; by integrating transport into other areas of work; by involving people more in developing ideas and decision-making; by providing people with appropriate travel information; and by continuing to secure additional transport investment for the city.

Contact information and local partners

Partners

Brighton & Hove City Council
www.brighton-hove.gov.uk

Brighton & Hove Bus and Coach Company Ltd.
www.buses.co.uk

Key persons

Site Manager: Tom Campbell, +44 01273 293328, tom.campbell@brighton-hove.gov.uk
Dissemination: Debbie Reed, +44 01273 290367, debbie.reed@brighton-hove.gov.uk
Evaluation: Sarah Jay, +44 01273 291028, sarah.jay@brighton-hove.gov.uk

For more information, please visit www.civitas.eu/archimedes

Welcome to



DONOSTIA-SAN SEBASTIÁN

Spain

The City of Donostia-San Sebastián in the Basque Country in northern Spain is home to some 180,000 inhabitants. The territory of the municipality amounts to some 60 km². Donostia-San Sebastián is keen to safeguard progress made towards sustainable mobility in the past and build upon its achievements.

The City of Donostia-San Sebastián in the Basque Country in northern Spain is home to over 180,000 inhabitants. The city overlooks the sea in a spectacular bay embraced by small mountains. The beautiful beaches are located right in the city centre and attract inhabitants and visitors alike for sunbathing, surfing and other water sports. The splendour of the manor buildings from the Belle Époque and the attractive pedestrian areas, round off the city's charm.

The welcoming and friendly city also attracts visitors with its passion for good food. From the miniature cuisine of the "pintxos" to the restaurants of the creative cuisine masters, good eating is one of Donostia-San Sebastián's commandments. The city is the capital of the Gipuzkoa province and the centre of a metropolitan area with around 400,000 inhabitants.

For about 20 years, Donostia-San Sebastián has been applying integrated policies favouring pedestrians, cyclists and public transport. By reducing the on street parking and returning the public space to pedestrians the city managed to become an even more attractive place to be. A major achievement of the mobility policy is the establishment of a pedestrian network that makes most of the city reachable on foot through promenades, vertical transport aids and a pedestrian axis. Before the CIVITAS ARCHIMEDES project, the city already had a cycling network of 28 kilometres.

The municipal public transport operator, DonostiaBus has been implementing an ambitious set of measures to further increase the high bus patronage.

In 2002, 48 per cent of urban trips were made on foot, 28 per cent by private car, 18 per cent by public transport and 6 per cent by other modes including cycling.

The progress towards sustainable transport has been underpinned by extensive public debate that led to the creation of a permanent channel for stakeholder participation called the Consejo Asesor de Movilidad. This Mobility Advisory Board provides a forum for reviewing and approving the Civic Mobility Pact 1999, which is being endorsed by social, institutional and financial stakeholders.



Ambitions

Donostia-San Sebastián regarded CIVITAS ARCHIMEDES as a perfect opportunity to expand its policy approach described in the Sustainable Urban Mobility Plan. Within the CIVITAS ARCHIMEDES project, the city particularly wanted to maintain the high modal share of walking and increase bicycle use by 30 per cent. Infrastructure for cycling and walking was extended including the introduction of lifts and an escalator to encourage soft modes also in hilly areas. The number of cars entering the city centre was to decrease by 10 per cent compared to 2006, while one million extra passengers on urban buses were expected.

Donostia-San Sebastián aimed to curb the number of accidents through the introduction of 30 kilometre zones, increased enforcement, interventions at black spots and a Traffic Safety Pact with the main stakeholders. Several measures focused on changing the mobility attitude and behaviour of selected target groups, including employees, school children and university students.



The city combined policy measures with technological innovations, like hybrid buses, electric and hybrid cars, cargo-bikes and IT-systems to improve mobility information.

DonostiaBus set out to implement an ambitious programme of high biodiesel blends (B30 – B100) in its entire bus fleet. Accompanying awareness campaigns on the collection of used cooking oils, meant to increase the acceptance of alternative fuels among the population.

At the start of the CIVITAS ARCHIMEDES project, Donostia-San Sebastián was already a reference for good practice in sustainable urban mobility within Spain. With CIVITAS, the city wanted to further expand their exchange of experience to cities from other European countries.

Spotlight

Donostia-San Sebastián likes to see more people travel around the city by bike and at the same time aims to maintain the high modal share of walking. To make both mobility options more attractive, the city has increased the road space dedicated to cycling and walking.

During the CIVITAS ARCHIMEDES project 22 kilometres of new cycling lanes have been realized. This includes both exclusive lanes and stretches with coexistence. Two former train tunnels have been converted into cycling tracks creating important shortcuts where cyclists previously had to take a much longer route to avoid steep hills. The city bike system, dBizi, was expanded and opened to visitors and has increased its number of users.

In co-operation with the cyclist organisations a bicycle observatory has been established to monitor the development of cycling in the city. Evaluation of the network improvements shows that there has been a steady increase in the use of the bicycle. Comparing the year 2011 with 2008 the increase is of 32.6%. The cycling use increased from a modal share of 1.7% to a share of 2.6% with an average of 15,338 cyclists a day.

Challenges

The vast majority of the 18 local CIVITAS measures have been implemented according to plan. However, as can be expected from an ambitious package of innovative measures, not all demonstrations turned out exactly as expected.

The business districts in the CIVITAS corridor formed one of the concrete target areas where three CIVITAS measures coincided. These industrial areas have a high concentration of labour and are facing serious parking problems during business hours. The aim of the project was to reduce the number of car trips by introducing travel plans, improved public transport services and paid parking.



The travel plans have been developed in co-operation with the associations of enterprises and the coordinators of the business districts. Also the public transport was greatly improved with new lines and higher frequencies. When implementing paid parking, however, there have been many protests from employees, which have eventually meant that paid parking has not been introduced. The city is now first concentrating on further improving the public transport service.

A second challenge has been to find an appropriate business model for introducing a car sharing service in a relatively small city of 180,000 inhabitants. The city has had to go through various tender rounds to be able to create interesting conditions for private operators. The final solution, however, has been worth the wait and efforts. The company IBILEK, introduces 6 electric vehicles for car sharing in San Sebastián as part of a larger regional scheme in the Bizkaia Province.



22 kilometres of new cycling lanes have been realized in San Sebastián





Innovative solutions

The public transport company, municipal departments, freight operators and the new car sharing service have implemented innovative vehicle technologies as part of the CIVITAS ARCHIMEDES project.

DonostiaBus installed a mixing and filling station for bio-diesel at its own premises, making it possible to apply the correct bio-diesel blend to each individual bus. In 2012, 99 out of 122 buses are running on a B30-blend, 8 buses with B-50 and 6 buses with B-100. Also, the company has replaced 30 of their buses with new EEV vehicles. DonostiaBus is running a MAN Lion City Hybrid Bus in its fleet since June 2011. Measurements show that the vehicle accounts for an average of 30% in fuel savings when compared to a similar EEV bus.

To make freight distribution more efficient in the city centre, the company Txitrans introduced 6 cargo bikes that distribute goods from a centrally located consolidation centre and provide home delivery services.

The IBILEK car sharing service makes electric mobility available for any citizen that signs up for the service. The system was launched with 6 vehicles, of which 4 are fully electric and 2 are hybrid plug-ins.

82 municipal vehicles are powered by biofuel blends. Also the municipality has introduced 13 hybrid cars and 7 electric vehicles among different departments as well as 4 electric bicycles.

The use of biofuels has meant an annual reduction of 1,707 tonnes of CO₂ emissions (2011) and annual savings of 24.3 tonnes of CO; 6.7 tonnes of HC; 47.7 tonnes NO_x and 2.57 tonnes PM.

Report



High and increasing Bus Patronage

In 2011, for the first time in history, the total number of passengers in the urban busses of San Sebastián have surpassed 29,2 million. This means that the number of passengers has increased for the seventh consecutive year. The total increase compared to 2004 is of 12%. This achievement becomes even more impressive when compared to the overall downward trend of 5% in Spain during the same period.

The increase in passengers is a reward for the continuous efforts of DonostiaBus to increase the quality of the service. During the CIVITAS ARCHIMEDES project an integrated set of public transport measures have been implemented, including:

- Introducing the concept of Bus Rapid Transit on the CIVITAS corridors.
- New exclusive bus lanes and public transport priority at traffic lights.
- New passenger information systems.
- On board video cameras to increase feeling of safety.
- New lines and increased frequencies and serving business districts and the Ibaeta University Campus.

The increase of passengers during the year 2011 has been achieved mainly because of the growth of trips with the lines 5 and 31. Both lines were redesigned as part of CIVITAS measures to improve the public transport connection to the University Campus and the Miramón Business district.

Scaling up

Because of the success of the CIVITAS measures, San Sebastián has raised the interest of other cities that are interested in implementing similar measures. Throughout the project, the local partners have hosted several site visits for practitioners from other cities. Some examples of techniques and approaches that are suitable to be transferred to other cities are:

- Bus Rapid Transit concept, with dedicated bus lanes, PT priority and lines that are certified for their quality (including indicators as frequency and reliability).
- The personalised travel plans have shown that they can change individual travel behaviour for a relatively low budget.
- Video cameras in buses increase the feeling of security of passengers and the same cameras have already been taken up by other cities in the region.
- The first serial produced MAN Lion City Hybrid Bus in Spain was introduced in San Sebastián. Afterwards other cities have started buying the same bus, because of the good performance. Donostia Bus is certainly also interested in expanding the number of hybrid buses in its fleet.
- City distribution with cargo bikes is an attractive solution for city centres and reinforces awareness campaigns for cycling.



The complete information about implementation of all measures and their results are published on the CIVITAS website.



Working on a sustainable mobility culture

Measures that aimed to change the attitude towards mobility and the actual travel behaviour of citizens, have played a central in the CIVITAS ARCHIMEDES project of Donostia-San Sebastián with:

- Awareness campaigns for the student and teacher population of the University Campus.
- Way-to-school projects at 10 schools involving 140 pupils.
- Travel plans for 5 business districts.
- Over 200 Personalised Travel Plans that included a free trial of sustainable mobility options.



The experience from the Personalised Travel Plans shows that people like the alternative to the private cars once they have really tried them out. The vast majority of the people that participated in a free three months trial period with public transport or public bicycles had changed their travel behaviour also after the trial. Among the participants the number of car trips decreased with 12.5%, which were replaced by public transport, walking or cycling trips. Overall the initiative is estimated to result in a 1.5% reduction of all car trips made by citizens in the two districts. This means an annual reduction of 10,000 litres of fuel and 32 tonnes of CO₂.





Future vision

The CIVITAS project has been a great opportunity for San Sebastián to learn from the experience of other cities. Based on the exchange with colleagues from abroad, local measures were improved. The city is certainly open to future international co-operations.

The co-operation with stakeholders is essential for the development of effective local measures. The city has, for example, worked closely together with freight companies, shopkeepers and citizens to reorganize the distribution of goods in the city centre. The Mobility Advisory Council will continue to play a central role in local mobility policy.

Stable political support is of importance for the success of sustainable mobility policy. San Sebastián has been following a long-term approach with good results. The mobility culture is now part of the mindset of citizens and the main objectives for mobility have remained the same during the last 25 years.

The integrated packages of measures to promote cycling and public transport have lead to an increase in the use of these sustainable modes. At the same time, the number of cars entering the city has decreased. Promotion of public transport and cycling while decreasing the use of the private car is also the central objective for the coming years.

The evaluation of the CIVITAS measures shows that information technology can help to increase user satisfaction of public transport passengers. In the future, the city aims to implement more intelligent transport systems from the point of view of the users.

Contact information and local partners

Partners

The Public Transport Company of San Sebastian
www.dbus.es

Grupo de Estudios y Alternativas - gea21
www.gea21.com

Basque Institute of Logistics and Sustainable Mobility
www.ivlogistica.com

Universidad del País Vasco - Euskal Herriko Unibertsitatea
www.ehu.es

City of Donostia-San Sebastian
www.donostia.org

Key persons

Site Manager: Gerardo Lertxundi, +34 943 000 200, glertxundi@dbus.es

Dissemination: Maarten Van Bemmelen, +34 971 613 714, mvbemmelen@gea21.com

Evaluation: Miguel Mateos, +34 912 109 468, mmateos@gea21.com

For more information, please visit www.civitas.eu/archimedes

Welcome to

IASI

Romania



The city of Iasi, located in the north-east of Romania, is the country's second biggest city after Bucharest with 305,000 inhabitants and an area of 94 km².

Iasi is located in a plain area (the Plain of Jijia river), but the city has a hilly landscape with an altitude varying between 40 and 400 metres. It is the junction of the commercial routes that pass through Moldavia. Iasi has a continental-type climate with warm summers, and cold and windy winters with moderate snowfall.

Iasi is one of the oldest cities and the second largest academic centre in Romania with eight universities and about 60,000 students.

The city seeks to become a place for recreation and relaxation for all citizens, and aims to offer business opportunities as a regional hub for knowledge. As a step towards this, Iasi implemented a sustainable socio-economic development strategy in 2007, and has been working on an integrated development plan since 2009. The mobility demand in Iasi is particularly high in the city centre, where the educational institutions, universities, kindergartens and schools, with approximately 10,000 pupils, are concentrated.

The city's objectives within the CIVITAS ARCHIMEDES project focus on improvements of the public transport system in compliance with the city's strategic plans. The various measures are part of an integrated city mobility strategy which involves a set of correlated policies regarding transport and urbanism, as well as support of local infrastructure and rehabilitation projects. For example, the building of the cycle route is part of a

global mobility strategy which assumes the extension of the cycle infrastructure in the city by the construction of two new bike trails.

The main objective is to reduce the traffic in the congested areas and promote the alternative modes of transport. Promoting the use of bicycles combined with the implementation of school travel plans aims at changing pupils' and students' transport behaviour.

Moreover, activities towards collective transport and intermodal integration include improved ticketing and better public transport information at bus stops through real time information on routes and waiting times.



Ambitions

The city's participation in the ARCHIMEDES project was motivated by the will to increase the quality of Public Transport by addressing problems of travel time and reliability, and thereby making public transport more attractive.

In this perspective, lasi planned to equip 15 crossroads with traffic management systems and to assign a separate roadway to public transit on a segment of the CIVITAS corridor.

In order to boost Public Transport use and create a stronger affiliation to the service, one of the ambitions was to improve the ticketing system, in particular through installation of 10 Ticket Vending Machines.



Finally, to address safety issues in Public Transport, the city had foreseen to work on a surveillance system to be set up on the vehicles, aiming at reducing security problems.

Besides these improvements of infrastructure, lasi planned to educate people on the benefits of sustainable transport and encourage them to think about their transport habits. The Promotion and Education Campaign of Public Transport and bicycle use, along with the School Travel Plans and the construction of the first bike trail, aimed to make people aware of the benefits of alternative modes to the private car.

It is also important to mention the efforts to increase the level of information offered to the public transport users by the creation of a web-based transport planner and a travel information telephone service.

Spotlight

Cleaner and safer transport leads to an increased number of public transport passengers, to environmental protection by reducing the toxic emissions' spread into the air as well as to lower traffic flows, especially on peak hours, by reducing the number of vehicles on the main routes of the city.

Through the implementation of video surveillance, the fleet management and the incidents management systems, local public transport users are less exposed to various incidents inside the vehicles, increasing their comfort, safety and trust.

These changes have really been appreciated by the passengers, according to the satisfaction surveys that have been realised and to the numerous press articles published after their implementation.

A passenger recently stated: "I think the new video surveillance system installed in buses and trams are a useful investment for the citizens of our city. We, the passengers, feel safer now. Like everywhere in the world, the public video surveillance systems are an important step towards a safer community." The average number of incidents involving public transport drivers per month decreased from 12 to 8 after the implementation of the surveillance system.

Challenges

One important issue was that the Romanian legislation for awarding public procurement has suffered many changes. This led to the cancellation of tenders such as the ticketing system, the real time information panels and the integrated management system.

Delays obliged the partners to adopt a back-up plan, replacing the measures for ticketing system, real time information panels and an integrated management system implementation with a video surveillance system, ticket vending machines and implementation of a new traffic management system implementation. The implementation of these new measures has been performed in due time and strongly supported by the citizens.



Regarding the special bicycle route, the numerous obstacles of the city preventing the use of bicycle as a proper transport mode had to be identified. At the beginning, citizens were doubtful about such a measure, but thanks to the big promotion campaign, they finally perceived the importance of protecting the environment using ecological means of transport. The increased number of bicycle users, from 111 in 2010 to 172 in 2012 for instance, is considered to be a real success and a great achievement of the CIVITAS ARCHIMEDES project.

Although decision makers were not fully supportive to invest on innovative mobility solutions, the success of CIVITAS ARCHIMEDES convinced them that keeping on innovating is necessary to ensure that the efforts made are taken to the next level. Participating to the CIVITAS ARCHIMEDES project also allowed the municipality to get EC structural funds, to finance their traffic management system and the entire cycle network starting from the cycle route built in the CIVITAS corridor.



Video Surveillance helps increasing comfort, safety and trust.



Innovative solutions

In Iasi, some of the measures implemented have a strong innovative character and the research studies undertaken within the project have contributed to finding mobility solutions.

First of all, the city has given priority to buses through a traffic light system and separated priority routes for public transport vehicles. In addition, 30 buses are now running on liquefied bio-methane and the city has introduced fuelling infrastructures for other vehicles operating on second generation bio-fuels. A research study about emission levels and the impacts of the use of bio-methane in public transport on the overall air quality has been conducted. It is the first time that such a detailed study on emissions levels and impact of use of bio-methane is realised in Iasi, with several types of emissions being measured in various locations along the CIVITAS corridor.

Another innovative study has been realised on the urban goods distribution strategy which effectively led to an efficient circulation of goods and to a reduction of the traffic during peak hours.

Latest generation technologies have been used for the video surveillance system set up inside the public transport vehicles and displaying live images and other information (commercials, presentation spots, pictures) on screens. The innovative feature is the integration of a GPS Monitoring System to the Video Surveillance, allowing data display on LCD screens inside the vehicles showing: estimated time before arriving to the next stop, the name of the next station, available facilities at the stop, and the tourist sights on the way. It has had a great impact on the citizens and visitors which also proves they are open to modern changes and innovative technologies.

The “Green light corridor” is a traffic light priority system, which consists of 15 traffic control units and 54 radar traffic detection units installed on the CIVITAS corridor. The system optimizes traffic flows in this area.

Report



Cycle route

From the beginning of the implementation of the cycle route, citizens had very positive reactions towards the innovative character of the infrastructure and the need for safe bicycle use in Iasi.

Many public personalities supported the Municipality’s actions through the CIVITAS ARCHIMEDES project, and wished to be actively involved in the cycle route opening event, as well as in the education and promotion campaigns. These campaigns included various events such as a trial contest, a cycle orientation contest, a bicycle parade and a photo session with the participation of many actors and singers, convincing young people to participate.

Many promotional products have been distributed e.g. block notes, flyers, school schedules, bags and marked pens. One year after the end of the project, pupils and students still use the campaign’s logo, “bicicooltura” which proves the success of the campaign.

Scaling up

Most of the CIVITAS ARCHIMEDES measures have been successful enough to be upscaled to the city level. For example, the lessons learned while implementing the bus priority measure have been directly aim a traffic management system project, co-financed by the EC Regional Fund.

The GPS Monitoring System also makes real time monitoring of the vehicles and a better planning of public transport services possible. The improved monitoring is the argument behind an extension to the entire fleet. The Video Surveillance System had a great impact on the passengers, and many of them appreciate to benefit from safer journeys. The number of incidents involving public transport drivers actually decreased by 30% in the first month following the installation of the system.

Education and promotion campaigns about public transport and cycling used a range of marketing approaches: organizing contests, rewarding prizes and facilitating direct participation of young people to different activities. This succeeded in raising their interest by getting them involved in important strategic decisions. Pupils and students who have discovered they could influence important decisions by sharing interesting ideas. This participative method of giving stakeholders the possibility to act as CIVITAS ARCHIMEDES partners is fully exploitable by other cities to ensure the acceptance of the population.



Cycling measures

Was the bike trail building and the cycling promotion a successful measure in Iasi, and does it deserve to be extended in the future? We believe it does.

The activities involved two major components: the construction of the cycle route and the organisation of events to promote the cycling benefits. The cycling promotion campaign was realised by distributing promotional materials, by making audio and video promotion materials, broadcasting, and by creating a web page for the cycling promotion campaign.

The impact of these activities was very significant. The modal share of bicycles is now around 8%.

Gheorghe Nichita, the Mayor of Iasi, appreciates this good result: "It was a real pleasure to see so many young people who enthusiastically participated to the events of our campaign. This proves that the implementation of the bike lane was an expected, useful project. The bicycle route will be extended to the entire city, CIVITAS ARCHIMEDES being the starting point of our project for developing a metropolitan bicycle route network."





Future vision

Iasi will strongly capitalise and build upon the findings and work done in CIVITAS ARCHIMEDES, to actually take a step forward towards a more sustainable mobility. From 2013, the traffic management system will be implemented in the whole city, through the Traffic Management System Project for Iasi. This way, the measure performed within CIVITAS ARCHIMEDES will be fully extended.

The Video surveillance system has such a great impact that new financing solutions have been looked for and already found in order to extend this video system on the entire Public Transport fleet. Based on the experience of the access restriction scheme in the historical centre, the City of Iasi considers the extension of this type of measure to other areas of the city, depending on the traffic level of different zones. The future urban development of the pedestrian area is also included in the road network development of the cultural, historical and touristic zone project.

Regarding the cycling infrastructure, the city of Iasi will implement several projects in the future. These projects are focused on the road rehabilitation and the construction of new bicycle routes connected to the one built as part of the ARCHIMEDES project. The promotion campaign will also continue, due to its success.

The introduction of new technologies like the Ticket Vending Machines and the video surveillance system - which contribute to the attractiveness and safety of the public transport system - will be extended in the coming years.

Finally, Iasi intends to find solutions for implementing the initial measures that were replaced due to the public procurement tender – the introduction of a special ticketing system for students and pupils with personalised contactless cards, and the real time passenger information system at bus stops which are very important for the improvement of the quality of PT services in Iasi.

Contact information and local partners

Partners

The Public Transport Company of Iasi
www.ratp-iasi.ro

City of Iasi
www.primaria-iasi.ro

Universitatea Tehnică din Iasi
www.tuiasi.ro

Key persons

Site Manager: Beatrice Fotache, +40 720 03 75 66, beatricefotache@yahoo.com
 Dissemination: Sebastian Buraga, +40 742 53 90 09, sebastianburaga@gmail.com
 Evaluation: Cristian Stoica, +40 722 22 95 02, dir_tehnic@ratp-iasi.ro

For more information, please visit www.civitas.eu/archimedes

Welcome to

MONZA

Italy



The city of Monza, located in Northern Italy, has approximately 123,000 inhabitants and spreads across an area of 33 km². It is located in the Lombardy region 15 km North of Milan on the Lambro River, a tributary of the Po River.

Monza is best-known for its Grand Prix but it is also an important contributor to the Italian economy with 58,500 companies - one company for every 13 inhabitants - being mostly small and medium enterprises.

Since 2009, Monza has also been the administrative centre of the Monza and Brianza province of 850,000 inhabitants, with a population density of more than 2,000 inhabitants per km² given by its highly urbanized territory.

Monza is also an important node on the Railway network, crossed by routes connecting Milan with Como and Switzerland, Lecco and Sondrio, Bergamo and the last one connecting the core of Brianza. Besides the traffic due to the economic and administrative role of the city, Monza is suffering from a huge amount of through-traffic that crosses the city on route to Milan and big motorway nodes.

Therefore Monza has joined the CIVITAS ARCHIMEDES project with the objective of setting up an urban mobility system where alternative modes increasingly mitigate these negative impacts.

CIVITAS ARCHIMEDES in Monza focused on a new mobility offer aimed to enhance the urban environment and to reduce energy consumption as well as environmental and noise pollution. Monza specifically sought to develop two types of measures: on the one hand,

behavioural measures, such as school travel plans and increase of the use of bike for daily shifts within the city, and, and on the other hand, car sharing and highly technological measures to increase the mobility offer.

Ambitions



The primary objective of Monza as a learning city in ARCHIMEDES was to set up an Urban Mobility System. This system should reduce the impact of private traffic, create a new mobility offer with alternative modes made more attractive in a perspective of improving the environmental conditions and reduce the energy consumption. One of the concerns was to raise the awareness of Monza's citizens (children, adults and elderly people) around crucial issues concerning the livability and accessibility of their city and the urban context in general.

Another ambition was to develop new skills in the technical departments of public administration, and to foster policies and best practices successfully implemented in other European cities. This should be done by encouraging fruitful networking activities among different cities and sectors (e.g. the Mobility and Environmental offices in the Municipality of Monza as well as between Monza and other Italian CIVITAS cities, nowadays all connected by the CIVINET Italy Network).



Moreover, the Municipality of Monza relied on the cooperation of other relevant local stakeholders for the full implementation of this project. In its role of lead partner, the Municipality was supported by the former public transport company (Trasporti Pubblici Monzesi - TPM) and by the new one (Nord Est Trasporti - NET) and by a specialized engineering company (Project Automation - PA) to implement Research and Technological Development (RTD) and demonstration activities in CIVITAS ARCHIMEDES.

Spotlight

People appreciate well-organized Walking buses, not only because they were successful, but also because children love them. Ensuring their continuity was the real challenge for Monza. An important goal to achieve was to have Walking buses operational during the whole school year, as they can only be effective if parents are strongly committed to voluntarily take the children to school in organised shifts on a daily basis.

Since April 2011, the Walking Bus has been a reality: 150 pupils and 50 adults are involved, and 10 routes are currently operating.

Moreover, before ARCHIMEDES, there was no real time parking guidance system to inform drivers about the occupancy rates of the most relevant parkings in the city. Today, Monza has 55 panels, 26 of which are electronic and among these 4 are enriched with Variable Message Signs about the city and the traffic conditions. This is very useful, not only during special events such as the Formula 1 Grand Prix, but also for daily commuters.

Challenges

Looking back at the last four years, Monza, as a learning city, has succeeded in introducing many positive changes: first of all, to start thinking about mobility in a systemic and not in a fragmentary way, and then to evaluate the mobility offer throughout the city.

Nonetheless, the Municipality also had to face many challenges, sometimes independent from its own will. The first one was linked to the competence shift on the Public Transport policies from Milano to Monza and the Brianza province in 2009. This implied different bureaucratic delays in parallel to the merger between TPM and NET, a company owned by ATM Group, the Public Transport Company operating in Milan in September 2009. TPM remained a partner only for the measure related to Park Guidance System, while NET became responsible for the public transport related measures.



Moreover, in some occasions, implementation of measures was delayed by difficulties in obtaining permissions or reaching agreements with relevant local or national stakeholders, e.g. the National Railways Company. Another relevant issue concerned citizens' participation in activities implying profound changes in their daily habits (e.g. subscribing to car-sharing, choosing the Walking Bus to take children to school or using the demand responsive public transport service).

A stronger commitment at different levels is required to allow the full and systemic implementation of all Monza's measures as well as the adoption of common communication strategies and policies.

The children of Monza love their new Walking buses.





Innovative solutions

More technological answers to mobility issues marked the real breakthrough in Monza, which is affected by a huge amount of traffic due to vehicles crossing the city to reach Milan. Prior to the technological measures Monza had about 80 intersections equipped with traffic lights. This policy was no longer suitable to meet the requirements of a complex traffic control policy and had to be updated according to the best available technologies.

The aim was to design and implement a Urban Traffic Control (UTC) system that contributes to maximize traffic flows through the city. Its integration with the Bus management system (providing real time location information gathered by the automatic vehicle location and monitoring system) and with the public transport priority system were fundamental to increase the quality of the service provided by the urban public transport.

The challenges and factors of success for these three integrated solutions were firstly in the opportunity to provide for the lack of reserved lanes for buses. Then in the exploitation of the good level of performances in real urban contexts and finally in the use of technological approaches for this application (which are currently close at hand). The measures on Advanced Traffic Information Services for urban public transport and for a real time guidance system informing drivers about the occupancy rates of the most relevant parkings in the city were very important to reduce congestion and to improve users' perception of mobility services.

Report



New perspectives for mobility management in Monza

ARCHIMEDES has been the first comprehensive approach to face mobility management in a systemic way for Monza. The technological measures proposed in the project have been aimed at creating a sound set of measures to build-up an integrated system for mobility management. The experience gained through the knowledge provided by leading cities in ARCHIMEDES has shown a feasible way to shift from a traditional way of managing mobility issues towards a more up-to-date approach thanks to the introduction of technologies applied to public transport and to traffic flow management. The following functions have been fully achieved:

- Coordinated and centralized traffic lights control through the use of a UTC system on the CIVITAS corridor dedicated to private traffic.
- Precise and on-line public transport fleet tracking through the application of an AVL/AVM system.
- Real time information about public transport arrival time at important bus stops across the city.
- Real time information about mobility issues at the most important interchange node of the city through an interactive touch screen totem.
- Real time information about free parking spaces through a Parking Guidance System made up of 55 dynamic, electronic panels.
- Information about events and mobility issues (streetworks, traffic congestion, public transport routes' deviations) through VMS installed along the main access streets to the city centre.
- Public transport priority at traffic lights along the CIVITAS corridor dedicated to public transport.

Scaling up

If the Walking Buses in little or middle size cities are not new, the approach adopted in Monza is innovative and suitable to other contexts. During the first year of the CIVITAS ARCHIMEDES project, participatory workshops have been organized by CREDA (an Environmental education association working in the area of Monza and Brianza) and held in four pilot primary schools in order to raise awareness among students, parents and teachers about the benefits of sustainable school travel methods. The same approach was also used to design the School Travel Plans with pupils which ended in the identification of ten different routes to reach the four schools involved.

Three Learning History Workshops have been planned in order to discuss strengths and opportunities as well as lacks and barriers that have been faced in the design and implementation of the measure. These workshops were targeted mainly to teachers and parents involved in the demonstration activities but also to teachers and parents from other primary schools.

This methodology, far from being extended to the whole city, is suitable to be transferred to other cities willing to test a more sustainable approach to school-home mobility.



Car sharing scheme improvements

After introducing a car sharing scheme in 2007, Monza took the opportunity given by the CIVITAS ARCHIMEDES project to further implement this innovative form of mobility in the city by overcoming barriers to the use of car sharing.

A marketing campaign, aimed at offering financial benefits, has been focusing on all citizens, but with a special attention to young people. 50 free subscriptions to the car sharing service lasting one year (25 of which are reserved to citizens between 18 and 35 years old) have been offered by the Municipality of Monza. Also GuidaMI, the car sharing service provider, has added a bonus for free uses, with the aim of promoting the car sharing service in Monza.

Facilities for subscribers have been planned. The facilities include free parking in car parks, and authorizations to circulate in streets usually interdicted to traffic and in reserved lanes; or in days when circulation is interdicted because of high pollution levels.

Cars have been located in the city centre and in Porta Castello the most important interchange node in Monza. They are located right outside the railway station and the bus station which makes it very appealing for new users.





Future vision

After the completion of the CIVITAS ARCHIMEDES project, Monza will continue on the road to full implementation of the measures developed during the last four years.

As a learning city, ARCHIMEDES allowed the Municipality and the relevant local stakeholders to start thinking about mobility in a more systemic way and to foster decision makers, as well as citizens, to make more efforts towards sustainability. Cooperation, citizens' participation and positive innovation at different levels are needed to ensure that the efforts are beneficial and changes can occur.

The Municipality of Monza has been rewarded for this new approach to mobility issues. The different studies and the achieved results on bike facilities convinced the Lombardy Region to support the city project economically with the implementation of a bike sharing scheme.

Moreover, the Lombardy Region also decided to fund an Integrated System for mobility management, consisting of an Operational Supervision Centre where road, traffic and travel data and information, collected by several technological systems will converge.

Contact information and local partners

Partners

Project Automation S.p.A.
www.p-a.it

Trasporti Pubblici Monzesi, S.p.A.
www.tpmonzesi.com

City of Monza
www.comune.monza.it

Key persons

Site Manager, Evaluation Manager: Simonetta Vittoria, +39 039 2832839, mobilita@comune.monza.it
Dissemination: Valentina Guelpa, +39 039 2043423, ambiente@comune.monza.it

For more information, please visit:
www.civitas.eu/archimedes or
www.archimedes.monza.it

Welcome to

ÚSTÍ NAD LABEM

Czech Republic



Ústí nad Labem is an important industrial centre located in the north-west of the Czech Republic. The city's population is around 95,000 inhabitants, living in an area of 94 km².

Ústí nad Labem is a hilly city, located in a river basin, surrounded by hills. It is located at the confluence of the river Labe and the river Bílina. To the south, it neighbours the Bohemian Uplands, and to the north the Krušné Mountains. The western part of the city is bordered by the Podkrušnohorská basin, featuring open-cast coal mines. It is situated in a deep valley (up to 400 m) of the river Labe and the surrounding mountains. The basin is enclosed by two rocks, Mariánská rock to the north and Strekovská rock to the south-east, and the hills of Větruše to the south and Sedlo to the east. The hilly terrain contributes to the low take-up of cycle transport in the city.

Ústí nad Labem is home to the Jan Evangelista Purkyně University, with eight faculties and a large student population. The city was formerly the base for a large range of heavy industries, causing damage to the local environment, which is now the major focus for improvements and care.

The city is situated about 20 km from the German border. It has a convenient position at a railway junction, at the important international waterway Labe, and, in the near future, it will be fully connected to the motorway, running from Prague to Dresden.

Ústí nad Labem is becoming gradually more and more congested with vehicles as the demand for travel grows. The city centre is overloaded by individual

transport and the non-coordination and non-regulation of the supply of business activities creates problems. The city seeks to improve the urban environment and ensure better life conditions for its inhabitants.

The development of the Master Plan for the city was initiated in 2007. The document was adopted in its first form in 2011, as subject to provisions of the newly adopted Building Act. It anticipates the development of the city for the next 15 years, and thus the opportunity to integrate Sustainable Urban Transport Planning into the Master Plan ideally matches the timing between city policy frameworks and the CIVITAS ARCHIMEDES project.



Ambitions

Ústí nad Labem participates in the CIVITAS ARCHIMEDES project as a learning city, focussing on undertaking research studies and working with citizens through public campaigns.

Currently, traffic on local roads has reached such a level that it is necessary to address issues of sustainable development and seek complex transport solutions for the city. Moreover, specific suitable alternatives and new opportunities must be developed. The city aims at regulating and segregating motorized transport in order to avoid safety risks for the population and to limit emission of harmful gases, noise and vibrations. It furthermore deals with priority for public transport and support of walking and cycling modes, promoting a cleaner life in the city.

The main stake for the city, and thus its objectives for the project, is to propose efficient transport organisation through the development of the Sustainable Urban Transport Plan for Ústí nad Labem.

The CIVITAS ARCHIMEDES project allows realising different feasibility studies and demonstration actions, which results are highly valuable for the development of the transport organisation in the city for the future decades. The experience of the leading cities in CIVITAS ARCHIMEDES also strongly serves the consolidation of the global knowledge for Ústí nad Labem.



Spotlight

Ústí nad Labem organised a Drive Safety Campaign and a Traffic Speed Reduction Campaign focused on safe driving, reduction of driving speed in the city and prevention of traffic accidents. The target group consisted of both drivers and non-drivers, especially vulnerable users. Activities included events organised on main public spaces in the city, workshops, traffic education, production and distribution of information and training materials, and promotion in local media. The goal was to raise awareness about causes and consequences of traffic accidents.

Traffic education, which focused primarily on children and other vulnerable groups in the city, has been improved and made accessible to all. Children are taught basic traffic rules and practice the correct behaviour in city traffic both as pedestrians and as cyclists. They learn how to move safely on the streets and how to read traffic signs and understand traffic signals. Major importance is placed on their safety on roads of the city. High quality traffic education with significant effects will be gradually applied on city residents in the broadest scale possible, and is suitable for exploitation.

Challenges

Solutions proposed within CIVITAS ARCHIMEDES, based on deep analysis and research of existing and foreseen conditions in the city, can be unpopular (such as restrictions for individual transport, paid entrance to the city centre, paid parking zones, limits for supply vehicles, etc.) and require both investments and will for implementation of city authorities, which is difficult to acquire. The challenging part of the project is the public and political acceptance for proposed solutions, which were incorporated into the Sustainable Urban Transport Plan (SUTP) of Ústí nad Labem. This issue is being addressed by discussions of transport experts with city authorities and public hearings to increase awareness.



Focus of current efforts is now the approval of the SUTP by the city authorities in order to enable the most important project output to become the official strategic document setting direction for future development of transport in the city. The challenging submission process involves discussions about the proposals and compromises.

Another related issue is the fact that Ústí nad Labem, as a learning city, performed a majority of research studies and supported public campaigns which results were incorporated into the SUTP. After the successful completion of the SUTP, the city will face demanding requirements for implementing the proposed solutions. Realisation of individual steps described in related actions plans present significant demands especially on financial, personnel and time resources. The city will strive to follow these steps and will seek additional support for realisation of recommended actions towards sustainable development.



Children of Ústí nad Labem are taught basic traffic rules and correct behaviour.



Innovative solutions

Thanks to the CIVITAS ARCHIMEDES project, Ústí nad Labem developed its SUTP, outlining the complex transport solutions suitable for the city. This extensive document includes findings of performed tasks and reveals solutions to some of the crucial mobility issues in the city.

The traffic solutions were simulated and assessed through the up-to-date traffic model of the city, calibrated through data from performed and available traffic surveys and censuses made in the city, and traffic detectors located on local roads. It was also supplemented by data from national traffic censuses. The model enables to calculate volume of source and destination traffic in the area, routing of traffic flows and modal split. It is used for modelling traffic demand and the traffic load on the entire city road network. It was utilised for evaluation of proposed scenarios and for development of solutions suitable for city conditions in the current state and in the future years.

One of the innovative project activities included development of methodology for road safety audits. Based on official police records, localities with a majority of road accidents were identified and on-spot inspections were performed by a vehicle equipped with special tablet. It allowed recording road characteristics, safety shortcomings, GPS location and videos for subsequent evaluation of collected data. During the passage, road parameters were manually recorded to the PC through predefined input tools by an inspector. Based on the findings, specific solutions suitable for each individual locality were designed.

Report



New websites for city mobility

New website dedicated to road safety in Ústí nad Labem was launched on www.bezpecnepousti.cz. It includes advices and recommendations for safe behaviour of drivers, pedestrians and cyclists. It also contains an interactive map of dangerous locations in the city with safety warnings and videos. Specific sections are devoted to the accident rate in the city, traffic intensity on individual roads, traffic control and traffic training.

The comprehensive web portal for cyclists in Ústí region was put into operation on <http://cyklomapa.usti-nl.cds.w.cz>. It includes interactive maps of all the cycle routes showing videos with GPS position, characteristics and pictures of individual routes, safety information and warnings, information about surface, difficulty of terrain and points of interest for cyclists in the area.

Ústí nad Labem launched another website for people with mobility restrictions on <http://bezbari.usti.cds.w.cz/imapa.aspx>. It allows viewing of videos of access routes on an interactive street or orthographic map. Access routes are described from their source (a public transport station or a parking lot) to destination (offices, social services, medical facilities and other public buildings). Provided information includes data about barriers on the route, such as edges, stairs and ramps, photo gallery of critical spots and detailed descriptions. The website also includes a downloadable application for a cell phone. Provided routes will be further extended to cover other important points of interest in the city.

The websites implemented in the city for specific target groups will continue to be operated and fed with updated information to provide up-to-date information to city residents. In order to easily access the new websites for city mobility, a Transport Portal was established on the official city website www.usti-nad-labem.cz.

Scaling up

The city performed a research study of parking conditions in a sample residential area with typical parking problems and a suitable parking scheme was proposed. There are localities in the city with similar conditions, which need to be addressed. Results were thus generalised to serve other areas and the methodology proved to be suitable for replication in other densely build-up city parts with intensive traffic and significant shortage of parking places.

Safety inspections were performed on major roads and localities with the most road accidents in the city. Based on the findings, appropriate safety improvements were proposed and an Action Plan describing individual steps with priorities required for implementation has been designed. Methodology of safety inspections should be performed regularly and on all localities in the city. The methodology of safety inspections has been developed and described in a brochure, in order to facilitate exploitation.

Noise caused by the traffic in the city was analysed and a noise map of Ústí nad Labem was developed. A noise map is a useful tool for optimal implementation of noise reducing measures and could be transferred to other urban areas. According to the established methodology, a bicycle policy audit (BYPAD) was performed in the city and based on the findings, the Action Plan was developed describing individual steps required for cycle transport improvements. These steps need to be followed and gradually implemented in the city, the BYPAD should be periodically repeated to assess the progress, and the BYPAD methodology is suitable for exploitation.



Sharing experience

Sharing experience helped Ústí nad Labem to develop suitable solutions. Although most of the set goals are of long-term nature and require concentrated efforts and investments, there are measure results already visible in the city.

Regular traffic education, both theoretical and practical, is ongoing in the city and its effectiveness has been improved. Image of local public urban transport has been increased through the campaigns, and information and education materials have been produced and made available to all. Possibilities for cycling in the area, as well as mobility options for disabled people are easily accessible, through websites with interactive maps, videos and practical information. Awareness about safety threats and safe traffic behaviour was improved and also other city activities were well appreciated by local residents.

The city will continue its efforts and will use the experience in future realisation of optimised transport solutions. "Within the CIVITAS ARCHIMEDES project, transport experts in our city gained much expertise, especially in fields they haven't encountered before - evaluation, dissemination and training of their activities. Furthermore, they learned how to collaborate with partners abroad and how to utilise best practise from other urban areas in local conditions", Dalibor Darílek, Head of the Department of Transport.





Future vision

Within the CIVITAS ARCHIMEDES project, transport practitioners in the city gained knowledge about traffic issues throughout Europe and innovative approach to their solutions. Experience in co-operation with cities across Europe helped to develop strong baseline for successful solutions of local transport development and required improvements. Comparison of different urban environments helped to view traffic problems, existing or potential, and possibilities for progress from various points of view and with new ideas.

Ústí nad Labem, as a learning city, acquired much experience and knowledge during the lifetime of the project. The most valuable part for the city is the possibility to develop and adopt the SUTP, containing results of all research and technical studies elaborated within the four years and having its basis on mutual sharing of information and cooperation among the project partners. This strategic document is setting the direction for future development of city transport involving such traffic management solutions, which will enable improving living environment in the city.

In the upcoming years, the city will focus on fulfilling defined goals and follow the steps set for individual transport sectors within the action plans. Based on shared experience, Ústí nad Labem can utilise acquired knowledge to facilitate efficient and successful future implementation of proposed solutions.

Contact information and local partners

Partners

City of Ústí nad Labem
www.usti-nad-labem.cz

Key persons

Site Manager: Dalibor Darílek, +420 475241843, dalibor.darilek@mag-ul.cz
Dissemination: Katerina Oktabcova, +420 475 241 111, katerina.oktabcova@mag-ul-cz
Evaluation: Jirí Landa, +420 475 271 111, civitas@mag-ul.cz

For more information, please visit www.civitas.eu/archimedes

Conclusions/ Recommendations

During the four years of CIVITAS ARCHIMEDES, 83 projects have been implemented in six European cities. Great results have been achieved. Challenges have been met and overcome, and the cities have shared experiences to reach their goals of cleaner and safer cities.

The CIVITAS ARCHIMEDES project began in September 2008 and has been running for four years. It has brought together six European cities: Aalborg (DK), Donostia-San Sebastián (ES), Brighton & Hove (UK), Iasi (RO), Monza (IT) and Ústí nad Labem (CZ). During the lifetime of the project, the six cities have implemented 83 measures to increase energy efficiency of the cities' transport systems, providing safer and more convenient transport for all, and thereby having a significant impact in improving energy, transport, and environmental sustainability.

Technology

All cities have implemented ITS solutions for travellers and transport managers. A strategic traffic management scheme and design of a traffic control station to be included in the SUTP in Ústí nad Labem, a video surveillance systems for public transport in Iasi and San Sebastián and the urban traffic control system and the public transport priority system in Monza.

In Aalborg and Brighton & Hove, smart phone solutions have been developed to make information available for travellers during their trips.

Infrastructure

Infrastructure is essential for the success of the project. It can be in terms of redesign of roads and bike paths or in terms of infrastructure to facilitate fuelling of diesel and power for electric cars.

Large infrastructure projects have been designed as part of the CIVITAS ARCHIMEDES project. 22 kilometres of new cycling paths have been built in San Se-

bastián, and 10 kilometres in Iasi. In both cities this has increased the share of cycling. In Aalborg, new infrastructural approaches have been tested on the Cycling commuter route to the university. These approaches have led to an increase in the share of cycling on the route.

Brighton & Hove City Council became the first outside London to install on-street electric vehicle charging points. The registration scheme began in February 2010 and is available to all UK residents in order to encourage uptake. Over the last two years, the number of registered users has grown steadily to 33. Both Aalborg and San Sebastián have initiated the installation of fuelling infrastructure for the bio-diesel driven vehicles in the project.

Innovation

The nature of all CIVITAS projects is innovative and the purpose of the project is to push forward the development of sustainable transport solutions. Therefore all cities have been dealing with innovative aspects to reach even further than expected during the four years of the project.

Highlighted innovative measures in the CIVITAS ARCHIMEDES include the installation of LED lane lights for cyclists in Aalborg, the use of a new comprehensive traffic model in Ústí nad Labem, a Urban Traffic Control system in Monza and a video surveillance system for public transport in Iasi.

In San Sebastián a special innovative focus has been on clean vehicles, ranging from 100% bio-fuelled buses, to



cargo bikes and electric and hybrid car sharing. Also clean vehicles have been introduced in different departments of the city. The CIVITAS ARCHIMEDES project has in all cases been the lever for the innovative solutions.

Policy

The development of Sustainable Urban Transport Plans (SUTPs) in Monza and Ústí nad Labem has been an important task in terms of supporting policies on sustainable transport locally. Both cities have been working on the plans since the beginning of the ARCHIMEDES project and have finalised the plans by the end of the project. In the process, various meetings and workshops concerning the development of SUTPs have been held within the consortium letting the learning cities of ARCHIMEDES use the experiences of the plan development from the leading cities.

CIVITAS ARCHIMEDES cities have also played important roles in the CIVITAS Political Advisory Committee. Currently ARCHIMEDES is represented by Alderman Mariann Nørgaard (Aalborg) who has been a member since 2009 and Mobility Councillor Jon Albizu (Donostia-San Sebastián) in the PAC.

Finance

The CIVITAS Plus project period from 2008 to 2012 has been a troubled time in Europe due to the financial instability. Nevertheless, it has been possible to implement all projects as planned. The CIVITAS initiative has been an important support to implementing innovative solutions in the six cities – solutions that otherwise might have been cut. The investment in innovative solutions in the ARCHIMEDES project will hopefully help to shape

European policies in the field of sustainable transport in the future and forward the reach of sustainable mobility objectives.

Recommendations

Participation in large scale European demonstration projects can be challenging. Working in living cities and with innovative measures most certainly will lead to a range of challenges, of which most can be overcome. But the involvement in the CIVITAS programme has for all cities also been a great opportunity to implement large and innovative solutions in the field of sustainable mobility. When the cities are evaluating their participation, they put a strong emphasis on the possibility to share knowledge and experiences within the project and within the CIVITAS network. Monza and Ústí nad Labem, the learning cities of the project, are good examples of this.

In Iasi, it has been proved that participating in the CIVITAS Project can have positive influence on future funding. The cycling route build as part of the CIVITAS ARCHIMEDES project has allowed the municipality to get structural funds to finance a bigger cycling network. Also in the remaining five cities there are good examples that the CIVITAS measures are being exploited and funding is added to maintain or upscale the solutions.

The CIVITAS ARCHIMEDES project has supported the cities to move forward in the field of sustainable mobility and to keep the cities in front of the development. The evaluation report of the project is dealing with each specific project in detail and will be worth reading for cities who want to take up and enhance sustainable mobility.

**Contact**

City of Aalborg - Technical and Environmental Department
Stigsborg Brygge 5
DK-9400 Nørresundby

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Editor

Gustav Friis, Project Dissemination Manager, City of Aalborg

Authors

Valentina Anzoise (Monza), Valentina Guelpa (Monza), Debbie Reed (Brighton & Hove), Katerina Oktábcová (Ústí nad Labem), Maarten van Bemmelen (Donostia-San Sebastián), Andres Martinez (Donostia-San Sebastián), Marius Homocianu (Iasi), Sebastian Buraga (Iasi), Olivia Cahn (EuroProject Consult), Gustav Friis (Aalborg).

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