

CiViTAS

Cleaner and better transport in cities

SMILE

MALMÖ • NORWICH • POTENZA • SUCEAVA • TALLINN



Final Publishable Report

Towards a sustainable transport system in Malmö, Norwich, Potenza, Suceava and Tallinn



CiViTAS
Cleaner and better transport in cities
S M I L E



THE CIVITAS INITIATIVE
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Coordinator contacts

Malmö stad/City of Malmö

Phone: +46-40-341000

Contact persons

Environment Department:

Ms Dagmar Gormsen

Streets and Parks Department

Mr Magnus Fahl

Address: SE-205 80 Malmö, Sweden

Produced by

City of Malmö

Daniel Skog, +46 40 34 20 86

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Cover photos displaying a CIVITAS branded tram in Tallinn, Tony Blair thanking the Norfolk team for their work with School Travel Plan within CIVITAS SMILE, kids participating in CIVITAS campaign in Suceava and CIVITAS branded real time information signs in Malmö.

Introduction

This is the final publishable report of the CIVITAS SMILE project. It is supposed to summarise the effort of 51 separate measures performed by 32 partners in five cities over the course of four years, spending over 31 million Euros.

During the course of the project Europe has seen increased interest in the detrimental effects of climate change and the necessity to decrease emissions of greenhouse gases, mainly attributed to the attention given both to the Al Gore presentations and subsequent documentary played at cinemas across the world and to the so called Stern report, claiming that the costs for doing nothing to combat climate change were far greater than the proposed 1 % of GDP annually spent from now.

Towards the end of the project the near collapse of the finance market made an impact sometimes beneficial and sometimes not so beneficial. Public transport use often increases in times of economic crisis, but the will to invest in clean tech might be considerably reduced. Also the fall of the Swedish krona and the British pound by around 15 % towards the euro made an impact on the project.

On the more positive side, although difficult to assess in terms of influence on end results, was the inclusion of Romania as a full member of the European community. In short, the four years of the project have seen many changes not possible to foresee when submitting the applications late 2003.

This report is divided into five sections plus annexes: objectives, work undertaken, end results, dissemination of results and

a description of the partnership and the cities. It is intended to give an overview of the project, although by no means being a full account. For further study of implementation and results the interested is referred to the CIVITAS initiative web page where measure fact sheets, evaluation plan, final plan for using and disseminating the knowledge, exploitation plan, measure evaluation sheets and measure description fiches are available.

The annexes contain a contact list, if further reference is needed, e.g. if a civil servant or policy maker is interested in implementing a similar measure. Also contained is a list of how the 51 measures were grouped in work packages and distributed among the participant cities. In the following text however, there is no reference to measure or work package number as that would make the text less readable. Finally worth noting are the policy recommendations from the project which, albeit technical in nature, gives a comprehensive overview of the findings of this project.



Mr. Christian Resebo
Project Coordinator
CIVITAS SMILE



Civitas SMILE Cities



Malmö, Tallinn, Suceava, Potenza and Norwich



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Annex 2 and 3 to be found in separate documents

Project objectives

The objective of the CIVITAS initiative is to achieve a more sustainable, clean and energy efficient urban transport system by implementing and evaluating an ambitious, integrated set of technology and policy based measures and CIVITAS SMILE has embraced the same objectives.

Overall objectives

Sometimes the sustainable transport solutions are constrained to development of alternative fuels but CIVITAS SMILE encompasses the full range of measures covering engine efficiency and fuel efficient driving techniques, efficient use of each transport mode, sustainable choice of transport mode and the inevitable question of whether the transport is necessary at all. In fact the evaluation shows that the wide range of measures implemented within the project is a sine qua non the results would be as good.

Another overall objective was to learn from our successes and our mistakes and to transfer this knowledge first within the project, consisting of two so called lead cities (Malmö and Norwich) and three follower cities (Potenza, Suceava and Tallinn), and later also to other European cities.

The strategy is to combine a set of measures to develop an intelligent, sustainable and intermodal city traffic that makes it possible to live an active life independently of use and ownership of private cars. Some measures have been full scale from the start and some have been more experimental in nature and thus smaller



scale. They have all contributed to both the overall implementation strategy and the transferability scheme.

Specific city objectives

CIVITAS SMILE has been structured in eight demonstration work packages, covering the wide range of actions required to attain sustainable transport – alternative fuels, access management, pricing strategies, improving public transport, providing alternatives to car ownership, improving goods distribution and improving the use of an intelligent transport system, ITS. Altogether 51 measures have been taken within these work packages to achieve this “less car-dependant life style” in the five cities involved.



Malmö

As one of the two leading cities, three major objectives can be identified for Malmö via 22 individual measures in all eight work packages, viz. establish and support a biogas market, push for a modal shift and to improve local goods distribution.

For Malmö one of the main objectives was to support and implement a biogas scheme and increasing the use of alternative fuels. This included building infrastructure for biogas production and distribution, increasing the municipal and hospital vehicle fleet with greater share of clean vehicles preferably compatible with biogas, purchase of ten biogas-fuelled heavy goods vehicles to the local dairy company and subsidising parking fees for clean vehicles.

The next major objective was to push for a modal shift, increasing the share of bicyclists, pedestrians and public transport users. To achieve this, two innovative parking facilities for bicycles in public transport hubs were planned together with connecting, so called, demonstration lanes with upgraded comfort and services. The parking facilities were unfortunately not feasible to construct within the project time frame but instead an added effort to develop concept design and model building was made.

Several campaigns aimed at various target groups, including work places, new inhabitants and so on, were scheduled to influence both attitudinal and behavioural change and to inform inhabitants of new services and infrastructure. A new web

based bicycle planner was also planned for launching. To increase comfort for cyclists radar detectors were planned to allow for green light for cyclists in traffic junctions.

Aimed particularly at improving the quality of public transport was introduction of mobile services, including ticketing system, real time traffic information and route and travel planner, introduction of real time signs at bus stops and surveillance cameras on all city buses. The municipality also planned a number of designated bus routes and a priority system in traffic signals.

Another major objective was to improve the goods distribution in the urban areas. A big effort to achieve a freight consolidation scheme was unfortunately cast aside early in the project, but was replaced by a consolidation scheme for local produce. Other deliverables were to equip the cars of a parcel delivery company with GPS and introducing a traffic control system for them and equipping all heavy vehicles of Malmö Lorry Centre with vehicle computers to monitor emissions, fuel economy and handle order intake. The low emission zone was also scheduled for extension to decrease mainly local pollutants and some 180 truck drivers were to be trained in heavy eco driving. A system for optimising warehouse usage and logistics at the local dairy company was also scheduled.

Other objectives were to make better use of existing traffic signals through an automated “intelligent” algorithm steering the traffic depending on the present traffic flow, to establish a commercial car sharing club as an alternative to individual car ownership and to spread the eco driving skills of local hospital and municipality employees.



Norwich

As the second lead city, Norwich boasts 17 measures covering all eight work packages. Four main objectives can be identified; viz. improved goods distribution and improved public transport, increased awareness of alternatives to car use and demonstration of bio-diesel blends as a viable alternative fuel in Norwich/UK.

To improve the goods distribution in the city centre was a key objective for many of the measures in Norwich. The biggest infrastructure change planned was a freight consolidation centre where one or several external warehouses would be used to consolidate shipments to optimise city centre distribution. Other deliverables included giving priority through priority lanes to clean goods vehicles (later reformulated to encompass only the vehicles from the consolidation centre), the introduction of the first UK low emission zone outside London and giving real time traffic information to hauliers who complied with certain air quality standards through retro-fitting of engines. Furthermore a user participation group in the form of a freight holders club was to be established to form a background for many of the plans for goods distribution improvements and finally an objective was to introduce a parcel delivery system to the park and ride sites surrounding the city from the city centre shopping malls, also aimed at allowing car users to shift to public transport for shopping trips.

The next overarching objective was to improve public transport. Four deliverables were planned in this direction; the construction of a bus interchange at the rail station to allow easy access between bus stop and rail station, the introduction of on-street ticket vending machines to allow for speedier boarding and easier purchase of correct tickets before getting on the bus, real time information to bus passengers and provision of individualised public transport information to clients of the local hospital.

To achieve a modal shift was the third major objective. To introduce travel plans at all schools and all major work places was one of the key deliverables in achieving this. At one work place individual travel advice was also given. To help commuters car pool, a web based match making service was launched at several work places. A scheme to influence the choice of car buyers to smaller cars through giving a rebate on parking fees was scheduled and a commercial car sharing club was also introduced. A time controlled access restriction on two higher-end market streets was also planned, but later revised to a full-time closure of one of the streets.

Finally bio-diesel blends were to be investigated as a viable fuel in mainly heavier transport, although unsupported by the insurance industry and the warranty system of vehicle producers. Questions over local pollutants were also raised.





In Suceava the objectives were to raise the quality of the urban bus fleet and to introduce and promote LPG (liquefied petroleum gas) and biogas as a viable alternative fuel for public and private vehicles. Also they wanted to establish a low emission zone and green corridors for public transport. Furthermore they aimed at promoting the concept sustainable transport to its citizens, through campaigns and educational activities.

Potenza, Suceava and Tallinn

As one of three so called follower cities, Potenza wanted to work with four deliverables: to introduce clean public transport vehicles, supporting the local market for alternative fuels, to offer a demand responsive public transport service, to launch a car-pooling system for individuals and to offer a centrally placed mobility centre and designated mobility offices at various major work places.

Tallinn had the objective to improve the public transport system with wide range efforts to implement a priority system on 10 central lines and to provide a multimodal information system in all of the public transport system.



Work performed and methodology employed

CIVITAS SMILE has consisted of both full scale projects encompassing all existing infrastructure, e.g. equipping all public transport vehicles in Tallinn with automatic stop call signs, and more experimental by necessity smaller activities, e.g. development of car sharing clubs in Malmö and Norwich.

We also have examples of measures taken that are well integrated in the city's overall traffic and/or climate change strategy, e.g. the upgrade of the bus fleet in Suceava, and of measures that are more innovative and where the next step is less known, e.g. the installation of SPOT-technique in traffic signals in Malmö.

An important aspect of the work has been the wide range of organisations in the partnership, large public bodies, both with local and regional authority, together with private companies varying from small local parcel delivery company to big energy corporation or worldwide public transport provider. Together with the universities and research institutes we have formed a so called Triple Helix model, an extension of the public-private-partnership (PPP), where society and private enterprise integrate with academia to better all three components. In fact the very constellation of the partnership has helped the project implementing certain regulations, e.g. the extension of the low emission zone in Malmö.

A further background to the project has been the political dimension. From the start the project has participated in the CIVITAS Political Advisory Committee and has also kept itself with a Political Advisory Board where local, national and EU-wide policies have been discussed.

Also of great importance has been the wide range of measures taken, covering almost all aspects of achieving sustainable urban transport: modal shift incentives, efficient

use of transport mode, fuel efficiency and alternative fuels. Many of the measures are supportive to each other and function better when implemented together rather than as individual measures.

Although focus has been on demonstration and evaluation there has as part of the project been several purchases, constructions, installations, regulations implemented, services or products developed and education and information/campaigning provided. A summarised overview of all tangible deliverables can be seen below.



Malmö

On alternative fuels, in Malmö almost 430 clean vehicles have been purchased or leased within the project, whereof 10 CNG-powered HGVs by the local dairy company. The other vehicles belong to the municipality, the local hospital and the car sharing club. The main problem has concerned the availability of appropriate CNG-powered vehicles for the hospital and the car sha-

ring club, given that some of the hospital's demands were of such standard that no CNG engine were possible and Volvo, the main owner of the car sharing club, stopped their CNG car production 2006. The problem remained unsolved until the end of the project. For the majority of the cars, the 370 municipal cars, CNG were readily available and leased accordingly.

To further promote alternative fuels a rebate on parking for clean vehicles has been granted. Due to the delayed political decision only some 1500 permits were issued by the end of the project compared to the 2500 envisaged.

A big part of work with alternative fuels was the construction of a 20 GWh methane gas upgrading plant, which was ready in spring 2008 and subsequently connected to the gas grid. The construction was much delayed due to problems with permits, particularly one related to a gas slip which could not be allowed given the environment permit. A combustion technique was installed which circumvented the problem. Two pump stations were also constructed as part of the project, one public fast-filling pump and one slow-filling for the local dairy company. There was a long debate as where the slow filling station would be placed, first at a bus depot for the local public transport company, but the alternative was later decided upon.

To lower emissions through engine efficiency, fuel efficient driving technique, so called eco-driving, has been taught to some 1200 people, mostly regular employees but also professional drivers. 180 of these professional drivers have completed what is referred to as heavy eco-driving, the same fuel efficient driving technique applied to heavier vehicles. The municipality, the local dairy company, the local hospital and Malmö Lorry Centre has been involved in this. The Lorry Centre also worked with vehicle computers to help the drivers maintain their fuel efficient driving technique. Because they wanted to encompass also the order intake in the same software and hardware, no alternative was available

at the European market, demanding most of the time be spent on choosing a suitable supplier with which further development could be made. Since this supplier had to be replaced half-way through, no finalised product was available by the end of the project.

A measure taken to stimulate engine efficiency, particularly with regard to local pollutants, have been the extension of the low emission zone to encompass practically the inner circle line of the road network in Malmö. Part of this measure was also to influence the government to make the regulations for the low emission zones national standards and this was also achieved together with the three other cities with a zone in place.

To influence a more environmentally friendly choice of travel mode several measures were taken. Part of this was the marketing of the new bus route system launched in 2004, with the intention to inform people of the new improved possibilities to use local public transport. The establishment of a commercial car club was also part of the project, and altogether 7 parking sites were in place with 20-30 cars active, almost the double compared to expected results.

A big part in this was also the Mobility Management activities. Some 15 sub-projects were run during the four years of the project, with various target groups. Local enterprises were addressed through the campaign 'companies on bikes' where they could get subsidised bikes with company logo and bike computer and in return reported how much the bike was used. Another project was to hold breakfast meetings with networks of enterprises to open up for a dialogue about sustainable transport. The regional transport authority targeted local enterprises with a trial commuter scheme in which car users were offered a free month on the public transport system. New inhabitants were reached through a telephone campaign where they were informed about the availability of public transport and bicycle network and offered a free monthly ticket or to borrow a

bike. The general public was also reached in a couple of recurring mass communication campaigns, which tried new means of communicating and interacting with the public. No ridiculous car trips and the ‘environmental choir’ are two examples of campaigns that have been exported to other cities.



To raise the status of cycling, not only the campaign, ‘no ridiculous car trips’, was carried out. Concept design of high quality bicycle lanes and construction/installation of two such lanes was part of it. Radar detectors were also installed at 26 traffic signals to raise comfort in the same manner as cars get green light when approaching traffic lights. Finally bicycle maps were integrated into the public transport travel planner, giving search results for a bike route as well as bus/train route. This turned out to be very time consuming as the bicycle road network contains many so called missing links which had to be corrected manually to render complete routes.

Early in the project, it was foreseen that the intended construction of bicycle parking facilities could not be carried out. Instead concept development on a more visionary basis took place rendering a handbook and catalogue for how innovative parking facilities can be constructed and situated in relation to larger transport hubs, and which services that can be included in these locations. This handbook has already become widely sought after.

Under the term efficient use of transport mode, lie both the filling of empty seats on buses and in cars as well as optimising

goods transport. One of the measures taken in Malmö is the warehouse management system taken into operation by the local dairy company. Work has consisted in both establishing a logistics software to help warehouse workers speed up their work and also to train them in using it. Due to problems with the software the measure has been restarted during the course of the project and not entirely finished by the end of it.

More on increasing efficiency in goods transport and also reducing the need for unnecessary transport has been the installation of a traffic control system and GPS equipment in a local parcel delivery company. The same ambition was behind trying to connect local farmers and restaurants in a virtual market and consolidate the shipments using an established distributor of regional produce. Much time was devoted to link producers and buyers to the virtual market, and later to convince and assist farmers to actually use the web tool.

Other measures include the quality improvements of public transport, the surveillance cameras on buses to improve safety, the development of mobile internet services, the bus priority on certain high density lanes and in 42 traffic signs and provision of real time signs on all major bus stops. The regional transport authority responsible for the city public transport has devoted much time in this for concept, software and database development and the municipality has carried out the bus priority measures. A similar scheme by the municipality was the so called intelligent traffic signal system, or adaptive signal system, in two greater junctions with ten traffic signals interrelating respectively. An advanced algorithm would allegedly help streamline the traffic flow with the help of road sensors indicating the amount of traffic and thereby reducing emissions.



Norwich

One major effort in Norwich was the trial of three different blends of bio-diesel in various engines to measure the effects on both greenhouse gas emissions and local pollutants (nitrogen oxides and particles). B5 and B20 are the actual blends with 5% and 20% respectively of bio-diesel blended into mineral-diesel. B100 is of course not actually a blend, but was also part of the testing. Much work consisted in establishing good quality fuel and reliable supply, something that tested the project early on when the partner and would-be-supplier first delivered bad quality fuel and later on went into liquidation and had to be replaced. Much other work consisted in the actual measurement of emissions of the various blends, using equipment installed on different vehicles which then went into traffic.

To influence the increase in fuel and engine efficiency a scheme to introduce the first UK low emission zone was started. It had however to be slightly revised and implemented in stages, due to political concern. Instead of encompassing all heavy vehicles only buses (about 90% of all heavy traffic in Norwich) were affected of the stricter regulations. For all vehicles, an engine switch-off scheme was introduced. Time controlled access to two centrally placed commercial streets was also developed as a means to reduce the cost for full infrastructure rebuilding, but later on it was decided one of the streets was to be fully

closed after all. Much work was devoted to the public consultation phase and the preparation of material for the political decisions.

Further to increase fuel and engine efficiency was the change in parking regulations to give rebate to smaller cars and punish bigger cars. To develop the regulation was a time consuming task.

To influence the choice of travel mode, better interchange between the central station and buses was constructed to allow for more convenient shift between trains and buses. Improved parking facilities for bicycles were also constructed in connection to the rail and bus station. A big problem of the public transport system in Norwich is the boarding time on buses, because of the many different bus companies operating the lines and the uncertainty as to which bus will arrive next. For this reason ticket vending machines have been installed at key bus stops in the city, where the major bus companies have agreed to accept a pre-order system which later reimburses them for the ride. To further increase bus usage, collaboration with the local hospital was started to provide clients who booked an appointment with an individualised travel itinerary. As the hospital's finances went down the collaboration was interrupted before the software system, which would provide the itinerary at the touch of a button, could be implemented.

Efforts to install real time signs at bus stops were made. Much work went into negotiating with the company providing the signs and traffic information as the City of Norwich wanted to own the material themselves and the company procured wanted to sublet bits of the information and charging more for each new information parcel developed and provided. Therefore only a small number of signs have been installed within the project time frame.

The particular case of interchanging travel modes was developed further with a parcel delivery scheme to park and ride sites

already established around Norwich city centre. The idea was to try the system out together with larger malls around Christmas and much time was devoted to sell in the concept to them. The uptake was good enough during the trial period to warrant a continued trial, but it was later on decided only to be pursued at bigger shopping holidays.



Also in Norwich a commercial car sharing club was started and expanded. Altogether 10 cars were leased at two different sites and much effort was made to find both the ideal sites for the cars and to reach a critical mass of members.

Part of the plan to reduce the use of cars and maybe increase the efficiency of cars was the measure to help schools and major work places write and implement a travel plan for the employees and schoolchildren. A group of six devotees worked hard to cover all schools in and around Norwich. These travel plans also served as a kind of local user groups allowing for a formal dialogue between the municipality and the everyday travellers in the region.

The University of East Anglia, partner in the project, also tried to customise the service to its students and faculty members by giving individual travel advice and thereby promoting bicycling or bus usage or car pooling/car sharing. The car sharing club even had a trial location on campus,

although it had to be taken off due to bad uptake.

Part of the efficient use of travel mode is the optimisation of goods distribution in the city. Norwich has a medieval city centre which is ill suited for heavy transport. This is why a series of measures were taken to establish and expand a freight consolidation centre. After the procurement phase a company named Foulgers was left in charge of the operation with existing warehouse located on the northbound A11 road from London. They then went on to sell in the concept to major retailers in the city centre in order to have their deliveries sent to the consolidation centre and then loaded onto smaller HGVs for further distribution with optimised loading. Although a lot of experimenting with marketing and services offered the uptake is a disappointment so far, but in the recent recession more inquiries have appeared.

A further measure to facilitate for clean goods transport was to allow for clean HGVs to use the priority lanes for buses. Worries about bicyclists travelling in the same lane limited this ambition to only encompass the consolidation centre vehicles, thus strengthening that measure. A lot of work undertaken for this regards the public consultation process. At the same time work to establish a freight stakeholder group to use as a referent when implementing present and future measures on goods traffic was undertaken. The first ambition was to have physical meetings a couple of times a year, but this was later revised to virtual meetings and net forums.

Last but not least among the efficient goods transport measures is the scheme to provide real time traffic information to hauliers who complied with certain euro-standards for emissions by retrofitting their vehicles. This was deemed a too high price by the stakeholders, so the acceptance level was altered to those hauliers who allowed their drivers to take heavy eco-driving training.

To increase efficiency of passenger transport a virtual match-making tool was established and marketed so that car commuters could easily find each other and car pool instead.

The Norwich measures were delivered with an ultimate objective to sustain their future performance and subsequent improvement. As the project progressed some new stakeholders were identified who became appropriate successors for the continuity of these services. This provided clear evidence of the "transferability" plan working to ensure longevity of the measures beyond the project.

Potenza, Suceava and Tallinn

Potenza undertook four different measures to reduce greenhouse gas emissions. To improve public transport they both purchased four new CNG-powered buses and also tried to implement a demand responsive transport system where the bus route is determined by those who order it. Because the local bus operator CTP did not win the bid to continue operating the public transport in Potenza, a change of partners had to be made and this prolonged the process so to the point that the buses arrived only late in the project and the demand responsive transport system was in fact not implemented in time. A car pooling system was also developed,



establishing a web-based matchmaking tool, helping commuters find each other. A specific parking space was also offered to those who car pooled.

To further push for a modal shift several so called mobility offices were established at major work places. Specially trained officers help commuters plan their trips in a more sustainable way. Some information campaigns have also been carried out. There is a building being built close to the central station which will house several "mobility managers", although this is slightly outside the project.

In Suceava the improvement of public transport was a big effort. 15 new LPG-powered (liquefied petroleum gas) buses were purchased. At the same time a big effort was made to influence car users to convert to LPG-engines, with particular focus on taxi-owners. Also an effort was made to start off the biogas market with sludge from the local sewage treatment plant; however it was not possible to establish production and distribution within the project time frame. The bus route system was remade to increase potential uptake. So called eco routes, were established to give priority to the new buses and these eco routes are also part of the extended low emission zone implemented within the project, limiting access to Euro II vehicles and above. The low emission zone work also encompass pedestrianisation of one of the city's main streets and time controlled access to the historic city centre for all motorised vehicles. A GPS system for the buses was also tested during the project to further increase public transport efficiency. Moreover, information about timetable was previously neglected but has now been provided in print to the citizens and a VMS signs has been installed at the city hall showing time table information.

Information and awareness raising campaigns have accompanied all these measures during the course of the project. VMS signs at centrally placed locations have informed real time about emissions of local

pollutants, workshops and seminars have been held at schools and work places and so on.

In Tallinn two large scale measures have been undertaken. First, a priority system on 10 lines (of about 70) was implemented testing several different methods including priority lanes, priority at traffic signals and adjustment of traffic flow (e.g. one-way for cars, two-way for public transport). The second measure was to purchase and install an onboard automatic stop-call system in almost all public transport vehicles, giving both visual and audible information about the next stop. Also an automatic passenger counting system has been installed in a number of buses to allow for the collection of statistics to improve the bus route system, given that the existing ticketing system does not provide that information.



A CIVITAS branded tram in Tallinn

Tangible deliverables

Vehicles purchased (or leased)

About 480 clean vehicles, including 42 buses and 10 HGVs

Constructions

One methane gas upgrading station

Two pump stations

One rail station interchange

15 ticket vending machines

12 priority lanes for buses

Installations

27 radar detectors for bicycles at crossings

Over 700 Gps-systems in buses and delivery vehicles

Surveillance cameras on 180 buses

Over 70 real time signs

Adaptive traffic signals in two complicated junctions (20 signals)

Automatic stop call system in almost 500 public transport vehicles

Bus priority system in 42 traffic signals in Malmö

Regulations

Extended/introduced low emission zone in three cities (Malmö, Suceava, Norwich)

Subsidised parking for clean vehicles (Malmö, Norwich)

Two pedestrianised streets in Suceava and Norwich

One time controlled access restricted street in Norwich

Services developed and/or offered

Two commercial car sharing clubs

Walking “school buses”

Trial commuting by public transport

Individual travel advice

Freight consolidation scheme in two cities (Malmö, Norwich)

Sustainable biodiesel supply chain in Norwich

Goods delivery to park and ride sites in Norwich

More than 100 travel plans made in Norwich

Mobility centres established in Potenza and Suceava

Mobile internet services in Malmö

Bicycle travel planner in Malmö

Products developed and/or offered

Vehicle computers and software for order intake and emission and fuel consumption measurement

Education provided

Almost 1 500 eco-driving and heavy eco-driving training sessions

Sustainable transport campaigns

Marketing of new bus route systems in Malmö and Suceava

“No ridiculous car trips” campaign

The CIVITAS choir in Malmö

Mobility week in all cities

End results and lessons learned

The CIVITAS SMILE project has used several methods to evaluate the individual measures taken or sometimes clusters of measures, and the project as a whole, or rather the city efforts. Three different evaluation approaches have been used, impact assessment, process evaluation and cumulative effects assessment. Moreover, a transferability assessment and a cost-benefit/cost-effectiveness analysis have been carried out as well as a scenario for up scaling of measures..

The impact assessment was made using the CIVITAS II standard indicators, and each measure was allocated a set of indicators suited to that particular activity. The indicators addressed five areas the project has on economy, energy, environment, society and transport system. For each measure a baseline has been established indicating the situation before implementation. Also for each measure a do-nothing-scenario was drafted and finally a measured effect, or after scenario, has been examined.

The process evaluation was conducted using a database for collecting information through a battery of questions on the work performed and background of the measure.

The cumulative effects assessment refer to the effects which derive from the combined impact of a particular measure and/or combinations of measures, taking account of the 'baseline' data in each city and set within agreed geographic boundaries and timescales. Data for this has been collected by interviews and studying of documents of strategic nature.

Transferability of measures concerns the possibility to transfer the implemented measures to other cities and the analysis is intended to show what sort of pre-requisites and special circumstances made a particular measure successful or not.

Measures have also been scrutinised from a cost-effectiveness perspective, where mainly pollutant savings have been compared to costs for the implementation, irrespective of the SMILE project, i.e. without the added costs from participating in an EU-funded project.

Neither the in-depth methodology account nor the actual analyses will be included in this report, but are available at great length in the Final Evaluation Report, which can be found at www.civitas-initiative.eu.

The analyses of the measures individually, within the city contexts and by workpackage (see categorisation and list in annex 4), have confirmed both the impacts of the individual measures but also the variations and linkages across the wide range of measures that have been implemented in the partner cities.

Significant, quantified impacts have been identified within the project duration for many of the measures particularly in workpackages concerning clean vehicles, access restrictions, and so called soft measures.

The measures in the pricing strategies workpackage have also been shown to have a quantifiable potential, but over a longer time period due to the nature of the measures in influencing the gradual replacement of the overall private vehicle fleet.

The small scale of intervention, the diffuse / indirect nature of the impacts and the different characteristics of the three measures in the workpackage on new forms of vehicle ownership have made it difficult to draw consistent conclusions about this type of measure, although they do show promise.

The measures in workpackages on public transport and telematics have generally been found to be supporting measures for which isolating a direct quantifiable impact within the broader context of a city's transport system is difficult. However, public surveys have shown these measures to be well received and to contribute to modal change, although in isolation or at a limited scale their impact would not, on their own, be enough to produce a noticeable effect at the city or possibly even route level.

Finally the freight measures have proved to be the most disappointing, with only marginal impacts being observed for one or two measures.

Malmö

The most pleasing fact that can be presented about the results in Malmö comes from the travel survey performed first in 2003 and again 2008. It clearly shows that during the SMILE period there is a shift from car use to walking and cycling in terms of share of trips, albeit not considering the length of a journey (which is an unknown figure).

	2003		2008
Car	53%	→	41%
Bus	10%	→	9%
Train	3%	→	5%
Cycle	20%	→	23%
Walking	14%	→	20%

Of course, it is difficult to discern exactly what can be attributed to SMILE, but no doubt SMILE has made an impact in the city.

The evaluation singles out a couple of highly successful measures in terms of most reduction and best cost-effectiveness. It is the low emission zone which has managed to lower local pollutants by an estimated 19700 kg NO_x and 370 kg particulates (PM10) annually. In terms of CO₂-reduction the most contributing measures appear to have been the bio-methane gas upgrading plant by Eon and the heavy eco-driving training by Malmö LBC with 430 tonnes (soon over 1100 tonnes) and 630 tonnes of CO₂ per year respectively.



In terms of cost effectiveness in relation to CO₂-reduction again it's the biogas plant and the heavy eco-driving that is most effective together with the 10 biogas powered HGVs at Skånemejerier, the local dairy company, all of which have shown a cost reduction for the implementing partner in association with the CO₂ reductions delivered by the measure. These measures have shown a win-win scenario within the cost

effectiveness assessment because the cost reduction can be identified by the organisation responsible for making the investment within the project. Also the parking subsidy to clean vehicles appears to score well in these terms, mainly because the cost for the implementation is borne by the individual rather than the implementing authority.

Cost effectiveness in terms of reduction of local pollutants is also attributed to the biogas plant but also the low emission zone is mentioned. The cost for the low emission zone is however not primarily taken by the authority who issues the regulation.

Another result worth mentioning is the commercial car sharing club, who managed to supersede its targets of 15 cars on five sites by a sizeable margin; 20 cars on seven sites by the end of the project and steadily increasing. They seem to have found their critical mass of customers.

The bicycle campaign 'no ridiculous car trips' is also interesting to note which received an astonishing 50% recognition in the immediate after survey and a total of 20% of the population indicated that they had been influenced by the campaign. A year after still 20% remembered the campaign and 10%, half of those who remembered the campaign stated they were still influenced. For a municipality campaign, these figures are extremely high, and probably one of the reasons the format for the campaign has been exported both to other Swedish municipalities and to other European cities.

For the bus measures a stated preference survey was made, in which respondents indicated a price tag for the respective measures as a raise to the monthly ticket. Most strikingly the passengers valued the surveillance cameras on buses to about € 7 increase from € 35. The bus operator has



Public transport in Norwich

also indicated the maintenance costs inside the buses have reduced by 30% after installation.

On the disappointing results can be mentioned the eco-driving for hospital and municipal employees, not in terms of the effect of the training itself, but on the actual uptake among the employees. It has been difficult to convince both employees and managers to invest in the training despite the potential for cost saving that is inherent for both parties. Most resistance has appeared from staff working on schedule, where a replacement would have had to fill the driver's place.

Norwich

The Norwich evaluation shows great success for their travel plans, giving an estimated 1100 tonnes of CO₂ reduction annually. The bio diesel trials have provided a sustainable supply chain which will reduce CO₂ emissions from Anglian buses by some 600 tonnes per year. The bio diesel trials also shows convincingly that a 20 % blend is optimal when considering fuel efficiency and emissions reduction and this in turn is

something that could influence national regulation, warranty issues and other factors obstructing wide scale implementation.

Although not within the project measured effects, but when calculating the potential of the parking price strategy to influence smaller cars, it shows a staggering 2700 tonnes of CO₂ reduction in the most optimistic scenarios down to about 300 tonnes in the most cautious. This measure is also mentioned as one of the most cost-effective ones in the evaluation. Two other measures are considered highly cost-effective, viz. travel plans and car pooling, but this is when considering the cost savings made by the individuals participating and not only the implementing authority.

Regarding reduction of local pollutants emissions the low emission zone shows the single largest effect, estimated to 10000 kg of NOx reduction and 430 kg of particulate reduction annually. This is also the most cost effective measure in this regard, albeit that the costs/investments necessary are not taken by the regulating authority.

An important result regardless of the quantifiable indicators is the effect the travel plans have had in terms of user participation and involvement of the public in traffic planning. An anecdote illustrates this. When Norfolk County introduced a circle line connecting the park and ride sites they had so little uptake as to close down the line. In the course of the travel plan scheme the user groups asked for such a service, unknowing of its previous existence. As a result of the travel plan the line was reintroduced and almost immediately reached uptake to warrant future existence of the line. This illustrates the need and the benefits from a sustainable user participation scheme for transport measures.

Most disappointing of the Norwich measures is of course the one where clients would receive an individualised itinerary for public transport to their hospital appointment, and the hospital's refusal to carry through. The importance of a strong

partnership is however illustrated well with this measure.

Another interesting measure is the freight consolidation centre which proved to have major difficulties in their uptake of customers. Up until the end of the project as much as seven but right at the end only one customer signed up for the service, which obviously limited the actual consolidation, although some articulated HGVs have been avoided in the city centre. In the light of the recent recession, an increase is foreseen as more retailers have had queries about the service provided. One of the key lessons learned is that the authority must, apart from a sustainable financing of the consolidation centre in place, help the centre by providing restrictions and enforcement to favour the solution.

Since the availability of the evaluation reports to the general public, Norwich have received considerable attention by the media, professional institutions and cities in the UK to learn more about their measure



experiences. These enquiries are receiving considerable attention to ensure the knowledge is disseminated.

The recent formation of the CIVITAS UK and Ireland City Network has provided a further platform for sharing practice in sustainable mobility and the participation of Norwich in this has added to the wealth of information disseminated at the end of the project. The Network is supported by the UK Government Department for Transport. It has since endorsed that what local authorities do is critical if we are to make the

changes necessary to achieve sustainable mobility and to tackle climate change. The example of Norwich can make a difference as a mechanism for sharing experience and best practice between local authorities across the UK. It offers the opportunity for technical experts, policy makers and politicians to work together to deliver joined up solutions, expand knowledge and expertise.

Potenza, Suceava and Tallinn



In Potenza the introduction of four CNG buses showed that although there was a decrease in local pollutants emissions, there was at the same time an increase in CO₂ emissions, compared to the previous diesel powered buses. When biogas facilities are not available then the implementing authority need to consider their priorities in these circumstances. For the remaining three measures, the mobility centre, the demand responsive public transport system (DRTS) and the car pooling, the results are harder to discern, for various reasons, the DRTS because it was never realised within the project, the car pooling because it was implemented late and the mobility centre because it is mainly of supportive nature. Calculations on the DRTS show that in terms of cost efficiency related to global and local pollutants it should probably not be implemented, but other factors do of course enter when planning a public transport system (equality, integration, etc.).

A significant result in Potenza is however that sustainable transport is now an important part of the political agenda and while the mobility centre is now established in its permanent location close to the central station a mature understanding of travel needs have been acquired. A key lesson learned is the importance of a strong partnership, given that the Potenza partnership had to be reorganised twice leading to delays never recovered.

For Suceava the scheme to introduce LPG to the market seems to have had effect in that fuel sales have increased by almost 40% from start to a bit more than halfway through the project. In terms of CO₂ reduction and reduction of local pollutants, the result is also good (370 tonnes CO₂, 6100 kg of NO_x and 380 kg of PM₁₀ annually). In terms of increased patronage the number of passengers has increased by incredible 750 % from project start to finish. This is of course attributed to the quality improvements of the bus route system and the increased comfort of the buses, increased accessibility, better and more available information about time tables, etc.

The low emission zone has also been successful in that it has lowered emissions, but foremost the information activities have provided an increased acceptance and decreased intolerance towards the measure, giving room for further extension in the future.

The SMILE funding has accelerated the progress with which Suceava has been able to improve public transport service quality. Provision has moved away from trolleybuses, pre-Euro buses and minibuses, which covered most of the urban public transport needs, to a system mainly based on Euro 3 and LPG buses; 30 of which were provided and 15 upgraded to use LPG through SMILE. A particular driver in the successful implementation of the bus measures has been the linkage of external funding (i.e. from the EC through SMILE) to the achievement of the implementation

deadlines set. SMILE has, through the investment in new buses, helped to raise the standard and change the image of public transport. The promotion of LPG through fuelling converted buses, also adds to the image of an innovative transit system.

One of the more notable effects measured in Tallinn is the fact that previous years' continuous decline in public transport modal share halted in 2008, much due to the improved quality of the service, mainly the automatic stop calls. The priority measures taken have "only" resulted in a less than projected decrease in average speed, which is of course positive but only in the respect that it would have been even worse without SMILE.

The impact of the public transport measures in Tallinn has not been as clear as hoped, although it has helped to change the image of public transport. The conclusion is that a wider range of initiatives is required to simultaneously impact upon

several elements of the transport system in order to drive a wider sustainable change, to include travel awareness and campaign measures in order to make best use of the investments that are made.

Hence, the most important result for Tallinn from participation in the SMILE project is the focus that it has provided on the importance of public transport in the city through the linkage of external funding to the project implementation. Apart from the actual results and impacts of the measures themselves, which are documented elsewhere in this report, this is emphasised by the increased list of sustainable transport projects scheduled for implementation in Tallinn and the future participation in the CIVITAS MIMOSA project.

Main impacts according to the evaluation team

The analyses of the measures individually, within the city contexts and by workpackage, have confirmed both the impacts of the individual measures but also the variations and linkages across the wide range of measures that have been implemented in the partner cities.

- Significant, quantified impacts have been identified within the project duration for many of the measures particularly in workpackages “clean vehicles”, “access restrictions” and “Soft Measures”.

- The measures in workpackage “integrated pricing strategies” have also been shown to have a quantifiable potential, but over a longer time period due to the nature of the measures in influencing the gradual replacement of the overall private vehicle fleet.

- The small scale of intervention, the diffuse / indirect nature of the impacts and the different characteristics of the three measures in workpackage “new forms of vehicle ownership” have made it difficult to draw consistent conclusions about this type of measure, although they do show promise.

- The measures in workpackages “public transport” and “telematics” have generally been found to be supporting measures for which isolating a direct quantifiable impact within the broader context of a city’s transport system is difficult. However, public surveys have shown these measures to be well received and to contribute to modal

Particularly succesful workpackages

Significant, quantified impacts have been identified within the project duration for many of the measures particularly in workpackages “clean vehicles”, “access restrictions” and “Soft Measures”.



change, although in isolation or at a limited scale their impact would not on their own be enough to produce a noticeable effect at the city or possibly even route level.

- Finally the measures in workpackage “freight” have proved to be the most disappointing, with only marginal impacts being observed for one or two measures.

When considering the impact of the measures in the workpackages that were relatively more successful:

- The clean vehicle and fuel measures have generally been successful in delivering emissions reductions both in terms of greenhouse gas reductions and local air



The evaluation report says that “the behavioural change measures have generally been successful in achieving substantial changes in behaviour”. Here from CIVITAS campaign in Suceava.

pollutants, although there are variations between fuels, with a marginal increase in CO2 emissions for the CNG buses in Potenza to be offset against the local air pollutant benefits.

• In combination with this the behavioural change measures have generally been suc-

cessful in achieving substantial changes in behaviour, with the resulting greenhouse gas reductions being easier to identify (due to their direct link to fuel use) with direct changes in local pollutant emission and consequent air quality impacts being harder to identify.

• For the access control schemes that have delivered significant reductions in local air pollutants there is a strong element of supporting measures in order to help the access control schemes reach their goals. This comes as a mixture of higher level, long term policy formation and intervention (outside the formal SMILE project definition) and measures specifically defined and delivered within SMILE. Examples include:

• The policy decision in Malmö to invest in gas powered buses within the urban bus fleet which has been implemented over a number of years to ensure complete fleet compliance.

• The subsequent upgrade to vehicle gas in Malmö, done in conjunction with SMILE, so that 50% of the gas requirement for public transport is now from renewable sources.

• Part-funding for retrofitting of vehicles that use the Norwich Low Emission Zone with particulate traps and / or selective catalytic reduction devices, so that they meet the NOx and particulate emission criteria laid down for access to the zone.

• Eco-driving training to 90 bus drivers who regularly work on services passing through the Norwich LEZ.

• Research into biodiesel and the impact of NOx levels within the Norwich LEZ.

• Investment in the new public transport vehicles in Suceava and their subsequent conversion to LPG using SMILE co-funding.

• Supporting investments in public transport priority measures in Suceava.

The effect on the sustainable transport system of access control measures, which are effectively detailed policy interventions that dictate a public and market response, is comparable to that of the other group of pure policy interventions – the pricing measures. Again to be successful these need to be aligned with what is achievable within the local market. The intervention in Malmö which focused on clean vehicles was appropriately targeted because of the greater maturity of and greater financial support for the clean vehicle market in Sweden, and is likely to have a greater effect that had the measure been replicated in Norwich. The intervention in Norwich, which targeted fuel savings by promoting smaller cars was again appropriately targeted because it was adapted to local conditions and a mechanism that was available to be changed.

Many of the measures work in a synergistic way, as has been identified throughout the report. The ways that this will ultimately be felt for the types of measures implemented in CIVITAS SMILE are:

- (1) Reductions in car kilometres
- (2) Changes in modal shift to more sustainable modes
- (3) Lowering in atmospheric pollutant levels.

The problems with using these indicators directly are:

- within a city environment the scale of the intervention of a demonstration project is limited compared to the scale of the wider economy, which means that the effects, even of a relatively large project such as

SMILE, can be swamped by other changes to the transport system

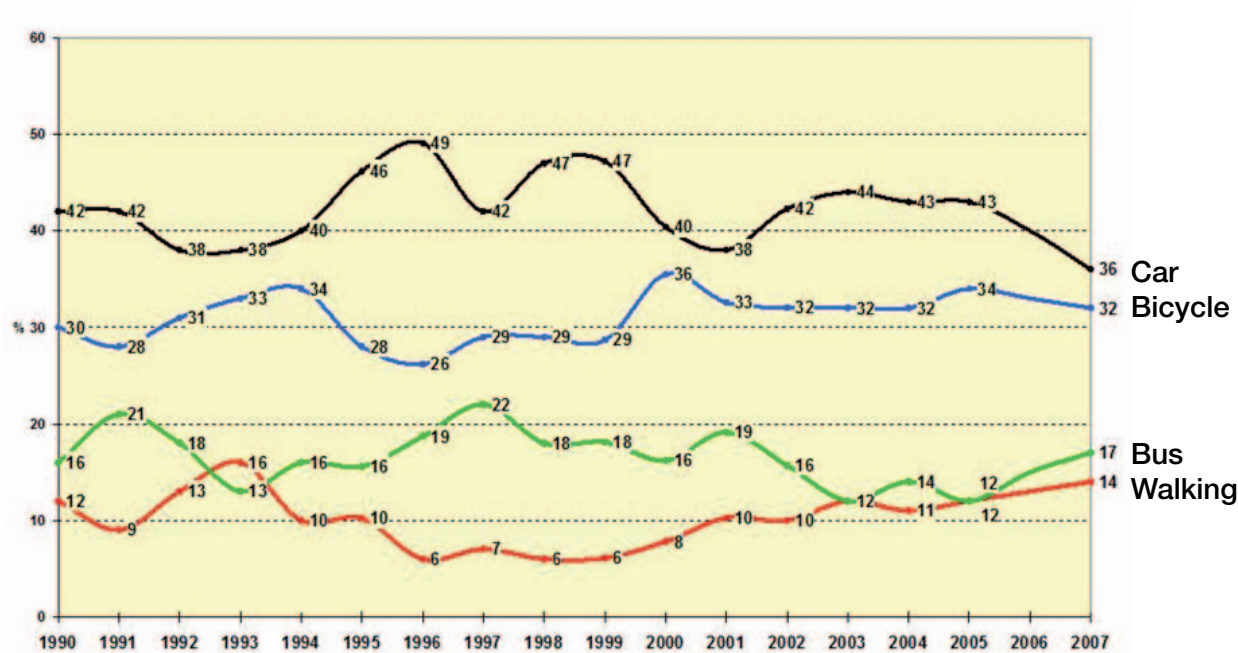
- these indicators are also directly related to changes in the wider economy; this influence has already been seen in Tallinn and Suceava where growing prosperity has led to increased car ownership and use, so driving modal share away from sustainable means. Similarly increasing economic prosperity and population have both been directly linked to increases in the overall demand for transport (both by people and goods) and hence increases in emissions.

Therefore SMILE is to some extent working against the macro level business as usual trend (except in times of recession) and at a level where the evaluation at a project would be subject to too many external variables to be able to provide definitive results.

That said the figure on the next page provides evidence from Malmö that the combination of the SMILE measures, with other policies and external factors acting on transport in the city is having the desired effect by illustrating the ongoing development of modal share in Malmö. The sample size is too small for statistical conclusions to be drawn, but is promising to note that car use has gone down by 7% from 2005 to 2007, when it reached its lowest point of 36% for the last 18 years. There is also a comparable increase in bus use of 5% for the same period (2005 to 2007), as well as an increase in walking and relatively stable share for cycling. A similar trend is picked up by the larger 5 yearly surveys conducted in 2003 and 2008 which have more statistical weight.

Time period	Number of passengers	Increase
Jan-04 to Dec-04	25 133 891	-----
Jan-05 to Dec-05	25 407 269	1,09%
Jan-06 to Dec-06	27 319 571	7,53%
Jan-07 to Dec-07	29 163 239	6,75%

Source: Skånetrafiken



Source: Skånetrafiken, annual telephone survey of 500 people, for work/school trips during the winter season

The fact that bus use has increased as shown in the figure above and confirmed in the table suggests that the bus related SMILE measures may have had a positive effect, although the biggest change to public transport in Malmö in recent years – the actual reorganisation of the bus routes rather than the marketing of the change – was not formally a SMILE project element.

Additionally, these data do not show the development of total travel in Malmö in the period to gauge the wider context, as total car kilometres travelled may actually also be rising.

The measures with the most significant quantified benefits were as follows:

- Based on the evaluation of the measures as implemented in SMILE, the five measures that appear to have contributed most to reducing CO2 emissions are:
- Measure 11.3, travel planning in Norwich, which delivered annual reductions of 1134 tonnes CO2;
- Measure 5.2, biogas on the net in Malmö,

which delivered annual reductions of 431 tonnes CO2 within the project period, but has inherent capacity to increase this to 1121 tonnes CO2 per annum;

- Measure 11.9, heavy eco-driving in Malmö, which delivered annual reductions of 634 tonnes CO2;
- Measure 5.4, sustainable biodiesel supply chain in Norwich which will deliver annual reductions of around 600 tonnes CO2 in the Anglian Bus fleet;
- Measure 7.2, influencing the choice of vehicle towards smaller and more fuel efficient vehicles in Norwich, which is a long term policy measure with the potential to reduce annual CO2 emissions by anywhere between 300 tonnes on a cautious scenario and 2742 tonnes on an optimistic scenario.
- The four measures, as implemented in SMILE, that appear to have contributed most to reducing local pollutants emissions (NOx and PM10) are:
- Measure 6.2, Low Emission Zone in Norwich, which delivered annual reductions of

10,000 kg NOx and 430 kg PM10;

- Measure 6.1, extension of the environmental zone in Malmö, which delivered annual reductions of 19,700 kg NOx and 370 kg PM10;
- Measure 5.6, renewal of the bus fleet to operate on LPG in Suceava, which delivered annual reductions of 6,163 kg NOx and 386 kg PM10;
- Measure 5.5, purchase of four CNG buses in Potenza, which is estimated to deliver annual reductions of 3,933 kg NOx and 63 kg PM10;

When considering cost effectiveness, in terms of CO2 emissions, for the measures where it was possible to quantify this, the most promising measures are:

- Measure 5.2, biogas on the net in Malmö;
- Measure 5.3, biogas HGVs in Malmö;
- Measure 11.9, heavy eco-driving in Malmö;

all of which have shown a cost reduction for the implementing partner in association with the CO2 reductions delivered by the measure. These measures have shown a win-win scenario within the cost effectiveness assessment because the cost reduction can be identified by the organisation responsible for making the investment within the project.

Two other measures, 11.3 (travel planning) and 11.4 (car pooling), both implemented in Norwich, have provided enough data to show that the overall cost for the full stakeholder group would be negative, so also delivering a win – win scenario. However, the cost savings that make this possible are the reduced fuel costs of the individuals who have participated and changed their behaviour, and which have not been captured directly in the cost effectiveness figures at the measure level.

Top CO₂ reducers

The five measures that appear to have contributed most to reducing CO₂ emissions are:

- Travel planning, Norwich (11.3)
- Biogas on the net, Malmö (5.2)
- Heavy EcoDriving, Malmö (11.9)
- Sustainable Biodiesel supply chain, Norwich (5.4)
- Influencing the choice of vehicles, Norwich (7.2)



Finally the policy measures 7.1 and 7.2, which involve the use of parking charge policies in Malmö and Norwich to influence public behaviour towards purchasing clean vehicles over a longer timescale, also appear to score well in cost effectiveness terms. This is in part due to the fact that the cost of implementing the change is largely borne by the individual rather than the implementing authority. However, because these measures are based on an investment on a rolling basis as the fleet is renewed and largely involve looking for incremental rather than step changes in purchasing patterns then the overall cost impact should be modest.

When looking at the cost effectiveness, in terms of local pollutant emissions, for the measures where it was possible to quantify this, the most promising measures are:

- Measure 5.5, purchase of four CNG buses in Potenza;
- Measure 5.3, biogas HGVs in Malmö;

both of which have shown a cost reduction for the implementing partner in association with the observed NOx / PM10 reductions delivered by the measure. However, measure 5.5 is associated with a 12.5% increase in CO2 emissions, and so should be viewed with caution unless this is con-



Cost effective. Skånemejerier’s biogas powered delivery vehicles are on of the CIVITAS SMILE measures that have proven to be most cost effective when it comes to reducing local emissions.

sidered acceptable due to acute local air quality problems or if an alternative way of reducing CO2 emissions can be found, for example the use of biogas instead of CNG.

Measure 5.7 – the promotion of LPG to commercial and fleet operators – also scores well from a cost effectiveness perspective, and vehicle owners should also benefit from a lower fuel cost, which is again not captured within the project level cost effectiveness assessment.

Of the policy measures 6.1 and 6.2 appear promising from a local authority perspective, but care must be taken in this regard because the investment in the technology required to meet the emission standards that are set for the zones is likely to be required of vehicle operators rather than the local authority, (although they may also be an operator of municipal vehicles that would need to meet the scheme criteria).

Finally, when considering cost effectiveness results it is important to note the way

in which investment costs are considered, because some organisations may be able to defer these costs to an annualised basis, as has been done in the project cost effectiveness analysis, whereas for others the size of a single investment may in itself be a barrier that cannot be overcome.

There are many examples of measures working together to meet common outcome objectives. Two prime examples are:

- the way that access restrictions link with other clean vehicle, clean fuel, car ownership and charging and travel information measures in the partner cities, as has been detailed earlier in this section;
- integration of public transport provision (route network), quality (e.g. safety and security), information (mobile internet and real time info), priority (infrastructure and telematics) and publicity.

The upscaling analyses have shown that there is significant potential for expansion of many, though not all, of the measures. This is in part due to the experimental nature of many of the measures where to fully implement would have been an excessive risk without a prior demonstration phase, but also because the finances needed for a full scale implementation are in many cases prohibitive unless the financial investment can be phased.

The importance of collaborative approaches has been clear throughout the project, from initial inception of the project and its measures through to delivery and evaluation. Partnerships have not always worked, as seen by the changes that became necessary in Potenza, with a change in public transport provider during the project. The approach required to working in partnership is perhaps one that is slightly different to the norm in the transport field, where a hierarchical, contractual arrangement is often more common.

A relationship that is perhaps more difficult is to get organisations that are not used to

working together to agree on making progress towards sustainable transport goals. This is the case for example when implementing voluntary workplace travel plans. The tensions in this type of working can be seen in comments from private sector organisations about the balance of investment and benefits lies, but part of the route to success in this case is to identify the benefits and motivating factors for organisations to participate; this could lead to the development of a business case for participation, which will always carry more weight for a private sector organisation than corporate and social responsibility on its own. (This process mirrors the need to understand the motivational aspects of a travel behaviour campaign aimed at individuals, identifying the different things that will make a difference to that specific person.)

CIVITAS is primarily focused on urban transport. However, it is very difficult to consider the urban transport in isolation from the wider regional perspective. This is reflected both in the formation of the SMILE partnership, which includes a range of regional authorities and one regional transport authority, and also in the measures, many of which have a regional rather than purely urban perspective.

The value of communication and information measures is often overlooked in terms of how they can help to make best use of existing services and infrastructure. The experiences of implementing the measures in workpackage 11 clearly addresses this and shows, again, the benefit that can come from making sure that people base their travel decisions on the full facts. However, the temptation to rely solely on information and marketing also needs to be resisted. People will only buy any service or product if it works; and in the transport this relies on a sustainable transport option being present that meets several other basic criteria, including convenience, cost, reliability safety etc. As in so many aspects of this project and these conclusions we

Upscaling

The upscaling analyses have shown that there is significant potential for expansion of many, though not all, of the measures.



again reach a position where no one single solution is the panacea to sustainable transport – a full integrated, approach is needed – as if CIVITAS were expanded 100 times so that instead of being a demonstration programme it were the norm!

There are clear differences in the fiscal regimes that exist between the countries / cities, which have a clear influence on the way in which measures can be implemented and what can be pursued. For example:

- One of the most promising measures in Malmö has been the deployment of biogas infrastructure for refuelling vehicles either directly or via use of the gas grid as a transfer means. However, this is dependent upon the level of financial support (reduced fuel duty) for this renewable fuel according to the national fiscal regime, and certainly in the UK this measure would not have been treated in a comparable manner had it been implemented in Norwich during the SMILE contract period. Similar issues would mean that in the UK biodiesel at blends higher than 5% blend are discouraged in the bus fleet due to the duty regime, even though the SMILE research has indicated that a 20% blend provides the best balance between local air quality pollutants, operational issues and greenhouse gas emissions.
- It appears to be accepted practice in Italy for demand responsive transport services to be granted local subsidy to ensure provision of inclusive public transport to the remote parts of the regions. This comes at

a significant cost (the estimate in Potenza was annual operating costs of around €100,000), which would be seen as difficult to justify in other locations where there are different public expectations and demands on local authority budgets.

Dissemination and use

The dissemination of CIVITAS SMILE has been coordinated from Norfolk County Council and Transport & Travel Research (TTR), with help from University of West of England. They have planned the overall dissemination activities and been in charge of the production of newsletters and updates on the CIVITAS web page.

In each city a local dissemination manager has been appointed, in charge of both liaising with the dissemination coordination team and disseminating the project locally. Measure leaders have also disseminated the individual measures dependant on measure needs and arisen opportunities.

Continuous follow up of web page hits have indicated a solid interest for the SMILE measures, much due to the steady flow of news articles published there.

The target groups for the various reports produced within the project are by necessity a select few; policy makers of all levels, civil servants and interested people within the transport sector. Sometimes the results have also been of enough significance to warrant a press statement giving public knowledge of some of the involved measures. Most notable is the recognition the Norwich based measure to implement travel plans had when Tony Blair, the then Prime Minister of Britain, praised the effort in a public speech. In Malmö there has been some public interest regarding the change in modal split which made it possible to tell the SMILE story to a wider audience.

In Suceava and Potenza CIVITAS has been used to a greater extent to support the individual measures, particularly when



organising information days and such like events.

By a Norwich initiative a specific CIVITAS UK task force has been established re-sounding in both media and more transport sector specific audiences, e.g. for giving speeches at various conferences. In fact, many project participants are highly sought after speakers at conferences and workshops, even to such exotic locations as Tokyo, Japan.

Summary of Plan for using and disseminating the knowledge

The plan for using and disseminating the knowledge is a report divided into three sections: exploitable knowledge and its A



use, dissemination of knowledge and publishable results.

The use of knowledge by the different partners can be summarised as follows:

- The CIVITAS SMILE city partners will use the knowledge generated from the project to improve the sustainability of their transport networks, and the transport services that they provide for citizens and stakeholders;
- Academic partners will use the research outputs to contribute to the advancement of knowledge and good practice in the specific area of sustainable urban mobility, and to wider themes where appropriate;
- Private transport consultancies will use the research outputs to provide better support and advice to their clients; and
- Private sector suppliers and operators will use knowledge from the project to develop goods and services which contribute in direct and indirect ways towards a more sustainable transport system, including car clubs, renewable fuels, improved public transport services and improved freight services.

The European Commission, as the end client, is a key user of these results in shaping their future policies and is expected as owner of the research, to use the CIVITAS SMILE policy recommendations and recommendations for further research to inform decisions.

During the course of the project several informational products have been developed, measure facts sheets that have been continuously updated, five newsletters, a brochure and posters. All these are available at the CIVITAS initiative web page. Also the final reports will become available at this web page once approved.

Other factors include the CIVITAS plus projects VANGUARD and POINTER as well as the CIVITAS CATALIST project. They will all help disseminating the results from SMILE.

Future plans for upscaling of measures

The upscaling analyses have shown that there is significant potential for expansion of many, though not all, of the measures. This is in part due to the experimental nature of many of the measures where to fully implement would have been an excessive risk without a prior demonstration phase, but also because the finances needed for a full scale implementation are in many cases prohibitive unless the financial investment can be phased.

A few measures have also already been implemented at full scale, e.g. the clean vehicles and alternative fuel measures and the automatic stop calls in Tallinn or the surveillance cameras on all city buses in Malmö. A number of others are worth mentioning however.

The biogas effort in Malmö will be further upscaled with a 300 GWh/year production plant (cf the 20 GWh/year upgrading plant within SMILE) and the Scania region are estimating a total of 2,5 TWh will be produced annually by 2020. Of course, accessibility is also an issue and more pump stations are being planned. Infrastructure for biogas is also being planned for in both Suceava and Norwich. The low emission zones in Malmö, Norwich and Suceava also show potential for either expansion or tighter regulation.

Further sites for reconstructions similar to the rail station interchange in Norwich

have already been identified and there is room for about 100 more ticket vending machines in key locations, although the number of ticket sales would vary depending on location.

A few of the campaign oriented measures demonstrates the potential benefit from downscaling sometimes to increase the accuracy of the target group and to customise the message conveyed.

The uptake of the car sharing clubs is of course also a subject for upscaling as this is at the very core of the business concept. The same goes for the consolidation schemes in Malmö and Norwich which need to increase uptake before becoming a viable scheme.

Linking mobility management activities to other measures is also a key success factor. Priority lanes for public transport in Tallinn could encompass all main access routes.

A work package for work package exposition of upscaling can be found in the evaluation report available on the CIVITAS initiative web page.



City Car Club in Norwich

A growing market - Upscaling of biogas projects

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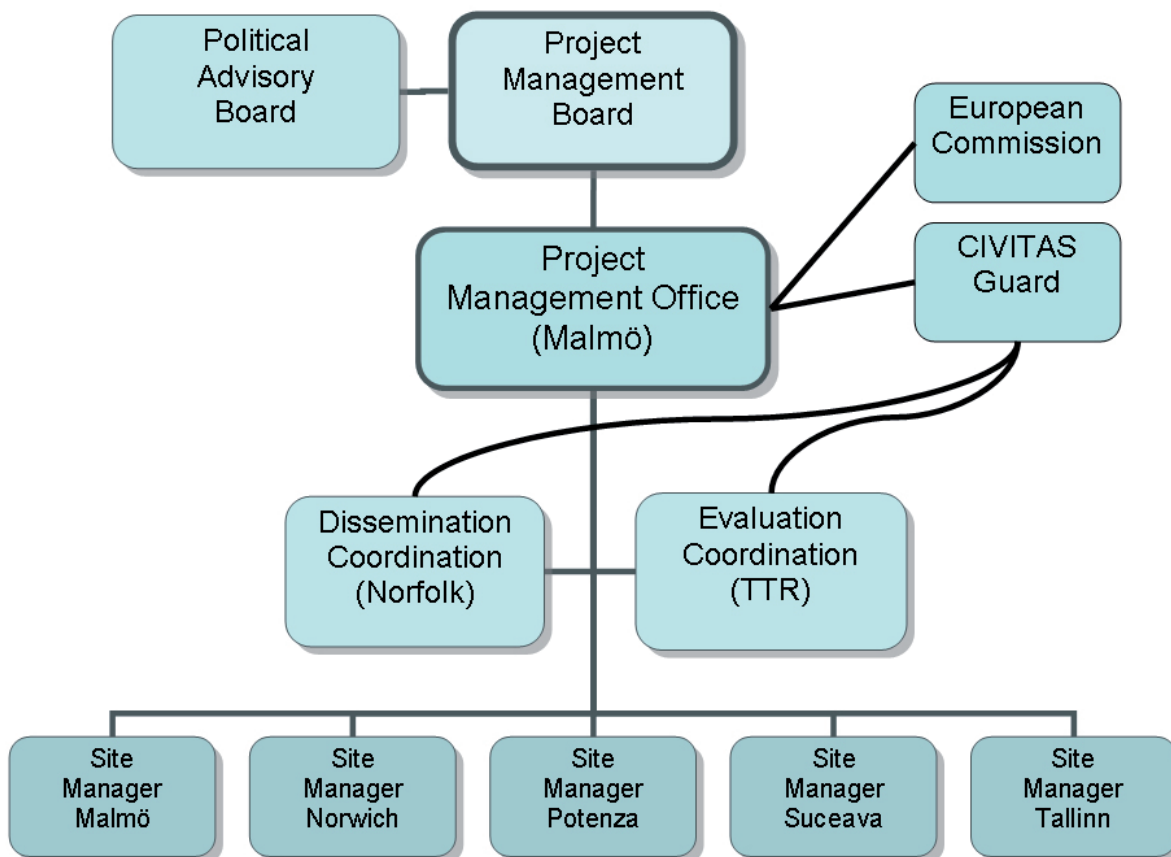
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Partners involved

The SMILE partnership was formed by joining two applications to one giving city of Malmö the role as project coordinator and Norfolk CC and TTR the role as dissemination and evaluation coordinators.

The partnership consisted of public and regional authorities being the coordinating factor in each site. In addition to that each site, except Suceava, had a local partnership with universities, SMEs and local public transport operators, in reality an extended public-private partnership. Sometimes this is referred to as a Triple Helix model for cooperation and it has turned out to be an efficient one. Each type of partner lifts the others, increasing the effectiveness of the measures taken within the project.

Flowchart of project structure



City profiles

Malmö

Malmö is Sweden's third largest city with a population of 276,000 that from medieval roots has developed into a thriving industrial and trade centre. During the eighties and nineties Malmö underwent a period of economic recession and high unemployment but in the new millennium the city is full of initiative and developing fast. During the last decade Malmö has consciously reinvented itself as a sustainable multi-cultural European city of the future with major developments such as the opening of Malmö University, the construction of the Öresund Bridge to Copenhagen and urban renewal including attractive new housing and commercial areas. The Western harbour, an award-winning ecological housing area, finished in 2001 was a major European housing expo Bo01. The area is showing fantastic results in terms of housing energy consumption and design and in addition to that proudly presents the "Turning Torso" by the architect Santiago Calatrava.



Malmö stad

A major environmental adaptation of the city's transport infrastructure is currently under development based around the construction of an underground/overground rail system linking into the transport infrastructure of both Malmö and Copenhagen. This major change in the transport infrastructure of the city will be a major turning point in communications in the city, completing the transport integration of the Malmö-Copenhagen metropolis and forming a focus for a reprioritizing of communications to tackle rising private car use. Early successes with clean and renewable fuels in the bus and city vehicle fleet, car-sharing, rational distribution, cycling and pedestrians will be built on in a long-term strategy to create a human-scale integrated sustainable transport system central to the sustainable city.

Norwich



The City of Norwich, situated in the east of England, is the administrative centre of the County of Norfolk. It covers some 50km² with a population of about 120,000, although this increases to 250,000 if the immediately adjacent built up area lying outside the city boundary is taken into account. Whilst the city itself is relatively compact, it is built on a radial pattern, and with a relatively large but low-density catchment movement patterns are essentially disparate. Reliance on car-based travel, particularly beyond the urban area, is very high. The City Centre is highly accessible by non-car modes of transport. Public transport services within the Norwich Area focus on the City Centre. A significant proportion of the urban population has access to a 20-minute (or better) service. Park and Ride services increasingly provide long stay car parking beyond the urban edge, reducing the need for car travel within the urban area.

Potenza



Potenza, in southern Italy is situated 820 metres above sea level, on a mountain range next to the Basento River. It was only in the twenties that Potenza outgrew its walled perimeter, expanding on the lower part of the territory, towards the Basento valley. In 1959 the Industrial Consortium of Potenza, established by public organisations, local authorities, financial institutions and big industrial firms, introduced a number of different activities within the provincial territory. The town steadily grew during the second half of the twentieth century until the destructive earthquake in 1980.

After about twenty years of reconstruction, Potenza is nowadays facing a huge process of renewal, increasing commercial activities, particularly developing industry and presently modernising industrial sites in the sectors of food, metal, electronics, shoes, clothing and plastic materials. At the same time, the Potenza authorities are paying

close attention to sustainable development with particular attention being paid to transport. The ambitious local policy goal is to realise the vision of a vital and attractive city with a sustainable, safe and flexible traffic system that enables all citizens to lead a good and active life independently of private car ownership and use. The city has one of the biggest pedestrian mobility support systems within the EU, with elevators and escalators leading to the historical centre and linked to a car park interchange which is close to the main accesses. Public transport is being overhauled and an integrated scheme under development at regional level will allow people to reach the city by public transport. Within the CIVITAS framework a Mobility Centre will be set up that will coordinate all the activities linked to sustainable mobility and increase awareness and participation of citizens and visitors.

Suceava



Suceava City is in the north-eastern part of Romania, 450km from Bucharest, and has been the capital of Suceava County since 1388. The municipality of Suceava, with a surface area of 52.1km² is located on the Suceava riverside, in a highland area, 400m above sea level. There are 118,500 inhabitants in the town and suburban areas. Suceava City is located at an important road junction, crossed by two European roads (the European corridor 9 of TINA network is situated near the city), five national roads and four county roads. The historical centre of Suceava includes many monuments and orthodox churches and is declared a UNESCO world heritage site.

Since 1999, the northern part of the country, where Suceava is situated, has been involved in a government regeneration scheme to boost the local economy and promote foreign investment. One important aspect of this regeneration is the improvement of the transport network. Suceava began implementing clean vehicles and quality public transport services within the

ALTERECO Project in 2000. The municipality owns the local transport company, which provides public transport in the city. The municipality of Suceava has formed partnerships with Merseytravel and CTP in several projects (ALTERECO, CATCH) concerning measures to reduce the impact of traffic and improve public transport.

Tallinn



The City of Tallinn is the capital of Estonia and at the centre of cultural, economic and higher education activities in the country. With 400,000 inhabitants, Tallinn is also the largest city in Estonia. Since Estonia gained independence in 1991 Tallinn has undergone considerable change. An economic downturn and then rapid economic growth have imposed large structural changes on the city and its transport system. The number of private cars has been increasing rapidly and the public transport network has not developed at the same pace as the private modes and faces huge competition. Between 1990 and 2000 public transport use fell from 250 to 94 million and the modal share of the public transport in Tallinn decreased from 77% to 31%.

The decline in the quality of public transport has affected virtually everybody in the city, but most of all women, children and elderly people who are most dependent on it. The massive shift to private car use has also damaged the city environment. The old part of the city has been declared a UNESCO world heritage site and it is in urgent need of actions to prevent damage caused by traffic. The existing public transport network (bus, trolleys, tramways and suburban trains) needs to be renewed and extended so as to support sustainable urban development.



Annexes

Annex 1 Policy recommendations

The policy recommendations section has been structured to follow the headings agreed for contributions to the CIVITAS final conference held in Toulouse in January 2009. However, an additional heading ‘Technical Recommendations’ has been added to provide guidance based on the technical conclusions.

Throughout these recommendations it is important to remember that mobility is a derived activity; travel is something that people do in order to reach some other objective, even if it is merely going for a walk or a drive, then they do so in order to gain satisfaction and pleasure or to derive a health benefit from the activity. Because of this, issues around transport are affected by other aspects. For example, economic cycles and other policy decisions as well as personal preferences and personal financial considerations all combine to influence overall levels of transport demand, the degree to which this demand can be met, the distances that need to be travelled and the choices over mode used and whether a journey is actually made. This all means that transport policy cannot be viewed in isolation from other aspects of public policy, as has been noted earlier in this report and is reflected in the links with for example, land use policy development within the SMILE cities.

Provision of Political, Policy and Regulatory Support

Political backing has been shown to be a key success factor in delivering the innovative sustainable transport measures within SMILE. Without such backing it can be difficult to mobilise the effort, co-operation or budget necessary to break from the norm. This is also important when attempting to get collaboration from different departments even within the lead organisation, as was found in Malmö when attempting to release staff to attend eco-driving training. Therefore:

- Clear, unambiguous direction from senior staff and politicians is needed about the priority to be given to clean, sustainable transport.

It is clear that certain institutional frameworks can help with this, for example in the

situation where mayoral authority is the key to action within a municipality.

Similarly, national and international legislation that places a statutory duty to meet certain targets or follow certain procedures ensures that issues are prioritised.

Relevant examples of this include:

- the local air quality regulations that place responsibility for monitoring and action on the local authority
- the recent proposals that public institutions should consider full life-cycle costs and environmental impacts when purchasing or leasing vehicles or specifying transport services.

These actions are in direct coherence and synergy with the priorities and activities of SMILE.

Broader regulation and targets are also important, as they can influence the way a measure can be implemented. The influence of regulations, sometimes in seemingly unrelated areas, can have an impact. This range from European legislation, where the bio fuels directive has been a driving force for low blend bio fuels, but has not necessarily helped high blend trials or differentiated between fuels on sustainability grounds, to local planning conditions, where the terms and costs of licensing regulations were enough make a pedestrianisation scheme in Norwich less favourable for the local traders. National air quality targets that were applied in central Norwich potentially presented a barrier to the integration of bio fuels and vehicle-based emissions reduction technology within the low emission zone. Thankfully the hard work of the University of East Anglia to conduct the necessary fundamental saw this combination of fuel and technologies come to fruition to provide maximum environmental benefit.

- Ideally innovative demonstration projects such as CIVITAS can help to drive and

form new national standards, as has been the case with Malmo participating with the other main cities in defining a Swedish standard for low emission zones.

The presence of a well planned and documented transport and environmental strategy has been shown to be beneficial by providing a structure for the inclusion of innovative measures, providing that the structure is well integrated across a range of areas such as land use planning, environment and transport and flexible enough to allow variation and innovation.

It is clear that this was the case in both of SMILE's main cities (Malmo and Norwich) and this was undoubtedly one of the factors that initially facilitated the successful bids from these cities and then enabled them to implement the wide range of actions required of them within the project.

During the course of the projects other SMILE cities, notably Suceava and more recently Potenza have been attempting to learn and develop appropriate strategy frameworks to learn from these experiences.

- The development of such policy frameworks and associated delivery strategies is included in some national legislation. It is recommended that where this is not the case then action is taken either at national level to develop such legislation or that cities and city regions take the initiative and develop such plans.

It is clear that the starting point of the sites is crucial in determining what measures and approach to implementation are appropriate.

The starting point of the various sites was very different in terms of both current focus of sustainable transport and the direction of future development. Because of this it is necessary to establish a clear current status assessment and a coherent set of objectives at political, strategic and functional levels within which the developments are

made. For the SMILE cities this might have been something on the lines of:

- Malmo - very strong on public transport and cycling and looking to build on these strengths and generate wider integration
- Norwich - good public transport and a flagship park and ride system, again looking to build on these strength and generate wider integration
- Tallinn – comprehensive, but low quality public transport network which formed the focus of the measures with a general public transport upgrade and additional focus on key corridors
- Suceava – building on previous focus to build a sustainable city centre, with a focus on an overhaul of the public transport service provision and regulation and extension of the low emission zone
- Potenza – existing city centre traffic restrictions, but poor local public transport and high car dependency requiring a public transport upgrade and a strong mobility management intervention

For both Tallinn and Suceava, which as cities representing the new member states were formerly members of the eastern economic bloc, a balance had to be struck between the pace and extent of liberalisation that is allowed and the degree of regulation that is required in order to ensure a sustainable outcome.

In both cases it would appear that the rate of change has been immense, linked to rapid economic changes. This can result in potentially severe transport and environmental problems, which a programme such as CIVITAS may only be able to mitigate rather than prevent, such is the strength and speed of the change and the size of the investment required. However this situation also represents an opportunity and both Tallinn and Suceava have shown strong desire and capability to address the issues as they have arisen and to put in

place measures that should stand the city in good stead for the long term, rather than looking for short term solutions.

In both cases, also, a strong political control and regulation of the transport market still exist (for Suceava this was reviewed and extended within SMILE) in order to provide the necessary level of planning and control.

In addition to the variability in policy / action statuses, the degree of backing in terms of traffic and land use modelling capability, transport and environmental monitoring and planning / parking control varies considerably and the lower level of expertise and systems in Tallinn and Suceava has been identified as a key area for improvement.

- These aspects (traffic and land use modelling capability, transport and environmental monitoring and planning / parking control) need to be a focus for development for many cities in the new member states if the support systems that will allow the development of appropriate transport policy frameworks and strategies as recommended previously are to be in place.

Availability of Financial Means and Economic Logic

Provision of finance for innovative measures has been a key reason for the cities to participate in CIVITAS SMILE.

The core funding available to local authorities tends to be for mainstream activities and those which have already got central government or local policy approval. Depending on the internal rules in place this may make identification of co-funding sources, whether internal or external, difficult. This, in turn, makes it difficult for cities to progress experimental or promising initiatives without some form of funding to allow an element of controlled risk or experimentation.

CIVITAS has been important to keep pushi-

ng the boundaries of innovative measures in the cities, either speeding up implementation of new ideas, or allowing innovative measures to be tested that otherwise would not be tested. The key step pushing on from such demonstrations is to ensure that successful measures have a business plan in place so that the benefits can be exploited and brought into the mainstream. This requires long term planning, for example using the approach taken in the Norwich freight consolidation centre, where the measure was set up through the design and tendering stage to ensure the ongoing liability is shared with a private sector operator.

In order for measures to reach the mainstream a justification needs to be established from the evaluation of the measures. In most cases this will involve a favourable cost effectiveness or cost benefit calculation. However, circumstances may exist where the political benefit from a measure may require continuation or expansion of a measure, irrespective of this. Whether this can be achieved depends on the degree of flexibility in the subsequent funding regime to be used (e.g. local / national sources).

The degree to which externalities and cost savings can be factored into the financial calculations on which these decisions are based is crucial to the overall case. Within the evaluation we have identified several cases where a direct financial benefit accrues to the project partners as a result of the measure. We have also identified cases where there is either a direct financial benefit but the systems do not allow it to be isolated / quantified or where the benefit is accrued by an individual or organisation that is not the implementation organisation.. This raises a number of issues related to the balance of investment vs. benefit in sustainable transport measures. Three particular instances that have been noted in SMILE are:

- Where the investment is made by a public sector organisation and there is a direct or indirect financial benefit to those citizens that participate

This seems entirely appropriate and such benefits are a successful way of marketing sustainable travel initiatives to the public and rewarding them for making positive societal choices.

- Where the investment is made by a public sector organisation and there is a direct or indirect financial benefit to a different public sector organisation

This type of situation has been shown to lead to problems in some cases, missed opportunities in others, as well as some successes. For example, the collaborative working between City of Malmo and Skånetrafiken on many of the public transport and mobility measures has been achieved by identifying the mutual benefit of investing in infrastructure, service improvement and marketing, with ticket revenue being the obvious financial outcome, which should permit further service improvements – leading to a virtuous circle.

A similar pattern has been seen in Suceava, where the introduction of a new regulatory regime for private minibuses has both generated a market opportunity for the public transport company, but also generated an additional income stream for the municipality which it has then been able to invest into new buses.

However, the situation is not always replicable – in Norwich it proved impossible to persuade the main hospital to provide sustainable travel advice for people attending outpatients appointments, even though the health sector would be a long term beneficiary of the improved health outcomes from a change to more active travel and has to a certain degree contributed to access problems by virtue of building a consolidated hospital site at the edge of the city, which is less well linked to sustainable transport provision.

- Where the investment is made by a private sector organisation (either voluntarily or as a result of local legislation) and there is an environmental benefit for the wider population.

This has been raised by several organisations asking why as a private sector organisation they should pay the full investment cost when the benefits are felt primarily by society at large as represented by the local public authority. Where co-financing through programmes such as CIVITAS are in place then this complaint can be mitigated, though not necessarily removed, depending on the levels of grant / co-financing that are available.

- This highlights the need to find ways to work across sectors, both in terms of the public and private sectors and also within the public policy framework so that the full implications of decisions can be understood. For example, if the full transport and environmental impacts of a hospital or school relocation were included in the bottom line calculation would the outcome be the same?

We have noted that there are clear differences in the fiscal regimes that exist between the countries / cities, which have a clear influence on the way in which measures can be implemented and what can be pursued.

- For the results to be truly transferable between cities / countries such fiscal differences need to be minimised because there is not only a direct effect, but a much more fundamental effect in terms of technology development and availability which takes time to overcome, even when changes are made.

Creation of Institutional Cooperation and Stakeholder Involvement

Institutional co-operation has been a common and often necessary theme throughout the SMILE measures. In the vast majority of cases it would be impossible for a single organisation to implement a CIVITAS measure because of cost or knowledge requirements linked to its innovative nature. In some cases the number of collaborating organisations has approached double figures! The basis upon which this co-operation happens is crucial and having

the appropriate structures in place appears to help the necessary collaborations to be set up and exploited. This is particularly the case where there is a specific public/sustainable transport agency and then a number of contracted operators in place whose responsibility it is to provide the specified services.

There are many examples from SMILE that could be quoted:

Suceava – municipality and local transport company who collaborated to provide new vehicles and routes; municipality and schools and businesses for both sustainable mobility promotion and new mobility management actions.

Malmo – city authority and regional transport authority for many public transport and mobility measures; city authority and private sector businesses for eco-driving, car sharing, biogas and measures aimed at goods transport in and around the city.

Norwich – collaboration between city and county councils as joint partners with interlinked statutory responsibilities; direct liaison between city/county council and bus operators; liaison with private sector freight transport operators; liaison with schools, University of East Anglia and other businesses for mobility management / travel planning.

Potenza - collaboration between city and regional authorities in relation to initial mobility management/travel planning; liaison with businesses and other main institutions about subsequent mobility management / travel planning.

Tallinn – where again there were three service operators (both publicly and privately owned) providing the public transport on behalf of the municipality under contract.

The previous points about institutional structures and the way in which grant support programmes function in individual countries are clearly important to un-

derstand the issues that need to be addressed to make such partnerships work. Also important are clear understandings of the objectives of both the individual organisations and the project to be undertaken in order to avoid uncertainty and conflict part way through project delivery.

Although organisations involved in delivering the measures are working together to meet a common set of objectives, there will often be a contractual arrangement between commissioning organisation (often in the public sector) and a supplier – usually in the private sector.

- The scope of the contract for large scale, technical tenders is often wide ranging and complex. In such situations there needs to be thorough scoping of the technical requirements. Contracting organisations should ensure they are properly prepared for the procedures that this will entail, and allow for this in their implementation timetables. They will also need to have an appropriate level of in-house knowledge (or seek to obtain such knowledge), to ensure the right technical specification in tenders and to judge potential subcontractors' expertise.

When developing partnerships between public and private sector organisations the issue of intellectual property right can be a particular issue that needs to be carefully addressed. Within SMILE one of the telematics measures in Norwich was severely hampered because of the terms of an agreement that had been set up prior to SMILE. This pre-existing agreement prevented access to what would have been expected to be public information for uses other than those initially conceived without the payment of further significant access charges. This necessitated extensive negotiations, delays and in the end use of an alternative approach to the task and is a lesson for those specifying such agreements in future not to overlook the future potential of IT systems.

- On a related note, IT system compatibility is a particular issue which also often causes problems and has been an issue

from time to time in Malmö and Norwich as efforts have been made to use information from several sources and make it available in a consistent, user friendly way through a single portal. Where national and international standards can help with this type of issue, even if they are advisory rather than statutory they should be followed in order to avoid such compatibility issues.

One of the most important legacies of the SMILE project will be the different institutional culture in the cities, particularly Malmö and Norwich, where there has been a transformation in the way in which the softer elements of sustainable transport such as information measures and travel planning are viewed. This helps not only bring different teams within the same organisation together, but also leads to the cross-fertilisation of ideas.

Increase of User Participation and Awareness

The role of user participation and awareness is recognised both by the importance given to dissemination of the project at the local level, and also by the existence of workpackage 11 which includes a number of communication based measures designed to raise awareness of and change behaviour towards sustainable travel.

The approach to local dissemination has varied between sites with some using a range of local media such as radio, television and newspapers; whereas other sites (particularly Potenza and Suceava) have approached it more as a detailed consultation exercise. Both approaches appear valid, as they were chosen to match the available facilities and user needs.

Without user awareness and participation the innovative measures are effectively pointless. It has long been recognised that even major infrastructure projects can be enhanced in terms of effectiveness through an associated introductory information campaign. The importance of such communications increases by a disproportio-

nately large amount for many of the measures within CIVITAS which are effectively support measures to enhance existing infrastructure in one form or another.

The role of measures such as travel planning has been shown to have induced a major change in institutional perceptions in both Malmö and Norwich. This is not least due to the huge success of these measures, particularly in Norwich. This is shown by the contrast between the situation before SMILE when it was “incredibly difficult” to get transport engineers to engage with soft measures such as travel planning, to the end of SMILE when other staff involved in working groups and also coming to travel planning professionals for advice and colleagues in Development Control have been heard talking in the office about cycling routes as if they are serious about getting people out of cars. This will undoubtedly feed through to other policy measures and leave as a project legacy a different approach to these issues.

The potential for well-designed and targeted communication actions is easily demonstrated by two examples:

The first is from Malmö, where the Skånetrafikerna campaign “Skånetrafikerna for you” established a work-based targeted initiative had a very strong immediate impact and also a substantial lasting impact on travel behaviour for participating employees at a number of organisations. The key to this was to establish clearly the needs to the potential public transport users, make a clear offer of incentives to switch to use of public transport and in parallel with this develop a long lasting relationship between Skånetrafikerna and their new customers.

The second example is from Norwich, where the County Council’s sustainable transport team established a new collaboration with, amongst other organisations, a group of independent schools in the city centre. The independent schools tend to have a much larger travel to school distance than normal, with many children travelling in from outlying villages. This opened

the opportunity to exploit the existing Park and Ride network, and with the introduction of a new ticket structure, a significant modal shift was achieved for the final leg of the journey to school i.e. within the urban area.

- These measures emphasise the need to properly research user needs – a stage that is often omitted due to budget restrictions or eagerness to follow a proposed idea – before attempting to run an awareness / behavioural change campaign, so that it can identify the individual motivating factors and so maximise success.

This approach is taken to its logical extension in the application of personalised travel planning, which has also been applied in Norwich in the area around the University of East Anglia.

Technical Recommendations

The disappointing results from the freight measures highlight a particular issue that needs to be considered. CIVITAS and other projects often try to isolate measures within the city context, and there is often talk of urban freight initiatives and city freight schemes. However, this ignores the fact that the current economic system means that freight transport needs to be considered at a level that is broader than the individual urban level. Decisions that govern the movement of freight in our cities are often taken in locations far from that city, possibly in other countries. Similarly the vehicles that conduct the transport are often based at depots far from the urban area where land and labour is cheaper. This existing framework cannot be ignored even for urban freight consolidation schemes, which would introduce a break in the chain at the urban boundary, because that break in the chain cannot be a discontinuity that affects the economic effectiveness of the distribution operation.

The evaluation of individual measures has shown that there is scope with existing clean vehicle and fuel technologies to

reduce emissions of both locally harmful pollutants, but also life-cycle CO₂ emissions if bio fuels from sustainable sources are used, particularly those like biogas that are produced from waste. However, the indication is also that the combination of soft measures to modify travel choices and overall travel demand together with strong policy steers at all levels (such as low emission zones, further tightening of vehicle CO₂ standards, fiscal incentives to more fuel efficient and less polluting vehicles etc) will be needed as a package in order to meet our future environmental goals. In some parts there is a temptation to rely solely on a technical fix over the next 40 years, based on the assumption that the energy supply can be decarbonised. Whilst this might be the case, there is an inherent risk in relying on technologies that are not yet close to being developed. In the meantime there is an opportunity to start making the necessary changes to personal mobility behaviour, attitudes and expectations that will in all probability be needed anyway as part of any package for a sustainable future.

Transferability of measures is not guaranteed in exactly the same format because of variations in cultural, social and economic situations and contexts. For this reason it is important that adequate time, effort and resources are allowed for full research, motivational assessment and testing for many of the measures that are constituent parts of the SMILE project. Such steps should be inherent for many of the measures, particularly those that rely upon a change of behaviour by either an individual or an institution / company.

From a technical perspective two measures appear not to have worked as planned – measure 12.2 which involved the installation of a traffic monitoring and signal optimisation system and measure 10.1 – the freight driver support system – which was scaled back from a demonstration to a technical development project because of problems with the dynamic planning and scheduling element of the system. Both these measures appear to have potential

to deliver positive benefits in their areas of application and so would be worthy of further, well monitored technical development. (Although measure 12.2 might be expected to be mature technology by now unless a particularly innovative algorithm is at the route of the problem.)

Two other measures that have not performed as well as might have been expected are measure 11.5 (individual travel planning) which did not produce the level of behavioural change observed in other similar projects and 10.5 the freight consolidation centre, which needed increased profile and regulation of the local access for freight vehicles to drive uptake

Annex 4 List of measures implemented

CIVITAS 2 area	Measures	Site
Energy-efficient, cost-effective and clean vehicle fleets and the necessary energy infrastructure.	5.1 Clean municipal fleet	Malmö
	5.2 Biogas on the net	Malmö
	5.3 Clean heavy vehicles with CO ₂ cooler	Malmö
	5.4 Alternative fuel vehicle fleets	Norwich
	5.5 Introduce clean vehicles in a large fleet of urban buses	Potenza
	5.6 Alternative fuel bus fleet	Suceava
	5.7 Promotion of alternative fuels in the public and private sector	Suceava
	5.8 Environmentally adopted cars (<i>new measure</i>)	Malmö
Demand management strategies based upon access restrictions	6.1 Extended environmental zone for heavy vehicle and enforcement	Malmö
	6.2 Introduction of a Low Emission Zone (LEZ)	Norwich
	6.3 Introduction of time controlled access restrictions	Norwich
	6.4 Extension of low emission zone	Suceava
Demand management and revenue raising strategies based upon integrated pricing strategies	7.1 Marketing of clean vehicles by subsidised parking	Malmö
	7.2 Influencing the choice of vehicle towards smaller and more fuel efficient vehicles	Norwich
Stimulation of collective passenger transport and its quality of service.	8.1 Marketing of new bus route system	Malmö
	8.2 Improved security and safety on buses	Malmö
	8.3 Integration of cycling with public transport	Malmö
	8.4 Rail station interchange	Norwich
	8.5 On street ticket vending machines	Norwich
	8.6 Linking individual passenger transport information with healthcare appointments	Norwich
	8.7 Demand Responsive Transport System	Potenza
	8.8 Bus priority measures and other bus improvements	Suceava
	8.9 Improved Public Transport Information	Suceava
New forms of vehicle use and/or ownership and lifestyle.	9.1 Car sharing for business and private persons	Malmö
	9.2 Development of a car sharing club	Norwich
	9.3 Development of a car pooling	Potenza
New concepts for the distribution of goods.	10.1 Freight Driver Support (<i>new measure</i>)	Malmö
	10.2 Satellite based traffic management for SMEs	Malmö
	10.3 Development of Strategic Freight Holders Club to Deliver Improved Efficiency of Freight Operation in the City Area and Effect Improved Air Quality in Urban Areas	Norwich

	10.4 Priority access for clean goods vehicles	Norwich
	10.5 Urban transshipment centre	Norwich
	10.6 Goods delivery to Park & Ride Sites	Norwich
	10.7 Sustainable SME logistic for the food industry (<i>new measure</i>)	Malmö
Innovative ‘soft’ measures for managing mobility demand.	11.1 Managing mobility needs of private persons and business sector	Malmö
	11.2 Eco-driving for municipal employees	Malmö
	11.3 Travel Planning	Norwich
	11.4 Car-pooling	Norwich
	11.5 Individual travel advice	Norwich
	11.6 Mobility centre ¹	Potenza
	11.7 Information and awareness ²	Suceava
	11.8 Eco-driving for hospital employees (<i>new measure</i>)	Malmö
11.9 Heavy eco-driving (<i>new measure</i>)	Malmö	
Telematics	12.1 Use of real time applications for traveller services	Malmö
	12.2 Traffic monitoring	Malmö
	12.3 Mobile internet services in connection to bus information	Malmö
	12.4 Internet tool for traffic planning	Malmö
	12.5 Public transport priority system	Tallinn
	12.6 Automatic stop calls and information-signs in public transport vehicles ³	Tallinn
	12.7 Bus priority system	Malmö
	12.8 Customised traffic and travel information service for freight operators	Norwich
	12.9 Provision of real time passenger information	Norwich

¹ This measure has been redefined to cover 4 topics that were originally separate in the project proposal.

² Originally numbered 11.10 in the project proposal.

³ In Tallinn there are three types of public transport vehicles: buses, trolleybuses and trams

Annex 5 List of contractors

Malmö			
Name	Description	Measures	Contact details
Malmö stad (Co-ordinator, Site Manager)	City of Malmö Municipality. Participation through the Environment Department and the Streets and Parks Department	5.1, 6.1, 7.1, 8.3, 10.7, 11.1, 11.2, 12.2, 12.4, 12.7	www.malmo.se/smile +46-40-341000 Environment Department: Ms Dagmar Gormsen Streets and Parks Department Mr Magnus Fahl Address: SE-205 80 Malmö, Sweden
Skåne- trafiken	Local public transport company	8.1, 8.2, 11.1, 12.1, 12.3	www.skanetrafiken.se +46-451-288400 Ms Camilla Bakken Mr Krister Nordland Address: Andra Avenyn 7, SE-281 83 Hässleholm, Sweden
EON Gas Sverige AB	Local and regional supplier of natural and bio gas	5.2	www.eon.se +46-40-244700 Mr Staffan Ivarsson Adress: Nobelvägen 66, SE-212 15 MALMÖ, Sweden
Skåne- mejerier	Local and regional dairy company which also delivers its products to all retailers in Malmö	5.3	www.skanemejerier.se +46-40-142700 Mr Börje Olofsson Address: Boplatsgatan 9 213 76 MALMÖ
215 215 Transporter	Delivery firm using regular cars as well as heavy vehicles	10.2	www.215215.com 040-215215 Ms Ulrika Gunnarsson Address: Scheelegatan 5, SE-212 28 Malmö, Sweden
Sunfleet	Car sharing company	9.1	www.sunfleet.com +46-40-330774 Ms Christina Bjerke Address: Sunfleet/Hertz, Jörgen Kocksgatan 1B, SE 21120 Malmö, Sweden

Malmö			
Name	Description	Measures	Contact details
UMAS	Main hospital of Malmö. Participation through its transport unit which caters for deliveries between the hospital's units	5.8, 11.8	www.umas.se +46-40-331000 Mr Thomas Håkansson Address: SE-205 02 Malmö, Sweden
Malmö LBC	Delivery firm using mainly heavy vehicles	10.1, 11.9	www.malmolbc.se +46-40-188200 Mr Peter Willborg Adress: Blidögatan 20, SE-211 24 Malmö, Sweden
Malmö högskola	University college partly responsible for the evaluation of the measures	All measures in Malmö	www.mah.se +46-40-6657000 Per-Olof Hallin Address: SE-205 06 Malmö, Sweden
Lunds universitet	University with main responsibility for evaluation of the measures	All measures in Malmö	www.lth.se +46-46-2220000 Ms Stina Johansson Address: Box 118, SE-221 00 Lund, Sweden

Norwich			
Name	Description	Measures	Contact details
Norfolk County Council (Site Manager)	Regional government responsible for among others roads and transportation	5.4, 6.2, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 11.3, 11.4, 12.8, 12.9	www.norfolk.gov.uk +44-1603-223194 Mr Chris Mitchell Address: County Hall, Martineau Lane, Norwich, Norfolk, NR1 2DH, UK
Norwich City Council	Municipality	5.4, 6.2, 6.3, 7.2, 9.2 Evaluation of all measures in Norwich	www.norwich.gov.uk +44-1603-212515 Mr Andy Watt Address: City Hall, St. Peter's Street, Norwich NR2 1NH, UK
University of East Anglia	University conducting research on bio fuels	5.4, 6.2	www.uea.ac.uk +44-1603-456161 Mr Bruce Tofield Address: Norwich NR4 7TJ, UK

Norwich			
Name	Description	Measures	Contact details
First Eastern Counties Buses Ltd	Local public transport company	6.2	www.firstgroup.com/ukbus/easterncounties/easterncounties +44-1603-218402 Mr Peter Iddon Address: Rouen House, Rouen Road, Norwich, NR1 1RB, UK
Anglian Coaches Limited	Local public transport company	5.4, 6.2	www.anglianbus.co.uk +44-1502-711109 Mr David Pursey Address: Beccles Business Park, Beccles, Suffolk, NR34 7TH, UK
City Car Club	Car sharing company	9.2	www.citycarclub.co.uk +44-1484-818465 Mr James Finlayson Address: The Busworks, 39-41 North Road, London N7 9DP, UK

Potenza			
Name	Description	Measures	Contact details
Comune di Potenza (Site manager)	Municipality of Potenza	5.5, 8.7, 9.3, 11.6 Evaluation of all measures in Potenza	www.comune.potenza.it +39-0971-650558 Ms Antonella Fittipaldi Address: SAT srl, Via D. di Giura 54, IT-85100 Potenza, Italy
Regione Basilicata	Regional government of the Basilicata region	5.5, 8.7, 9.3, 11.6	www.basilicatanet.it +39-0971-668460 Mr Donato Arcieri Address : Corso Garibaldi 139, IT-85100 Potenza, Italy
ARPA	Research institute conducting research on mobility issues	11.6	www.arpaweb.org +39-081-7683376 Mr Gennaro Improta Address: Centro Congressi, Università Federico II Napoli, Via Partenope 36, IT-80121 Napoli, Italy
Co.Tr.A.B. - Consorzio Trasporti Aziende	Local public transport company	8.7	+39-0971-506852 Mr Giulio Ferrara

Suceava			
Name	Description	Measures	Contact details
Primaria municipiului Suceava (Site manager)	Suceava Municipality	5.6, 5.7, 6.4, 8.8, 8.9, 11.7	www.primariasv.ro +40-722-620020 Mr Dan Dura Address: Bd. 1 Mai nr. 5A, Suceava, Romania, RO-720224

Tallinn			
Name	Description	Measures	Contact details
Tallinna Linnavalitsus (Site manager)	City of Tallinn Participation through the Transport Department	12.5, 12.6	www.tallinn.ee +372-6404141 Mr Tiit Laiksoo Address: Vabaduse Väljak 10, EE-10146 Tallinn, Estonia
Tallinna Autobussikoondise AS	Local public transport company	12.5, 12.6	www.tak.ee +372-6509500 Mr Koit Kaevats Address: Kadaka tee 62a, EE-12618 Tallinn, Estonia
Tallinna Trammi- ja Trollibussikoondise AS	Local public transport company	12.5, 12.6	www.tttk.ee +372-6976100 Mr Leonid Mihhailov Address: Paldiski mnt 48A, EE-10614 Tallinn, Estonia
MRP Linna Liinid	Local public transport company	12.5, 12.6	+372-6720400 Mr Rein Vinni Address: Kadaka tee 72c, EE-12618 Tallinn, Estonia
Tallinna Tehnikaülikool	Tallinn University of Technology	Evaluation of 12.5, 12.6	www.ttu.ee +372-6202002 Mr Tiit Metsvahi Address: Ehitajate tee 5, EE-19086 Tallinn, Estonia

Others			
Name	Description	Measures	Contact details
Heriot Watt University	Heriot Watt University Cumulative Effects Assessment	Overall	www.hw.ac.uk +44 131 451 4407 Mrs. Angela Hull Address: HWU, School of the Built Environment, Edinburgh, Scotland, EH14 4AS, UK
Transport & Travel Research Ltd.	Consultancy within transport and travel. Evaluation and dissemination coordinator.	Overall	www.ttr-ltd.com +44 (0) 115 941 11 41 Mr. Alan Lewis Address: Floor 3, 39 Stoney Street, Nottingham , NG1 1LX, UK
University of the West of England	University of the West of England Dissemination support	Overall	http://www.uwe.ac.uk/ +44 117 965 6261 Mrs. Clare Mitchell Address: UWE, Frenchay Campus Coldharbour Lane, Bristol, BS16 1QY, United Kingdom



CIVITAS SMILE Final Publishable Report

This is the final publishable report of the CIVITAS SMILE project. It summarises the effort of 51 separate measures performed by 32 partners in five cities over the course of four years, spending over 31 million Euros.

All the measures have been implemented with sustainable urban mobility in focus. Participating cities have been Malmö (Sweden), Norwich (United Kingdom), Potenza (Italy), Suceava Romania) and Tallinn (Estonia).

CIVITAS - cleaner and better transport in cities - stands for City-VITAlity-Sustainability. With the CIVITAS Initiative, the EC aims to generate a decisive breakthrough by supporting and evaluating the implementation of ambitious integrated sustainable urban transport strategies that should make a real difference for the welfare of the European citizen.



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