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Foreword

Sustainable Urban Transport is a key task for European cities. Increasing road traffic with resulting congestion and environmental problems and the increasing dependency on finite oil resources is an important issue to address for urban areas. The cities of Lille, Graz, Prague, Pécs and Stockholm demonstrated and evaluated more than 50 different ways to reduce these problems by implementing radical and innovative sustainable urban transport measures during the years 2002 to 2006.

These efforts were carried out in the TRENDSETTER-project (Setting Trends for a Sustainable Urban Mobility) and were co-financed by the European Commission. For the cities involved, the project helped focus on these issues of sustainable transport. The project also brought increased co-operation between the cities and other European cities, with support by the European CIVITAS programme.

This Evaluation Report gives an overview of the results achieved in Trendsetter on measure, WP, City and TRENDSETTER level. In addition to this evaluation report, The consortium has produced five City Evaluation reports and eight Work Package Evaluation reports. These City and Work package Evaluation reports are important complements to this report. They contain additional and more detailed information about results on measure level, city level and work package level.

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1 Report Summary

The Trendsetter project have been carried out by partners from five cities; Graz, Lille, Pécs, Prague and Stockholm. The project has been evaluated at different levels and by different organisations. Within Trendsetter, 52 measures have been implemented. Each of these measures have been evaluated by local measure leaders in the cities. The measures are grouped in eight thematic areas, workpackages (WP). Evaluation have also been performed on WP level by the different WP leaders and on city level by city evaluation managers.

This evaluation report summarizes the evaluation on measure, WP and city level and adds evaluation on project level.

On Trendsetter level, most overall objectives are met, High level objectives, Demonstration objectives as well as Scientific and technical objectives. In some cases, late implementations have delayed the effects of a measure and therefore the fulfilment have not been possible to achieve within the time frame of the evaluation process of Trendsetter. The objective will be fulfilled within 2007.

In addition to comparison with the overall objectives, the report contains comparison with City objectives, WP objectives and Measure objectives. Also here, most objectives are met.

The implemented measures are listed below, sorted per work package.

Work Package	Subgroups	No	Measure	City
WP5 Access Restrictions	Environmental Zones	5.1	Widening of the Environmental Zone	Stockholm
		5.2	Widening of Environmental Zone for vehicles > 3.5 tons	Prague
		5.6	Congestion charging	Stockholm
	Strolling zones	5.3	Implementation of strolling zones	Graz
		5.4	Establishment of a car-free zone in the inner city	Pecs
		5.5	Preparation of a new traffic and transport strategy	Pecs
WP6 Integrated Pricing Strategies	Smart Card Systems	6.1	Smart card systems and integrated ticketing	Stockholm
		6.2	Smart card systems and integrated ticketing	Lille
	Parking	6.3	Reduced parking fees to promote clean vehicles	Stockholm
		6.4	Integrated pricing strategy for parking zones – differentiation between polluting and non-polluting vehicles	Graz
		6.5	Establishment of a zone-model parking in the central city area	Pecs
WP7 Public Passenger Transport	Information to passengers	7.1	Increasing public transport passengers	Stockholm
		7.5	Customer friendly stops for bus and tram	Graz
	Public transport safety	7.2	Public transport safety	Lille
	PT intermodality	7.3	Intermodal local/regional transport interchanges	Lille
		7.4	Seamless linkage of modes	Graz
		7.6	Park and Ride facilities	Lille
		7.7	Linking different ways of public transport	Prague
WP8 New Forms of Vehicle Use		8.1	New services and services for special customer groups	Graz
	Car pooling/sharing	8.2	Company mobility plan in the administration fleet	Lille
		8.3	Increasing car occupancy	Graz
	Awareness rising	8.4	Site level Mobility Management	Graz
		8.5	Urban Mobility Plan	Lille
WP9 New Concepts for the Distribution of Goods		9.1	Material logistic centre – to optimise freight deliveries at construction site	Stockholm
		9.2	Distribution of goods - Green city logistics	Graz
		9.3	Logistic centre for Old Town of Stockholm	Stockholm

Work Package	Subgroups	No	Measure	City
WP 10 Innovative Soft Measures	Bicycle measures	10.1	Innovations in bicycle transport	Graz
		10.2	Make bicycling attractive (B&R information on the Internet)	Stockholm
	Trip planning	10.3	Creation of a visitor web for optimal trip planning	Stockholm
		10.5	Marketing/information and quality management	Graz
	Awareness of clean transport and safety	10.6	Awareness for speed reduction and less car use	Graz
		10.4	Taxi drivers as information multipliers for clean transport	Graz
WP11 Integration of Transport Management Systems	Traffic information	11.2	Traffic monitoring and supervision	Stockholm
		11.3	Dynamic traffic management system	Graz
		11.4	Accessible road network (street) data	Stockholm
	Improving PT traffic flow	11.5	More adaptive signal control in a bus priority system	Stockholm
		11.6	More adaptive signal control in a bus priority system	Prague
		11.7	High level service bus routes	Lille
		11.1	Technical basis for an efficient customer focussed operation and information	Graz
WP12 Clean Public and Private fleets	Heavy vehicles	12.1	Clean and efficient heavy vehicles	Stockholm
		12.2	Biogas bus fleets	Lille
		12.3	Clean and user friendly bio-diesel bus fleet	Graz
		12.6	Waste collection with biogas-vehicles	Stockholm
	Light vehicles	12.4	Clean municipal fleets	Stockholm
		12.5	Clean municipal fleets	Lille
		12.7	Bio-diesel taxi fleet and bio diesel service station	Graz
		12.11	Making Clean Vehicles less expensive	Stockholm
		12.13	Increasing clean vehicle use in private company fleets	Stockholm
		12.14	Web-portal for drivers of clean vehicles	Stockholm
	Clean fuel distribution	12.8	Optimisation of the bio-diesel collection system	Graz
		12.9	Analysis of the biogas experience	Lille
		12.10	Improved biogas refuelling infrastructure	Stockholm

2 Introduction

Background

Satisfying mobility for both people and goods is essential for the vitality of our cities, and a well functioning transport system is vital for a good life in the city. However, increased traffic may actually decrease mobility when people and goods get stuck in congestion. Increasing emissions and noise levels threaten citizens' health and make the cities less attractive. In the long term, the issues of climate change and energy scarcity also puts a demand to ameliorate the negative sides of traffic, while keeping the flow of people and goods high.

The Trendsetter project – one of four projects financed by the Civitas I Initiative – has tackled these problems. By setting good examples, the five participating cities Graz, Lille, Pécs, Prague and Stockholm can inspire other cities and show them how to facilitate sustainable mobility. Trendsetter also shows that by following our examples, cities can meet the Kyoto and EU goals for emissions.

Trendsetter has implemented 52 specific measures in different thematic areas that complement and reinforce each other. Advanced mobility management schemes and clean vehicle fleets are among these measures. The project has also promoted the use of public transport, other alternatives to private cars and showed new ways to improve goods logistics and efficiency. Furthermore, Trendsetter has increased the acceptance for bio-fuels among citizens and encouraged operators, politicians and social groups to use innovative, low-noise and low emission technology.

Trendsetter and other European projects have shown efficient ways to reduce car use, introduce clean vehicles and make public transportation efficient and thus make European cities healthier, less energy demanding, less oil dependent and more attractive.

There are immense efforts going on within Europe to implement measures for achieving sustainable transport systems and societies. Lessons learned in Trendsetter cities can serve as a toolbox for ambitious followers.

Purpose of this report

This Evaluation Report gives an overview of the results achieved in Trendsetter on measure, work package, city and Trendsetter level. In addition to this evaluation report, The Trendsetter consortium has produced five City Evaluation reports and eight Work Package Evaluation reports. These City and Work package Evaluation reports are important complements to this report. They contain additional and more detailed information about results on measure level, city level and work package level.

The report also contains overall conclusions, lessons learnt and recommendations. More details and results can be found in the WP evaluation reports and the City evaluation reports, listed in annex 1.

Trendsetter – a part of the Civitas Initiative

The **CIVITAS** Initiative (CIty-VITAlity-Sustainability) addresses the challenge to achieve a radical change in urban transport through the combination of technology and policy based instruments and measures.

Within CIVITAS I (2002-2006) 19 cities were clustered in 4 demonstration projects, while 17 cities in 4 demonstration projects are taking part in CIVITAS II (2005-2009). The EC supported CIVITAS I within the 5th Framework Research Programme. CIVITAS II within the 6th Framework Research Programme.

The key elements of CIVITAS;

- CIVITAS is co-ordinated by cities: it is a programme “of cities for cities”
- Cities are in the heart of local public private partnerships
- Political commitment is a basic requirement
- Cities are living ‘Laboratories' for learning and evaluating

The overall objectives of the Civitas Initiative are:

- to promote and implement sustainable, clean and (energy) efficient urban transport measures
- to implement integrated packages of technology and policy measures in the field of energy and transport in 8 categories of measures
- to build up critical mass and markets for innovation

Each city implement a policy-mix based upon the categories of measures that are the backbone of the CIVITAS initiative. The policy-mix chosen by each city differs. Although aiming for the same result, each takes into account specific local circumstances.

Achievements within Trendsetter

Working within Trendsetter has given the participating cities a chance to learn from each other and compare practices. Trendsetter has helped the cities to implement local projects, to show this work to other cities and to show Europe what cities can achieve. Not only has the cooperation between the cities been rewarding – the cities' own local work and institutional networks have also been developed and strengthened through the European dimension. Because of the overall Trendsetter framework, local work has been more structured and well planned in some cases. It has also been easier to create momentum for innovative ideas within an EC-financed project.

Improving access to public transport

All Trendsetter cities have made large efforts to improve the public transport system in order to attract more passengers. Some of the measures have aimed at improving the access to public transport, and others to facilitate trip planning for smartest choice.

Lille has improved the safety and security of their public transport system, using both technical equipment and additional personnel. Lille also implemented integrated fares in the region. Both Stockholm and Lille have prepared for an implementation of a smart card system. The improved safety and security, the fare integration system, Park&Ride facilities, creation and improvements of multimodal nodes and the implementation of high level of service bus lanes support an increased use of different forms of public transport in Lille.

In Graz, 60 bus and tram stops, situated at important junctions, were rebuilt and improved to make them more customer-friendly. Both Stockholm and Graz have increased the quality of services in the public transport system by using regular quality surveys, real-time information at bus stops and on the Internet, a travel guarantee for delays, mystery shoppers reporting on quality, and incentives for contractors to perform better.

To make the buses more efficient, dynamic bus priority systems have been implemented in Prague and Stockholm, while Lille has introduced a bus lane with high-level service, the first in a future series of twelve similar bus lanes. New bus lines for special needs have been implemented – one to a hospital area in Prague and one between Graz and its suburbs on weekend nights. The attractiveness and image of public transport has also been improved by the introduction of biogas buses in Stockholm and Lille and bio-diesel buses in Graz.

Trip planning, traffic control and cycling

To make it easier for passengers to plan their trips, Trendsetter cities have introduced real-time information systems with information on arrivals and departures, trip-planning tools on the web, and mobility centres.

By controlling the traffic flow with e.g. traffic lights and motorway systems it is possible to achieve a smoother flow, avoid congestions and accidents and decrease emissions. Within Trendsetter, both Graz and Stockholm have implemented traffic management systems that collect and analyse real-time and static data.

Bicycle measures aim at making cycling more attractive. Both Stockholm and Graz use Internet route planning to help cyclists plan fast and safe routes. Graz also focuses on bicycle training for children and bicycle audits. Within Trendsetter, Graz and Lille have worked to make cycling an attractive alternative also on longer distances by marketing

cycling, extending the cycling network and equipping tram and bus stops and metro stations with Bike&Ride facilities.

Access restrictions for reduced traffic

Different types of access restrictions have been demonstrated within Trendsetter. Graz has implemented strolling zones in the city centre. Pécs has implemented a car-free zone, zones restricting heavy vehicles and a zone-model parking system. In Prague, the access restrictions for transit traffic have been extended and stricter rules have been adopted for part of the zone. Stockholm has increased compliance within the existing environmental zone, which prohibits entry by heavy vehicles older than eight years. Stockholm has also worked with congestion charging – a full-scale trial will be implemented in January 2006.

Marketing and mobility management

Marketing activities have shown to be an efficient way of changing peoples' behaviour and encouraging them to choose public transport. Stockholm has identified new inhabitants in specific neighbourhoods, and companies with an environmental profile, as important targets for direct marketing campaigns. Graz has focused on image strengthening and has carried out 'unconventional' marketing activities.

In Graz, mobility management has been given priority for several years. Mobility management for companies, schools and big events is carried out in Graz within Trendsetter. Lille has implemented a mobility plan for its 2,200 employees, setting a good example for private companies.

Co-transportation of goods

Graz and Stockholm have shown that consolidation of goods can reduce transports and their negative environmental impact. A logistic centre has been established in Graz, consolidating retail goods. In Stockholm, a logistic centre handles deliveries to a large construction site and another handles deliveries to restaurants. The demonstrations have also shown that, under special circumstances, logistic centres can be profitable.

Clean vehicles and fuels

Trendsetter has shown that biofuels are suitable options for city buses and car fleets and that it is possible for a city to inspire and support private companies. This starts off the development of a clean vehicle society. Within Trendsetter, biodiesel, biogas, ethanol and electric hybrid vehicles have been demonstrated. Infrastructure for biodiesel (Graz) and biogas (Stockholm and Lille) has been set up. A new major biogas production plant in Lille – the largest in Europe producing biogas from organic waste - is under construction..

More than 230 buses, fuelled with biodiesel or biogas have been demonstrated in Lille, Stockholm and Graz. Other heavy vehicles, e.g. nine waste freighters and five trucks in Stockholm, have also been taken into operation. Clean vehicles have been introduced both in city fleets and private company fleets. Lille has 55 new gas cars in their city fleet. Graz has worked together with one of the large taxi companies, which has now converted its whole taxi fleet of approximately 120 vehicles to biodiesel. Within Trendsetter, Stockholm has introduced more than 320 new clean vehicles in the city fleet, and more than 3,000 in private company fleets.

Incentives and promotion of clean vehicles

Incentives such as reduced parking fees and subsidies for extra vehicle costs have been used as a tool to increase the interest in clean vehicles. In Stockholm, clean vehicles are excluded from congestion charges, which can save the driver up to SEK 1200 (€130) per month. Demanding clean vehicles and fuels when procuring transport services or vehicles has also shown to be efficient. In Stockholm, other promotional activities, e.g. test fleets for companies, networks of clean drivers, and websites promoting clean vehicles have been carried out.

Overview of achieved effects

The table on the next page shows an overview of the emission, energy, mobility, time, investment cost and operational cost for measures in different areas and categories. The following scale is used:

Effects on Emissions, Energy, and Mobility	Implementation time	Costs for cities
Small	Short	Low
Large	Medium	Medium
	Long	Large

Costs are divided into Investment costs and Operational costs. Costs here refer to costs for the city to implement the measure
Time –implementation time

Areas	Categories	Emis-sions	Energy	Mobi-lity	Time	Inves-ment cost	Opera-tional cost
Convenient access to public transport	Integrated fares and smart cards						
	Increased public transport security						
	Convenient and safe intermodality						
	Customer-friendly stops						
	Dedicated bus lanes and priority at junctions						
	New services for special needs	–	–				
	Quality management						
Trip planning for smartest choice	Real-time information helps staff and passengers						
	Planning trips on the web						
	Integrated public transport services						
Traffic management	Traffic management						
Cycling	Cycling						
Access restrictions	Zones favouring pedestrians makes cities attractive*			–			
	Selective access restriction for heavy vehicles			–			
	Congestion charging						
Marketing attractive alternatives	Marketing						
	Mobility management						
Improved goods distribution	Consolidation of goods *						
Clean vehicles and fuels	Biofuelled vehicles			–			–
	Biofuel production			–			

*Measures that mainly have local effect

All implemented measures can be up-scaled within the city or transferred to another city. Which measure or bundle of measures that suits different cities are strongly dependent of the current situation and problems to be solved in the city as well as the priorities of the city concerning environmental effects, fossil energy use, mobility, time needed and investment costs as well as operational costs.

Trendsetter cities after Civitas

The involvement in Trendsetter and Civitas has been valuable for the participating cities in many ways and not only by the introduction of the measures and the effects they have had on the environment, energy consumption, mobility etc. The implementation of sustainable urban transport strategies in cities have improved the prerequisite for the future work within these fields by creating networks and cooperation between cities within Civitas on different levels; policy makers, politicians, technicians and city administrations. The Trendsetter cities all experience that the project also have created a platform for cooperation, since the cooperation between different fields have improved due to the participation in the Trendsetter project.

Not only the Civitas 1 cities benefit from cooperation. Other cities have shown great interest in the work performed and the lessons learnt. The Civitas II cities have a large advantage as being followers to the first initiative, learning from both mistakes and successes.

The Trendsetter cities will continue the work performed within the Civitas Initiative. Graz will continue with mobility issues and the focus on biodiesel. In Lille, the biogas experience will continue with the biogas plant in operation, making it possible to introduce additional vehicles fuelled by biogas. Stockholm continues their commitment on sustainable transport solutions, including even further development of clean vehicles and fuels. Stockholm coordinates the EC-funded projects BEST (BioEthanol for Sustainable Transport) and Lille coordinate Biogasmax, where also Stockholm participates. Pécs further develop their strategic work on transport and urban development while Prague go on focussing on offering the citizens attractive public transport.

3 Overview of the Evaluation Framework

Evaluation at different levels

Evaluation has been a horizontal task within the Trendsetter project and the project ahs been evaluated in different levels. The levels, objectives and who responsible person is shown below.

Evaluation level	Objectives	Responsibility
Measure Evaluation	Measure objectives	Measure leader
WP Evaluation	WP objectives	WP leaders
City Evaluation	City objectives	City coordination
TRENDSETTER Evaluation	TRENDSETTER objectives	TRENDSETTER Evaluation Manager
European Evaluation	CIVITAS objectives	METEOR, in cooperation with the Evaluation Liaison group

An indicator-based evaluation approach has been chosen for all levels. Each measure have been evaluated with indicators at several levels:

- TRENDSETTER common indicators
- Workpackage common indicators
- Individual indicators for each specific measure

The indicators at all three levels above are harmonised with the CIVITAS Common Core Indicators when applicable and possible.

Indicator based evaluation

Below is a table with the Trendsetter Common Core Indicators that are used in the evaluation.

Evaluation area	Indicator	Unit
Energy	*Energy use (total and renewable)*	*Joule/year*
Environment	*Emissions of fossil CO_2*	*Tons/year*
Environment	*Emissions of NOx*	*Tons/year*
Environment	*Emissions of PM*	*Tons/year*
Environment	*Noise levels*	*dB(A)*
Mobility	*No of trips*	*No or Qualitative 5-degree scale*
Mobility	*Travel time*	*Reduction in hours or %*
Mobility	*Quality of service*	*Qualitative 5-degree scale*
Mobility	*Acceptance*	*Qualitative 5-degree scale*

Below is a description of the evaluation areas and the indicators in each evaluation area.

Energy

The evaluation category *Energy* describes the annual energy use by traffic, in some measures divided on vehicle categories or modes of transport. The energy use should be divided into total energy use and use of renewable sources.

Environment
The evaluation category *Environment* consists of four indicators; Emissions of fossil CO2, Emissions of NOx, Emissions of PM and Noise levels. The emission indicators all describe the annual emission from traffic, in some measures the emission is divided on vehicle categories or modes of transport. The indicator Noise level describes the noise level in dB(A), which is an unwanted or harmful outdoor sound, including noise emitted from traffic.

Mobility
The evaluation category *Mobility* consists of four indicators; Number of trips, Travel time, Quality of service and Acceptance.

Do-nothing scenarios

When evaluating the measures, it is not enough to only compare before and after measurements. To be able to show results from actual measures or bundle of measures, a Do-nothing scenario have to be taken into account.

Early in the project, Trendsetter adopted the strategy suggested by Meteor, to use the model ITEMS to produce a Do-nothing scenario. Despite the fact that the participants spent much time and effort delivering data to be used in the model and discussing the outcome, Meteor never succeeded to present calibrated model results. Trendsetter then abandoned the idea of using ITEMS. Instead the experts in each city tried to derive what was related to Trendsetter and what had other reasons. It was not always possible to evaluate the effect of a single measure, but for a package of measures.

Methodology

The Trendsetter indicators aim at evaluating the effects on emissions, noise, energy and mobility, to be able to assess the fulfilment of the high level objectives. These indicators also feed into the cross-European evaluation. What indicators to be used in different measures was stated in Evaluation Plans. The possibility to perform quantitative analyses differs between measures and between indicators. The Trendsetter strategy was to perform a quantitative analysis if possible. The evaluation should take general trends and other measures into account. For measures/indicators where a quantitative evaluation isn´t possible to carry out, qualitative assessments are recommended, using a five degree scale (-- - 0 + ++).

4 Trendsetter objectives

The Trendsetter over-all objectives have been divided into High level objectives, Demonstration objectives and Scientific-/technical objectives. These objectives and their fulfillment are shown in the next pages.

Trendsetter High level objectives

Trendsetter objectives are to ameliorate urban air quality, noise levels and congestion while supporting mobility and urban quality of life. The high level objectives and their fulfillment are presented below.

Trendsetter High level objectives	**Have the objective been reached?**
Provide examples:	
Provide input to European policy making and promote a sustainable transport future in Europe.	Yes
Provide other cities with feasible best practice strategies to curb unsustainable traffic growth by using advanced mobility management schemes combined with clean vehicle fleets.	Yes
Increase acceptance of bio-fuels among citizens and encourage operators, politicians and social groups for innovative, low-noise and low emission technology.	Yes
Increase mobility:	
Promote the use of public transport and other alternatives to private cars	Yes
Demonstrate new ways to improve urban goods logistics and efficiency.	Yes
Enhance Environment:	
Reduce annual fossil CO2 emissions by 5 %, approximately 75 000 tonnes per year, for all cities within Trendsetter	No, not yet (see below)
Reduce NOx emissions by 900 tonnes per year and particulate matter by at least 1800 tonnes per year, for all cities within Trendsetter.	No, not yet (see below)
Reduce noise levels in all cities within Trendsetter	Yes
Save Energy	
Save over 850 TJ (20 300 TOE) energy per year, for all cities within Trendsetter	No, not yet (see below)

The objectives concerning emissions of fossil CO2, NOx and particles as well as the objective about energy savings are not met yet. The measures implemented in Trendsetter have the potential to fulfil the objectives, but not within the period of Trendsetter. Change of behaviour takes long time, longer than the Trendsetter projects. Other reasons for the late fulfilment of objectives are that some measures were delayed due to financial, political or technical problems. Delayed measures and measures that already in the contract had a late implementation had no possibility to reach its full effect during the evaluation phase. In most cases, the desired effects will be reached, but not during 2005, but during 2006 and 2007. Another very important factor is that in many measures, a quantitative evaluation of the effects of emissions and energy has not been possible to carry out. Instead, a qualitative evaluation has been accomplished, but the effect is not shown in the calculated figure below, on emissions and energy savings (see annex 2).

The calculated reduction of fossil CO2 was approximately 57 000 tonnes a year. The objective of 75 000 tonnes is expected to be reached, but not within the project period.

The reduction of NOX emissions is calculated to 315 tonnes a year, but late implementations and qualitative assessments are not included in that figure. The actual reduction is larger, but not possible to quantify. The objective of 900 tonnes will be reached within a few years and the Trendsetter effect is larger already today, if quantitative results are included.

The reduction of particles is calculated to 50 tonnes. This figure will increase during 2006 and 2007, when the effects of all measures are achieved. A mistake when calculating the objective in the proposal phase was made, which made the objective concerning particles unreasonable, and impossible to reach.

The saving of energy in the Trendsetter cities was calculated to just over 250 TJ/year, qualitative results not included.

Demonstration objectives

The demonstration objectives and their fulfillment are presented below. A few objectives are not reached while others are over achieved. The objectives that are not reached are commented below the table.

Demonstration objective	Target	Achieved	Difference	City
Public transport bus fleets				
Biogas buses	128	128	0	Lille
Leasing of 56 gas diesel buses (Euro 4 standard), conversion of 41 diesel buses for operation on bio-diesel	97	134	+ 37	Graz
Clean vehicles and infrastructure				
New clean vehicles (biogas, electric, electric-hybrid, ethanol) in city fleets	320	408	+ 88	Stockholm 324 Lille 84
New biogas refuelling stations	5	5	0	Stockholm 4 Lille 1
New biodiesel refuelling station	-	1	+1	Graz
Biogas waste freighters	7	9	+2	Stockholm
Taxis converted to bio-diesel	120	63	- 57	Graz
Clean vehicles in private company fleets	100	100	0	Stockholm
Substituted clean vehicles in company fleets (biogas, electric, electric-hybrid, ethanol)	300	3 000	+2 700	Stockholm
Clean and efficient heavy vehicles (buses, lorries and/or refuse trucks)	26	26	0	Stockholm
Transport and mobility management				
High level service bus lane	1	1	0	Lille
Bus priority signal systems	2	2	0	Stockholm, Prague
Environmental restriction zones	4	3	-1	Graz, Pécs, Prague (Stockholm)
Environmentally oriented Parking zones	3	3	0	Stockholm, Graz, Pécs
Smart Card system in full scale	1	0	-1	Stockholm
Improved intermodal links	4	3	- 1	Graz
High customer friendly bus and tram stops	60	60	0	Graz
Approximately 1100 P&R parking places in 4 P&R facilities	1 100	3 000	+1 900	Lille
Logistic Centres	3	3	0	Stockholm 2, Graz 1

IT based logistic management systems	2	2	0	Stockholm, Graz
Several IT-based transport information systems and traffic management systems	2	2	0	Stockholm, Graz
City bus line	1	1	0	Prague

Scientific and technical objectives

Scientific and technical objectives focus on testing the feasibility of various innovative technologies and policies in practice. The scientific and technical objectives as well as their fulfillment are presented below.

Scientific and technical objectives	Have the objective been reached?
Produce a total amount of 11 million Nm^3 biogas by the end of the project.	No, not yet
Reduce the commercial cost of biogas fuel by 20% in demonstrating cities	Partly
Implement a complete biogas technology chain in Stockholm and Lille, from production to end use	Partly
Evaluate the feasibility and effectiveness of using electric hybrid lorries for urban goods transport in Stockholm	Yes
Test the use of ICT solutions such as smart cards systems, bus signal systems, traffic control and supervision	Yes, with exemption of smart card system in full scale
Evaluate the effectiveness of web-based information and telematics as means to save energy and emissions in urban transport, and facilitate traffic flows.	Yes
Evaluate the effectiveness and political acceptability of environmental zones	Yes
Develop integrated city mobility plans integrating environmental protection, traffic and public health policies	Yes

Each demonstration objective and the fulfilment of it is described below

Produce a total amount of 11 million Nm^3 biogas by the end of the project.

In Stockholm, the production plant has not been a part of the Trendsetter project. Total production of biogas fuel during the project is 15 million Nm3, but biogas vehicles have consumed only 4,26 million Nm3. The rest has been used for heating and electricity production or just flared.

Before Trendsetter, the local biogas production in Lille was 0,12 Nm3 biogas per year. In November 2004, the construction of a new large organic waste plant started. In 2007, when the new waste plant is in operation, the production will be 3,6 million Nm3 per year.

This objective is not applicable for the other three cities.

Reduce the commercial cost of biogas fuel by 20% in demonstrating cities

The commercial cost of biogas fuel has not changed during the project in Stockholm. The total costs per km (investment and operation) are still slightly higher for biogas buses than for diesel vehicles.

In Lille, the price for biogas will be the same as for natural gas. This implies that the cost per km of a biogas bus is at the same level as the cost per km for diesel buses (including both investments and operational costs).

This objective is not applicable for the other three cities.

Implement a complete biogas technology chain in Stockholm and Lille, from production to end use

In Stockholm, the complete chain of biogas technology was already in place when the project started. The chain has been improved within Trendsetter, through a new distribution system (AGA swap-body technology) and new filling stations. New biogas car models are also improved with integrated tanks.

In Lille a complete biogas chain has been initiated. The chain will be finalised in 2007, when the new organic waste plats will be ready.

This objective is not applicable for the other three cities.

Evaluate the feasibility and effectiveness of using electric hybrid lorries for urban goods transport in Stockholm

Electric hybrid lorries and electric vans were demonstrated in Stockholm within the ELCIDIS project, which ended in 2002. The feasibility and effectiveness using them for urban goods transports have been evaluated within Trendsetter.

All six hybrid trucks have now been converted from hybrid to diesel mode. As long as the hybrid functionality was available they were usually running on electricity. The conversion was caused by problems with the charging system. The vehicle manufacturer did not supply new external charging system as replacement for the internal malfunctioning system. Thus, it became very difficult to operate the hybrid vehicles due to frequent technical failures.

According to the manufacturer the problem with the charging system could be solved using other types of batteries and charging system. Today there is not enough demand for heavy hybrid lorries and thus not possible to have a serial production running. This means that the purchase cost for these vehicles still is rather high. But Mercedes Benz claims that the hybrid technology is reliable now.

The former operators of the hybrid lorries are still in favour of using environmentally adapted vehicles and could be interested in using other types of clean vehicles and fuels.

Test the use of ICT solutions such as smart cards systems, bus signal systems, traffic control and supervision

Bus signal systems as well as Traffic control and supervision has been successfully tested within the Trendsetter project. The smart card system in Stockholm has not been implemented in time, so it has not been tested in full-scale yet.

Evaluate the effectiveness of web-based information and telematics as means to save energy and emissions in urban transport, and facilitate traffic flows.

The following web-based information and telematics have been evaluated within Trendsetter:

– The Swedish web portal www.trafiken.nu are showing the current traffic situation, real time travel times for the most important arterials, a travel planner for public transport, web cameras, parking information and bicycle information. A normal day, the portal has 8000 to 10 000 visits. The objective for 2006 is to reach 150 000 visits

a month. An extensive evaluation of the impacts of the portal and other ITS (intelligent transport systems) solutions in the Stockholm area have been performed.

- A Swedish digital road network, to which data can be linked. The digital road network is estimated to give improvements in decreased energy use, emission of fossil CO2, emissions of NOx and PM and increased mobility as a result of increased use of telematics as traffic signals, navigation systems, Incident management, parking information and ISA (Intelligent Speed Adaptation).
- A real-time multi-modal transport model, MatriX, was implemented in Stockholm and will serve as a platform for a traffic management system, and optimise and balance traffic flows on various main roads. Telematics as navigation systems, VMS (variable message signs), incident management and dynamic park&ride information is expected to increase as a result of this. Evaluation of the effects on environment, mobility and transport has shown positive results both on short and long term.
- In 2004, Stockholm launched a national website regarding clean vehicles, *www.miljofordon.se*, in co-operation with the cities Göteborg and Malmö. The number of visits has increased steadily, now being approximately 12 000 visits per month. The evaluation shows that the website has been successful in reaching potential buyers and to have a reliable and relevant content.
- In Graz a dynamic traffic management system was planned to be implemented in order to get an overview of the traffic situation so it can be managed and controlled. Data from various sources will be collected and the information will be distributed in different channels. Due to problems concerning the budget, the measure was delayed two years. The complete integration of all data sources is expected to be finalised mid 2006.

Evaluate the effectiveness and political acceptability of environmental zones

The concept/definition of environmental zones can include both zones with restrictions for heavy vehicles depending on age, weight or the engine's Euroclass standard, but also car-free zones and strolling zones where restrictions are set up also for cars. Trendsetter has shown that environmental zones can play an important role for reducing environmental impact and negative health consequences in urban areas.

- An environmental zone was established in Stockholm 1996. The effectiveness of the environmental zone has been monitored twice yearly. The political acceptance has risen from a rather low level, when the issue was in its initial phase during the mid-90´s, to a very high acceptance among transport operators, politicians and the general public. Also the obedience has been monitored regularly. Initially it was rather high but decreased after some years. Thanks to Trendsetter the enforcement was strengthened and the obedience level increased, being 96.2 per cent in 2004 (resulting in better air quality and less noise).
- The widening of the environmental zone in Prague was implemented as planned and has resulted in reduced emissions and energy consumption. The public positively accepted the measure and consequently the political acceptance for a measure like this is good. The only concern from the urban authorities has been increased administration work because of the widened zone.
- Four strolling zones were established in Graz within Trendsetter. The work was delayed because of Graz being Cultural Capital of Europe in 2003 and the city

council wanted to minimise disruption. Shop and restaurant owners were against the strolling zones initially, but later it became clear that the zones boosted commercial activity and contributed to a human-friendly city centre.

– In central Pécs a car-free zone was established, along with other complementary restriction actions such as speed limit, heavy vehicles restrictions etc. There has been good political support from all parties for this measure, even if the local politicians at first wanted to give in to the demands from citizens that were sceptical to the car-free zone. By 2010 it is planned that the whole city centre of Pécs will be closed for private cars.

Develop integrated city mobility plans integrating environmental protection, traffic and public health policies

In Lille, integrated city mobility plans including environmental protection as well as traffic and public health policies have been successfully developed. The Lille Metropolis Urban Mobility Plan, implemented in Lille for their 2.200 employees, set a good example for private companies. The plan had the objectives to improve car-pooling in the Lille Municipal fleet, favour two-wheelers and increase the use of public transport.

The interest for company mobility plans has been adopted by many other organisations in the region, such as regional authorities, department authorities and private companies.

5 Cities

Each measure contributes to the fulfilment of the objectives at the WP-level, City level, Trendsetter level and CIVITAS level. Therefore, the evaluation of a measure is affected by the objectives at all levels. In other words, each measure evaluation includes the evaluation of indicators required for aggregating results at other levels.

In this chapter are the cities described with a short description of the city and the results. For more information about the measures, results, achievements, up-scaling, transferability, conclusions and recommendation see the City evaluation reports and the Workpackage evaluation report, see annex 1 for the report list. There are also more information available at the website www.trendsetter-europe.org and in the Trendsetter Policy Report.

Below is a table describing the achieved quantitative results on city level according to the Trendsetter high level objectives. Additional achievements have been obtained but they have only been evaluated qualitatively. The actual achievements are also higher due to results achieved after the evaluation period, caused by late implementations and that some measures needs longer periods to obtain the desired effects (especially measures concerning change of behaviour).

Table 1 Summary of results in the overall objectives in the Trendsetter project on city level

				Graz	Lille	Pécs	Prague	Stockholm
	Parameter	**Unit**	**Achieved***					
Reduce	CO_2	ton /year	>56 800	>12 200	>32 000	>120	>1650	>10 800
	Energy	TJ / year	>255	>40	>130	>10	>15	>60
	NO_X	ton/year	>315	>7	>80	>20	>45	>160
	PM	ton/year	>50	>3	>1	>1	>3	>40
	Noise		↓	↓	↓	↓	↓	↓
Increase	Public Transport	#	↑	↑	↑	↑	↑	↑
	Clean vehicles	#	3868	197	212	N.A.	N.A.	3459
	Co-operation		↑	↑	↑	↑	↑	↑
	Mobility		↑	↑	↑	↑	↑	↑

Notes :

* Achieved means quantitative results during the evaluation period. Additional achievements have been obtained but they have only been evaluated qualitatively. The results should also be higher, due to results achieved after the evaluation period.

Arrows indicate an increase or decrease but that the results are not quantifiable.

N.A. – not applicable for the site

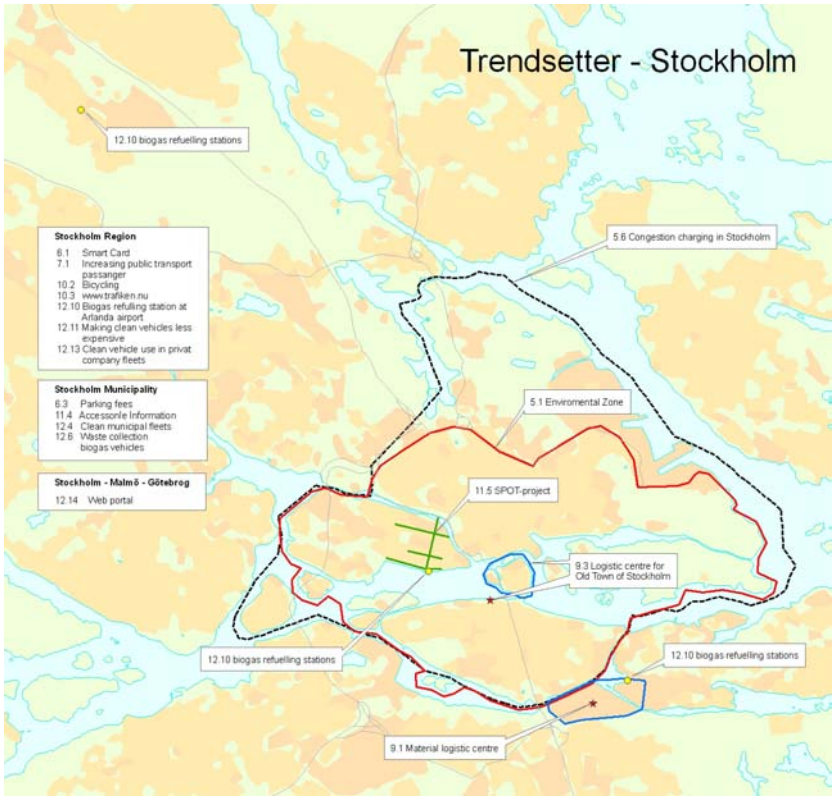
Stockholm

Stockholm has implemented 19 measures within Trendsetter. Partners in the project have been City of Stockholm Environment and Health Administration, Stockholm Transport, Swedish National Road Administration Stockholm Region, Stockholm Real Estate and Traffic Administration, Statoil Detaljhandel AB, AGA Gas AB and Home 2 You AB.

The following measures have been implemented in Stockholm within Trendsetter:

Work Package	Group of Measure	Measure	Measure No
Access Restrictions (WP5)	Environmental Zones	Widening of the Environmental Zone	5.1
		Congestion charging	5.6
Integrated Pricing Strategies (WP6)	Smart Card Systems	Smart card systems and integrated ticketing	6.1
	Parking	Reduced parking fees to promote clean vehicles	6.3
Public Passenger Transport (WP7)	Information to passengers	Increasing public transport passengers	7.1
New Concepts for the Distribution of Goods (WP9)		Material logistic centre – to optimise freight deliveries at construction site	9.1
		Logistic centre for Old Town of Stockholm	9.3
Innovative Soft Measures (WP 10)	Bicycle measures	Make bicycling attractive (B&R information on the Internet)	10.2
	Trip planning	Creation of a visitor web for optimal trip planning	10.3
Integration of Transport Management Systems (WP11)	Traffic information	Traffic monitoring and supervision	11.2
		Accessible road network (street) data	11.4
	Improving PT traffic flow	More adaptive signal control in a bus priority system	11.5
Clean Public and Private fleets (WP12)	Heavy vehicles	Clean and efficient heavy vehicles	12.1
		Waste collection with biogas-vehicles	12.6
	Light vehicles	Clean municipal fleets	12.4
		Making Clean Vehicles less expensive	12.11
		Measure fused with 12.11	12.12
		Increasing clean vehicle use in private company fleets	12.13
		Web-portal for drivers of clean vehicles	12.14
	Clean fuel distribution	Improved biogas refuelling infrastructure	12.10

The map below shows the geographical distribution of the measures.



Stockholm's contribution to Trendsetter demonstration objectives

- 324 new clean vehicles (biogas, electric, electric-hybrid, ethanol) in city fleets
- 3 new biogas refuelling stations
- 9 biogas waste freighters
- 100 clean vehicles in private company fleets
- 3 000 substituted clean vehicles in company fleets (biogas, electric, electric-hybrid, ethanol)
- 26 clean and efficient heavy vehicles (buses, lorries and/or refuse trucks)
- 1 bus priority signal systems
- 1 environmentally oriented Parking zones
- 2 logistic Centres
- 1 IT based logistic management systems
- 1 IT-based transport information systems and traffic management systems

Stockholm city objectives

- Reduce the emissions of fossil CO_2 by 20 % from 1990 to 2005
- Reduce the emissions of NO_x reaching a daily average not exceeding 60 $\mu g/m^3$ by 2006
- Reduce the emissions of particulates, reaching a daily average not exceeding 100 $\mu g/m^3$ by 2006
- Reduce the share of residents that are exposed to noise maximums higher than recommended level to 10 %, i.e. 50 % reduction
- Increase the number of public transport passengers by 100,000 by 2005, an increase by of 15 %. i.e. a shift from private transport by car towards public transport
- Increase the number of clean vehicles to 5,000 by 2005, thereby contributing to the long-term objective that clean vehicles shall reach a market share where the further increase is self-sustaining, i.e. 5 % of the City's public and private fleet

  The city shall keep its leading position in the field of clean vehicles and gain a leading position in the field of sustainable transport management

TRENDSETTER will contribute to these objectives by:

City Objective	Have the objective been reached	Measure*
Reducing annual fossil CO_2 emissions by 9 300 tonnes by 2005	Yes, reached 10 766 tonnes/year	**5.1, 5.6,** 6.1, **6.3, 7.1, 9.1, 9.3, 10.2, 10.3, 11.2, 11.4, 11.5, 12.1, 12.4, 12.6, 12.10, 12.11, 12.13, 12.14**
Reducing annual NO_x emissions by 70 tonnes by 2006	Yes, reached 550 tonnes/year	**5.1, 5.6,** 6.1, **6.3, 7.1, 9.1, 9.3, 10.2, 10.3, 11.2, 11.4, 11.5, 12.1,** 12.4, 12.6, **12.10,** 12.11, 12.13, **12.14**
Reducing annual particulate emissions by 1 850 tonnes by 2005	No, reached 3 tonnes/year. The objective was not correct calculated and is not reasonable	**5.1, 5.6,** 6.1, **6.3, 7.1, 9.1, 9.3, 10.2, 10.3, 11.2, 11.4, 11.5,** 12.1, **12.4**, 12.6, **12.10, 12.11,** 12.13, **12.14**
Reducing the share of residents exposed to noise maximums higher than recommended level to 10 % within the environmental zones	The noise level has decreased	**5.1, 5.6,** 6.1, **6.3, 7.1, 9.1, 9.3, 10.2,** 10.3, **11.2, 11.4**, 11.5, **12.1, 12.4, 12.6, 12.10, 12.11, 12.13,** 12.14
Increasing the number of public transport passengers by 100,000 by 2005	No, reached 72 000 passengers	5.1, **5.6,** 6.1, 6.3, **7.1,** 9.1, 9.3, 10.2, **10.3,** 11.2, 11.4, **11.5**, 12.1, 12.4, 12.6, 12.10, 12.11, 12.13, 12.14
Increasing the number of clean vehicles to 5,000 by 2005	Yes	**5.1, 5.6,** 6.1, **6.3**, 7.1, 9.1, **9.3,** 10.2, 10.3, 11.2, 11.4, 11.5, **12.1, 12.4, 12.6, 12.10, 12.11, 12.13, 12.14**
Increasing cooperation with other European Cities	Yes	**5.1, 5.6, 6.1, 6.3, 7.1, 9.1, 9.3, 10.2, 10.3, 11.2, 11.4, 11.5, 12.1, 12.4, 12.6, 12.10, 12.11, 12.13, 12.14**

* 6.1 are delayed but will contribute to the city objective when implemented in 2007

Green and bold – Measure contributed to the objectives fulfilment
Grey – Not applicable for this objective

For more information about how much and in which quantity each measure contributes to the city objectives, please see the Stockholm City evaluation report.

Measure description

Widening of the environmental zone (5.1)
This measure aimed at widening the environmental zone that restricts the access of heavy-duty (< 3.5 tons) vehicles into the inner city and to improve the obedience of the environmental zone regulation. Since the construction of Hammarby Sjöstad, e.g. about 8 000 new apartments was delayed, the widening of the environmental zone to include that area has been postponed.

Eventually, this measure has yielded positive environmental impacts anyway, since the understanding and obedience of the environmental zones already in force, has increased. Also, the acceptance of clean vehicles has increased as a result of this measure.

Measure objective	Have the objective been reached?
Widening the environmental zone restrictions for heavy goods vehicles and increase the obedience of the rules.	Partly. The obedience is increased, but the widening of the zone to include Hammarby Sjöstad could not be done, since the area has not been completed yet.
Provide other cities with best practice strategies.	Yes
Less emissions and noise in the city centre.	Yes
Less energy consumption due to cleaner and more efficient vehicles leading to a more sustainable city.	Yes
Increase acceptance of clean vehicles.	Yes
A more attractive city centre.	Yes

Congestion charging in Stockholm (5.6)
The main objective for the congestion charging measure was to prepare the scheme in the City of Stockholm and also to show the potential for it to: reduce traffic intensity on the most crowded roads during peak hours; reduce congestion and increase accessibility; provide other cities with best practice strategies; increase the use of clean vehicles; promote the use of public transport, reduce emissions of CO_2, NO_X and particulate matter; save energy and make the central city more attractive.

"The Stockholm trial" with congestion charging started in August 2005 by increasing the public transport services. In January 2006 the actual congestion charging of the traffic to the city centre started, due to legal issues the start has been delayed.

The measure has also increased the interest of clean vehicles, though they are excluded from the congestion charges.

Measure objective	Have the objective been reached
Reduce the amount of traffic on the most frequented roads during peak hours	Yes
Reduce congestion and increase accessibility	Yes
Provide other cities with best-practice strategies	Yes
Increase the use of clean vehicles	Yes, the share of clean vehicles is expected to increase. The share of clean cars has increased from 3700 to circa 6700 in the Stockholm region in one year.
Promote use of public transport	Yes, public transport used to and from the inner city is expected to increase by 7 percent. New buses, improvements in rail traffic and new and improved park-and-ride facilities contributes to the increase.
Reduce emissions of $C0_2$, NO_X, particulate matter	Yes, 110 tons less emissions of NOx (about 50 % reduced emissions in the inner city) and 37 tons less particulate matter (about 33 % reduced emissions in the inner city). Emissions of CO2 are estimated be reduced due to reduced traffic and better traffic flow.
Reduce noise levels	Yes, Reduced noise as a result of a reduction in the volume of traffic.
Save energy	Yes
Make the central city more attractive	The positive estimations about reduction of emission noise ande energy use indicate that the central city will be more attractive.

Smart card system and integrated ticketing in Stockholm (6.1)
The smart card system will make the access to the public transport system more effective and improve the service of public transport by making it easier for public transport users to deploy buses, metros and trains.

Creating a new ticketing system is a step in Stockholm Transport's (SL) endeavour to give passengers a higher quality of travel by providing them with a system that is quick, convenient and easily accessible. The new system shall be able to offer passengers more purchasing opportunities with respect to both the place of purchase and the type of tickets. Speeding up ticket inspection shall shorten trip time, especially on buses. The new system shall also make it possible to introduce tickets and prices that can encourage new passengers to travel by SL. It is also envisaged that the system will give SL greater insight into passenger travel patterns and provide greater flexibility in the introduction of new fares and ticket types. SL also wants a system that minimises the risks of ticket forgery.

Since the implementation of the smart card system is delayed, it has not been possible to carry out an indicator-based evaluation of this measure. When the system will be implemented, the energy use and emissions will be reduced. The measure is expected to increase the number of trips with public transport and influence the modal split towards a higher percentage for public transports. SL will work hard to reach a high level of acceptance for the new smart card system.

Measure objective	Have the objective been reached?
Increasing the number of public transport users·	Not today due to delayed implementation
Achieving a modal shift from private cars to public transport·	Not today due to delayed implementation
Make the access to the public transport system more effective·	Not today due to delayed implementation
Improve the service of public transport	Not today due to delayed implementation
Making it easier for public transport users to deploy buses, metros and trains·	Not today due to delayed implementation
Reducing emissions, noise levels and energy consumption	Not today due to delayed implementation

Reduced parking fees to promote clean vehicles (6.3)
Within the Trendsetter free parking for local residents' parking and commercial parking in the city was implemented for biogas, ethanol and electric hybrid vehicles. The aim was to encourage use of clean vehicles among citizens and companies.

The measure was heavily delayed due to lack of political agreement. Much effort has been spent on convincing concerned politicians and salaried employees in different city administrations to support the measure. The final decision on free parking for clean vehicles was taken in April 8, 2005. The free parking is valid since May 2, 2005.

Due to the late political decisions the evaluation has focussed on the process and not the indicator based evaluation.

If the project had not been implemented, the issue about a definition of clean vehicles in Stockholm would most likely not have been put on the city agenda. The Swedish Road Administration (SRA) has proposed a nation-wide definition of clean vehicles. This

definition would primarily be used for purchasing of clean vehicle fleets by governmental authorities and other such bodies. On the longer term it could also be used for other purposes, such as common regulations concerning incentives.

The project has contributed to an increase in knowledge and understanding of clean vehicles among the politicians. Besides this effect, the issue has lead to that clean vehicle as such have gained a lot of attention in the local and national media.. So the activities in the project have resulted in improvements and higher awareness about clean vehicles and fuels.

Measure objective	Have the objective been reached
Increased use of clean vehicles within the inner city	Yes
Reduced emissions, noise levels and energy consumption	Yes

Increasing public transport passengers (7.1)
The aim of this measure was to increase the number or passengers in public transportation. Quality and quantity surveys, marketing campaigns, travel guarantee and disruption information were some of the tasks implemented to achieve this target.

To reach the Trendsetter goals of reducing the emissions and improving air quality, SL decided that it could be possible to increase the number of passengers by encouraging a shift from cars to public transportation.

At the end of 2004, SL could see a clear trend. The number of passengers was increasing and so was their opinion of the service. If no actions had been taken at all to increase the number of passengers and their satisfaction SL, would probably have had to face even more dismal figures SL will make every effort to keep on the work of meeting the passengers' wishes. The surveys, marketing campaigns, travel guarantee and disruption information will most certainly help SL to reach the goal and maybe even go beyond it! Calculating that the average use of a car is about 1.3 persons per car during rush hours and that SL has increased the number of passengers by 72 000 could mean that there are as much as 46 000 cars less in the city of Stockholm as it would have been if all travellers had used a private car instead.

Measure objective	Have the objective been reached
Increase the number of public transport passengers in Stockholm with 15% until 2004 (100 00 new costumers per day)	SL did not reach the goal to increase the number of public transport passengers in Stockholm with 15%, i.e. from 640.000 a day based on year 1998 to 740.000 a day by the end of year 2004.
Increase the length of the public transport travels	SL do not have statistics telling us the exact figures for travel length from 1998 compared to 2004 but a fact is that there are more kilometres driven in the end of 2004 than the years before.
Increase the intermodality between the different public transport modes and between the private cars/public transport	Not applicable
Reduce energy use and emissions	Yes

"Construction materials", Hammarby Sjöstad (9.1)
A new housing area called Hammarby Sjöstad with 8 000 new apartments and thousands of new office spaces is under construction in a former harbour area in Stockholm. The aim of the Logistic Centre (LC) in this area has been to reduce the number of transports and thus also the congestion in the area to improve the quality of life for the inhabitants in the area.

Since there is no actual situation "before" Trendsetter, only calculations with estimations and assumptions have been made for that scenario (without a Logical Centre). For the "After" situation, the LC has a computer system that stores data of: number of goods, the receiver and the sender of the goods. Calculations have been made in order to get an overview of the total number of arriving transports to the area. Interviews have been made with contractors, drivers and suppliers. In a Master Thesis report[1], the most important results and findings from those studies were presented.

Through this project there has been an reduction in the number of trips within approximately 20 trips per day.

The vehicles in the project drove approximately 26 kilometres per day. The number of vehicle kilometres was reduced by 38 kilometres per day with the LC compared to a situation without the LC.

The emissions were reduced during the project peak period according to the objectives of the project and the energy use was reduced by almost 1.5 TJ.

Measure objective	Have the objective been reached?
Decrease the number of small direct deliveries (under 4 loading pallets) to the site with 80% through co-transportation	Yes
Less traffic jam in the construction site	Yes
Improved living conditions at site for new inhabitants	Yes
Improved working environment· Reduce energy use and emissions	Yes

"Restaurant supplies", Stockholm (9.3)
The need of an efficient delivery system within the medieval part of Stockholm was the main driving force behind this measure. The main objective was to decrease the number of small direct deliveries to restaurants and shops in the Old Town through co-transportation with clean vehicles. This would result in an improved environment for inhabitants, visitors and people working in the area.

The expected outcome from the Logical Centre was to increase the number of customers from 14 to 25. By introducing the LC for food deliveries, the transport mileage to the restaurants was expected to decrease by 65 %. The calculations for the LC were based on invoice data from the "O-centralen".

The results show that the outcome of a LC for Old Town in Stockholm is very good. There is a huge potential in reducing the total number of vehicle kilometres. With the LC,

[1] Ekerlund, S., Stuhrmann, E. (2003) *Hammarby Sjöstad Logistik Center – Samordnad distribution på en byggarbetsplats* Trendsetter Report No 2003:1, Trendsetter internal deliverable No D 9.1.1

the total number of trips is reduced with 9 trips per day and the number of vehicle kilometres is reduced with 6 km per day.

Measure objective	Have the objective been reached?
Decrease the number of small direct deliveries to restaurants and shops in the Old Town through co-transportation with clean vehicles	Yes
Less traffic jam during delivery hours in the Old Town	Yes
Improved environment for inhabitants, visitors and people working in the area	Yes
Reduce energy use and emissions. Estimated energy and emissions savings corresponding to 30 000 km of driving diesel lorries.	Yes

Make bicycling attractive (B&R information on the Internet) (10.2)
The objective of this activity was to make the use of bicycles as a transport means more attractive and to make the bicyclists more satisfied with the traffic situation

A digital map with regional cycle ways has been made (for the whole county). An improved utilisation of the information available on the Internet has been of great importance. Bicyclist's organisations have been informed about the work on this measure. During the period of 2003 to 2004, adjustments were being made in language and usability of the information on the Internet.

Measure objective	Have the objective been reached?
Create conditions that will promote the use of bicycles for transportation	Yes
Increase the use of Bike & Ride facilities	*
Increase bikers satisfaction with the traffic situation	*
Make people shift from car and public transport to bike, thereby reducing fuel consumption and environmental impact	*

* The bicycling information on the website is rather new, which means that we for the moment do not have that much of stated user satisfaction. We know however that the information is demanded. The satisfaction will be followed up as well as the other objectives.

Creation of a visitor web for optimal trip planning (10.3)
In this measure, a visitor web has been created to enable commuters to plan their trips in an optimal way. The focus in this measure has been on functionality, co-operation, quality assurance and evaluation of the measure.

Regarding user friendliness all results were utilised to improve the website regarding content, design, structure and usability. All results collected were used to improve the user friendliness of the website concerning content, design, structure and usability. By the year 2003, the design was improved considerably. A common logotype (this was to strengthen the trademark) was implemented for the website www.trafiken.nu in the regions of Stockholm, Skåne and Gothenburg.

Inception studies have been carried out to prepare for an optimal trip planning. Numerous complex issues have been identified on the technical level, regarding usability as well as co-operation issues in the integration of several organizations and travel modes. In an

advanced dynamic route planner, where all transport modes are included (public transport, bicycling, walking, vehicles etc.), information about travel times, incidents etc. from the road traffic is needed.

Measure objective	Have the objective been reached?
to facilitate "smart choice" concerning mode of transport·	Yes
to encourage people to consider alternative modes of transportation for their daily travel needs	Yes
to provide a real-time picture of the traffic situation in greater Stockholm area.	Yes

Traffic monitoring and supervision (11.2)
The traffic monitoring and supervision system, MatriX, does not lead to any environmental effects itself, but the access to information provided by this system is a solid ground for effective management of the road transport system, which leads to positive environmental impact. Traffic management is an important measure for increased traffic flow and more efficient use of the space. A better traffic flow leads to positive effects on the environmental. MatriX has a potential to be an important building block in the whole chain of efficient traffic management. The long-term effects are estimated to be larger than the effects on short-term, because all road-users will not be reached by the information. On the other hand, MatriX is optimized for decreasing problems in a local manner, which also decreases the effects in the global perspective. MatriX is one piece of the "traffic management puzzle".

Measure objective	Have the objective been reached?
Optimize and balance traffic flows on various main roads.	Yes
Reduce effects of traffic incidents and accidents in terms of queues and delays.	Yes
Induce a modal shift from private cars to public transport facilities.	Yes

Accessible road network (street) data (11.4)
The overall objective of this measure was to make it possible to reduce congestion and improve mobility, by providing easy access as well as high quality network data and to compile information about the road situation within the Municipality of Stockholm.

Evaluation of the environmental impacts was carried out through literature surveys and workshops. Implementation of a digital road network doesn't give any environmental positive effects in itself, but when data are linked together, the access to the information will increase and data needed for basic analysis can easily be extracted. The data can be used in a more convenient way for purposes such as better traffic planning, improved information to the public about alternative routes or travelling schemes. The more efficient use of the traffic network, more adequate public information and better planning tools are considered to result in improvements of the total environment.

In the first version of the system, there might be about 100 persons in the municipality and the suppliers of the municipality that will work directly on the systems and use data derived from the system. This does not count those persons using data exported to the Swedish Road Administration. In the context of the project regarding producing public services and integration of additional systems, it is likely that there will be thousands of

persons taking part of and benefiting directly form the data that has been collected in the system.

Measure objective	Have the objective been reached?
Finding and demonstrating an IT-based road network model, to which all the data that The Traffic Administration want to make available can be linked and thereby easily accessed·	Yes
Elaboration of a documented virtual traffic database·	Yes
Implementation of a documented interface to the traffic database	Yes

More adaptive signal control in a bus priority system (11.5)
The objective of this measure was to install a dynamic IT-based bus priority system, with SPOT/UTOPIA-signal installations at eleven intersections. Improved safety and higher level of service were two of the main objectives.

The results from this measure show no significant impact on local emissions when the cost function in the traffic control scheme is altered. The emission model used is a simplified national model where the estimates of CO_2 and NO_X are based on only the traffic flow. Looking closer into the results from the simulation studies, these show that the number of stops was reduced and the speed was increased by approximately 15 to 20 %, i.e. a completely new traffic flow. This indicates that the potential for control of local emission by using this method is great.

The objectives for this measure was: Minimising the total time lost by private vehicles and their emissions during their trips within the controlled area, subject to the constraint that public vehicles for which weighted priority has been requested shall not be delayed at intersections with traffic lights. This will increase the reliability and attractiveness of the bus service and reduce queuing, which will also reduce pollution

As for traffic and environment objectives the trials were successful. However in terms of operation and maintenance there are still a few drawbacks that need to be corrected. One is that under low traffic periods SPOT is not as accurate and precise in responding to singular vehicles appearing at the stop line. The only way to solve this is to switch back to old control system during these periods and this of course results in expensive doubling of systems including their different needs for detection. A new development of the SPOT control is another solution to correct for this. (Which is outlined in the report over suggested improvements for the SPOT/UTOPIA system.)

Clean and efficient heavy vehicles (12.1)
The objective of this measure was to procure 26 clean heavy vehicles. The method used to collect relevant data has been through questionnaires. The drivers and the contact person for each vehicle have been asked questions about fuel consumption, mileage, technical problems etc. Questions regarding driver perception of the vehicles were also included in the survey. From these figures, the indicators on energy and emissions were calculated using certification data or life cycle data.

The consumption of fossil energy was reduced by almost 21 TJ per year. The emissions of fossil CO_2 were reduced by 8 %, i.e. equivalent to 1 329 tons per year. Emissions of NO_X, particle matter and CO were reduced by 50 %. However, the emissions of HC increased by a factor of 20. The main reasons for this increase are the type of engine used and the impact of the catalytic after treatment. On the positive side it can be noted that the

health impact of methane is very low compared to HC from other fuels. However, methane is a more potent greenhouse gas than CO_2, so these emissions must be considered in an evaluation of the impact on global warming.

The cost of maintenance has increased from 0,033 € per km to 0,045 € per km. The increase in cost can be derived from the fact that the biogas engine is an otto engine, which needs more maintenance and change of spare parts than a diesel engine. The fuel consumption has increased by 60 % in comparison with the consumption of the corresponding diesel vehicles. This is due to the fact that a diesel engine is more energy-efficient than an otto engine, in particular when the engines are operating at low load. The consumption of engine lube oil has been twice as high in the biogas vehicles compared to the diesel vehicles.

The driver acceptance has been monitored and evaluated. More than 90 % of them were satisfied or very satisfied with their experience from driving heavy biogas vehicles and a majority of the drivers said that they would recommend other drivers to drive heavy-duty vehicles fuelled by biogas.

Measure objective	Have the objective been reached?
Increase the number of clean heavy vehicles in densely populated city centre	No, two vehicles short compared to the plan. In the near future more than 200 heavy clean vehicles will be in operation.

Clean municipal fleets (12.4)
The objective of this measure was to increase the number of clean vehicles in the municipal fleet of Stockholm. Actions have been taken to remove barriers and create incentives to promote clean vehicles. Common procurement of clean vehicles has cut prices for clean vehicles. Information campaigns and seminars have been launched.

The total energy consumption was reduced by 20 %. The emissions of fossil CO_2 decreased from 700 ton per year to 561 tons per year. The emissions of NO_X, HC and CO were reduced as well. The average maintenance cost has been 5 % higher for the clean vehicles compared to cars running on petrol mainly because the biogas vehicles needed more maintenance and repair. The fuel cost was 15 % lower for the biogas vehicles compared to petrol vehicles. The cost of ethanol (E85) was equivalent to petrol. The fuelling cost for the electric hybrid vehicles was 30 % less than for the corresponding petrol cars. The clean vehicles have not consumed more lube oil than the petrol vehicles. A few breakdowns have occurred. The problems have been solved and now the vehicles are running well.

The driver acceptance has been monitored and evaluated. In this survey 537 drivers were asked questions about their perception of the clean vehicles. 80 % of them stated that they were very satisfied with their experiences from driving clean vehicles and 80 % said that they would recommend others to drive clean cars.

Measure objective	Have the objective been reached?
Accelerate the take up of clean vehicles within the fleet of the city of Stockholm. Purchase of 200 clean vehicles.	Yes

Waste collection with biogas-fuelled vehicles (12.6)
The objective in this measure was to increase the experience and knowledge in the municipality regarding clean waste collection vehicles in Stockholm city centre operated by private entrepreneurs of the waste collection sector.

A questionnaire has been sent out to drivers of the vehicles. Their experiences of the vehicles have then been supplemented with technical data on the vehicles. In general, the drivers have been satisfied with the biogas vehicles. They are quieter when used in confined spaces and in addition, the drivers do not have the nuisance of diesel exhaust fumes as before. The total energy use has increased but the use of fossil resources has decreased.

Measure objective	Have the objective been reached?
Expand the municipality experience of clean waste collection vehicles in Stockholm city centre to private entrepreneurs of the waste collection sector.	Yes

Improved biogas refuelling infrastructure (12.10)
The lack of refuelling infrastructure for biogas-fuelled vehicles has been a great barrier. Improving the access to refuelling stations has been the main objective of this measure.

Three refuelling stations have been built in the course of this project. Initially, it was intended that that fourth station would be erected but the fourth station could not be built due to a debate about its location (i.e. near the city centre). The activities carried out within the project have led to an increase in biogas both in Stockholm and in other cities.

Improving biogas refuelling infrastructure will lead to:

Measure objective	Have the objective been reached?
Increase the number of clean vehicles to reach a breakthrough on the market.	Almost, since the breakthrough is not far away

Making clean vehicles less expensive (12.11)
One of the main objectives of this measure was to encourage vehicle manufacturers to produce clean vehicles and to make them available on the Swedish market. A common procurement of vehicles and a network of companies using and promoting clean vehicles by means of a system of subsidies for a part of the addition were two of the backbone tasks of this measure.

The evaluation has taken the before and after scenario into account. Evaluations of the indicators have been made twice. The basis for the evaluation is the questionnaire survey to the drivers in the Clean Vehicle Network. Data on fuel consumption, mileage, technical problems etc was combined with questions on driver perception of the vehicle. From these figures, the indicators on energy and emissions were calculated using certification values or life cycle data. The impact on mobility and awareness is rising and it has also been measured through interviews and questionnaires.

The share of energy from alternative fuels has increased, Fossil carbon dioxide emission has been reduced, The number of clean vehicles has increased in private companies and within the public. This project has had an impact of increasing the number of clean vehicles by 206 vehicles. The total increase is a result of the combination of reduced

prices and subsidies and Emissions of particles and nitrogen oxides are approximately the same as those calculated from certification data.

Measure objective	Have the objective been reached?
Increase the number of clean vehicles to reach a breakthrough on the market	Yes

Increasing clean vehicle use in private company fleets (12.13)
The objective of this project was to increase the market penetration of clean vehicles in private company fleets.

The evaluation has taken the "before" and "after" scenarios into account. Evaluations of the indicators have been made annually. The basis for the evaluation was the sales statistics for clean vehicles in the Stockholm County. If the project would not have been carried out, the conclusions are that without active and intense work to increase the awareness of clean vehicles and fuel, the knowledge about these would still have been quite low.

This project has reached good results. The direct achievements are:

- The number of clean vehicles has increased in private companies and within the public has increase by 2.440 vehicles representing different models.
- The mobility is similar for a clean vehicle compared to a conventional vehicle. The total energy consumption has decreased from 128 to 116 TJ/year. This has been accomplished by using clean vehicles instead of conventional vehicles without negative influence on the mobility. The share of renewable energy consumption has increased steadily during the project years 2002, 2003 and 2004.
- The emissions of fossil carbon dioxide on the vehicle basis have decreased from 186 g/vkm to 87 g/vkm. In this calculation, it has been taken into account that 68 % of the fuel for the vehicle is the alternative fuel and rest of the fuel 32 % is petrol. On the other hand, if 100 % petrol would have been substituted, the fossil carbon dioxide would have been reduced to 53 g/vkm.
- The reduction of CO_2 emissions implies that the total amount of fossil carbon dioxide has decreased by about 5 400 tonnes/year during the project time compared to the use of petrol vehicles only. In this calculation, the emissions during the full life cycle have been taken into account.
- The project has resulted in an increased attention in the media.
- The primary reason why companies purchase clean vehicles are that they want to test them because they are working actively with environmental issues, are curios or because they want to use them for marketing purposes.
- To convince the companies to choose clean vehicles there has to be additional and stable economical incentives.
- There is an obvious conflict between the company and their employees when they chose their company car, i.e. between the individuals' choice and the general company policy. There is lack of policies and guidelines within the company, which

leads to a high degree of freedom in the choice of a car. Because of that it is difficult to process common rules within the organisation.

Increasing clean vehicle use in private company fleets will lead to:

Measure objective	Have the objective been reached?
Raising the awareness of clean vehicles among important purchasing organisations thereby increasing the penetration of clean vehicles in private company fleets.	Yes

Web-portal for drivers of clean vehicles (12.14)
The objective of the measure was to promote and make information available and easy accessible on a public web site on the Internet.

After running the web-portal www.miljofordon.se for 18 months, it was evaluated through a questionnaire, distributed via e-mail and network e-mail lists to 500 visitors/users.

Before the web site was launched, information about clean vehicles was spread on different web sites and the reliability of the information on these sites was not transparent. There were only weak links between sites that promoted clean vehicles and sites with information about fuels. Furthermore, the field of clean vehicles is constantly developing. Hence, there was a profound need for continuing gathering information and to update existing information and make it available for potential buyers/users. Earlier studies concluded that a web site with focus on clean vehicles, open to everyone interested in clean vehicles (drivers, buyers, vehicle manufacturers, fuel suppliers) would be necessary to support the ongoing development in this area.

The aim of the project was to collect, refine and complement the information earlier spread on other web sites and to disseminate comprehensive information on clean vehicles and related issues, meeting a rising demand in this field. The evaluation carried out in December 2004 showed that the web site had 12 000 visitors per month by the end of 2004 and the number is continually increasing. The visitor's assessments are largely positive and the users are mainly (69 %) buyers or potential buyers of a clean vehicle. The contents corresponds to a very high degree to the visitors expectations and concerning content, it gives them all the answers they need (40 % gave the website the highest possible marks). Another 69 % answered that the site is very reliable; very few suspected commercial interests behind the information. The website/the information was easy to find on the Internet or through the clean vehicle-projects of the cities. The cities – Stockholm, Gothenburg and Malmö – sees the project as very successful and they have planned to make the website a permanent joint venture. Suggestions about improvements in the evaluation will be implemented in the continuing operation.

Make a web-portal for drivers of clean vehicles will lead to:

Measure objective	Have the objective been reached?
To reinforce the efforts of Stockholm in the promotion of clean vehicles as a solution for environment and energy matters in order to enlarge the clean vehicles penetration on the market	Yes

Graz

Graz has implemented 18 measures within Trendsetter. Partners in the project has been City of Graz, Spedition- und Internationale Transport GmbH, Public Transport Company of Graz, Taxi Group 878 Cityfunk Ltd, Styrian Transport Association, STVG Ltd, Erlach Consulting & Engineering, Province of Styria and Austrian Mobility Research.

The following measures have been implemented in Graz within Trendsetter

Work Package	Group of Measure	Measure	Measure
Access Restrictions (WP5)	Strolling zones	Implementation of strolling zones	5.3
Integrated Pricing Strategiesn (WP6)	Parking	Integrated pricing strategy for parking zones – differentiation between polluting and non-polluting vehicles	6.4
Public Passenger Transport (WP7)	Information to passengers	Customer friendly stops for bus and tram	7.5
	PT intermodality	Seamless linkage of modes	7.4
New Forms of Vehicle Use (WP8)		New services and services for special customer groups	8.1
	Car pooling/sharing	Increasing car occupancy	8.3
	Awareness rising	Site level Mobility Management	8.4
New Concepts for the Distribution of Goods (WP9)		Distribution of goods - Green city logistics	9.2
Innovative Soft Measures (WP 10)	Bicycle measures	Innovations in bicycle transport	10.1
	Trip planning	Marketing/information and quality management	10.5
	Awareness of clean transport and safety	Awareness for speed reduction and less car use	10.6
		Taxi drivers as information multipliers for clean transport	10.4
	Awareness of clean transport and trip planning	Integrated Mobility Centre	10.7
Integration of Transport Management Systems (WP11)	Traffic information	Dynamic traffic management system	11.3
	Improving PT traffic flow	Technical basis for an efficient customer focussed operation and information	11.1
Clean Public and Private fleets (WP12)	Heavy vehicles	Clean and user friendly bio-diesel bus fleet	12.3
	Light vehicles	Bio-diesel taxi fleet and bio diesel service station	12.7
	Clean fuel distribution	Optimisation of the bio-diesel collection system	12.8

Graz's contribution to Trendsetter demonstration objectives

- 134 bio-diesel buses operated on bio-diesel
- 63 taxis converted to bio-diesel
- 1 bio-diesel refuelling station
- 1 Environmental restriction zones
- 1 Environmentally oriented parking zones
- 5 strolling zones
- 3 Improved intermodal links
- 60 High customer friendly bus and tram stops
- 1 Logistic Centre
- 1 IT based logistic management systems
- 1 IT-based transport information systems and traffic management systems

Graz city objectives

From the city council side there exists a clear transport policy decision. It is the concept of "Sanfte Mobilität" – gentle mobility. The decision has following guiding objectives.

- City of short distances
- Balanced distribution of means of transport
- Socially and environmentally compatible traffic
- Good accessibility of all destinations for all modes
- Grass route planning and public participation public awareness

Trendsetter will contribute to these objectives by meeting:

City Objective	Have the objective been reached	Measure
Environmental objectives:		
Reduction of fuel consumption of 4 700t per year when the measures of TRENDSETTER are introduced.	At least 3000 tonnes/year	**5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8**
Reduction of transport related fossil CO_2 emissions by 24 700t/year.	12 220 t/year	**5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8**
Reduction of transport related emissions (HC 103t/y, NOx 69t/y, and particulate matters 8t/y)	NOx 7 t/year PM 4 t/year	**5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8**
Duplication of the volume of collected edible oil in households	Rise of about 20%	5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Safety goals:		
3% reduction of the accidents with bodily injury within TRENDSETTER.	Not measured as it could not be correlated with Trendsetter	**5.3**, 6.4, **7.4, 7.5, 8.1**, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, **10.6, 10.7, 11.1, 11.3,** 12.3, 12.7, 12.8
20% increase of compliance with speed regulations.	Not measured	5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, **10.6**, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Mobility goals:		
20% increase of participation of handicapped people in public transport.	Not measured	5.3, 6.4, 7.4, 7.5, **8.1**, 8.3, 8.4, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Break the trend of decrease of public transport use from the last three years.	Yes – public transport is increasing since 2004	5.3, 6.4, **7.4, 7.5, 8.1**, 8.3, **8.4,** 9.2, 10.1, 10.4, **10.5**, 10.6, 10.7, 11.1, 11.3, **12.3**, 12.7, 12.8
Increase of bicycle traffic of about 5% within TRENDSETTER.	Yes	5.3, 6.4, **7.4**, 7.5, 8.1, 8.3, 8.4, 9.2, **10.1**, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Increase of combined modes B&R and P&R of 25%.	Yes, new bike and ride and park and ride places have very high occupancy rates – from this a rise of at least 25% can be deduced	5.3, 6.4, **7.4**, 7.5, 8.1, 8.3, **8.4**, 9.2, **10.1**, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Reduction of car use for the home to school traffic of 20%	Only in targeted schools, about 20% reduction (in targeted companies a reduction between 11 and 16%)	5.3, 6.4, 7.4, 7.5, 8.1, 8.3, **8.4**, 9.2, 10.1, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
Awareness goals:		
Increasing level of satisfaction with the quality of PT of 15% (users)	High satisfaction segment o customers has increased from 26 to 30% from 2003 to 2004.	5.3, 6.4, **7.4, 7.5, 8.1**, 8.3, **8.4**, 9.2, 10.1, 10.4, **10.5**, 10.6, **10.7, 11.1, 11.3, 12.3, 12.7, 12.8**
Increasing level of satisfaction with the quality of bicycle policy of 12% (users)	Not measured	5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, **10.1**, 10.4, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, 12.8
To reach a recognition rate for edible oil collection actions of 70% of the households.	In the targeted area a level of 50% was achieved	5.3, 6.4, 7.4, 7.5, 8.1, 8.3, 8.4, 9.2, 10.1, **10.4**, 10.5, 10.6, 10.7, 11.1, 11.3, 12.3, 12.7, **12.8**

Green and bold – Measure contributed to the objectives fulfilment
Grey – Not applicable for this objective

Measure description

Implementation of strolling zones (5.3)
Graz has one of the largest pedestrian precincts among European cities. But the neighbouring districts are strongly affected by heavy individual motorised traffic. Accessibility of the precincts through these surrounding areas is neither safe nor attractive, which is a problem in many cities with large pedestrian areas. The objective of this measure was to implement four strolling zones in central Graz, thereby improving the quality of living and attractiveness of the city, to promote sustainable alternatives to private cars in the city centre such as walking and biking, to provide other cities with best practice examples and to reduce emissions and noise in the city centre. The pedestrian areas will be extended with differentiated access restrictions through an "onion-skin system" of pedestrian precinct, bike access precincts, the missing link strolling zone and beyond that the city wide speed limit of 30 km/h for certain suitable areas. Car traffic will not be excluded totally from inner city traffic, but will only play a minor role in these streets with respect to number and speed.

The measure implementation has been somewhat modified. Other strolling zones were selected, but the number was maintained.

Measure objective	Have the objective been reached?
Implementation of four "strolling zones" in central Graz and thereby improve the quality of living and attractiveness of the city.	Yes
Promotion of sustainable alternatives to private cars in the city centre, such as walking and biking.	Yes
Provide other cities with best practice examples from successful implementations of strolling zones in city centres.·	Yes
Reduction of emissions and noise in the city centre.	Yes

Integrated pricing strategy for parking zones – differentiation between polluting and non-polluting vehicles (6.4)
City of Graz has introduced a new parking system that makes a differentiation between polluting and non-polluting vehicles. Non-polluting vehicles are those that fulfil the Euro IV norm and other cars that emit less than 140 g (130 g for diesel vehicles) CO2 per driven kilometre and they will get a decreased parking tariff.

Before April 2004 the parking tariff was € 1 per hour. After April, the drivers of ordinary emission cars paid € 1,20 per hour the hourly parking tariff for low emission vehicles was reduced to € 0.80.

For getting the special tariff the drivers have to register their vehicle at the city council. There they receive a so called Umweltjeton (special coin) and a special sticker. The sticker is an official document, which is filled out by the city and includes the car number, type of car, colour of the car and an official seal of the city of Graz.

In order to implement the lower parking tariff, the legal regulation, in particularly the local law, which defines the parking tariffs, had to be changed. A paragraph, that declares the term low emission vehicles and the special tariff applied, was added.

Measure objective	Have the objective been reached?
Development and implementation of a new parking model system, acceptable for the citizens and technical and organisational feasible	Yes
Increased number of smaller and/or low emission vehicles in the city centre, with reduced emission, noise levels and energy consumption as consequences.	Yes

Seamless linkage of modes (7.4)
One P&R lot was established at the end stop of tram 1 in Mariatrost. Before that, some cars parked wildly somewhere around that end stop. The usage of the lot is free of charge. It is linked by a tramway directly to the city centre of Graz. Frequency of service is roughly 7-10 minutes, travel time to the city centre is about 12 min, where the tram links to all other lines and the federal railway.

Another P&Pool lot was established for outbound traffic towards the North (Bruck an der Mur).

At the PT stops of Andritz and Liebenau, a better linkage between (local and regional) buses and trams was created by reconstructing the whole tram (end-)station.

New tangential buslines were implemented, which allow travelling between outside city districts without having to take a detour through the city centre.

Guaranteed connections have been created at important stops, where passenger change between lines or modes.

Measure objective	Have the objective been reached?
Improve intermodality between transport means·	Yes
Improve information to travellers on intermodality·	Yes
Improve PT attractiveness and therefore increase the number of travellers	Yes
Better linkage of regional buses and city buses and tram	Yes
Better linkage of outer city districts	Yes

Customer friendly stops for bus and tram (7.5)
In Graz, there are 800 stops for bus and tram, most of them are not yet user-friendly. Within CIVITAS, accessibility to PT modes should be enhanced, with the mobility and vision impaired people as a main target group.

A catalogue of existing stops and their equipment was set up. The most important stops were chosen for reconstruction (at end of lines, important interlinkages between PT lines or other modes, closer to city centre and stops with inbound connections).

Originally, it was planned to equip all stops with maps of the neighbourhood, but due to personnel shortage this was skipped.

In cases of stops at crossings and the necessity, the whole crossings were rebuilt in parallel with the stops.

New stops are usually also equipped with a bike rack for B&R.

Some stops are equipped with RBL, the real-time information system. However, as the city expects a technology which relies on mobile phone usage, probably not more than ¼

of all stops will be equipped with that system. All new stops get ductworks, so as to facilitate later equipment with real-time information systems.

Meetings with representatives of the disabled were held and various solutions discussed. They favoured systems to enter buses of tram with drivers support instead of automated systems - as the latter ones often don't work in the colder seasons and often require wheelchair users to get down onto the road.

Measure objective	Have the objective been reached
Improve information to travellers at more accessible bus stops through innovative tools contributing to the modernisation of the PT image	Yes
Improve access for handicapped people to PT	Yes

New services and services for special customer groups (8.1)
Two new bus lines into the Hinterland have been created (78 and 80 to Seiersberg/Feldkirchen)

Together with a home for disabled and elderly, a taxi line was established in order to connect it to the final stop of a tramline. This was well accepted, and only blocked due to an administrative mistake for one year. From 2005 onwards it will again run with a slightly changed principle.

During TRENDSETTER, it was decided to replace all on-demand services apart from the theatre taxi by night buses, which run on Friday and Saturday nights, to serve especially the entertainment scene of young people. The existing on demand systems was highly inefficient and hardly requested. After they were stopped, complaints were marginal. The night buses, which were introduced in 2003, are a big success

After a certain time of operation, two routes of the night buses were extended into the suburbs, as they requested it. One suburb has implemented an own Taxi to carry home customers that have arrived by night bus at the closest end stop in Graz.

Measure objective	Have the objective been reached
Improved quality of public transport in the hinterland/suburban region·	Yes
Special services to increase number of passengers amongst disabled and elderly·	Yes
Increase of the usage of on-demand services by harmonisation and improvement of all on demand (5) taxi systems·	During the project, it was decided to replace all on-demand services apart from the theatre taxi by night buses.
All this will contribute to the quality of public transport and induce mode change, which reduces energy consumption and environmental impact.	Yes
Improved service by introduction of night buses	Yes

Increasing car occupancy (8.3)
The function and physical profile of this access road had to suit the standards of the national highway administration (ASFINAG) but could not fulfil the needs of a city street. Therefore the city had to buy a section of the access road from ASFINAG (i.e. paid

for their loss of fees for the usage). Only after this, the HOV lane could finally be implemented in December 2004.

The lane has been assigned the status of a bus lane with the exception of usage by taxis and vehicles with 3 or more passengers. Average occupancy on that road used to be 1.5, so the limit of 2 persons would have resulted in an over-usage of the lane.

In Austria, the introduction of HOV lanes is not foreseen in the law, therefore the dedication of a buslane was a feasible way to get around this difficulty.

A park& pool facility was established in the North of the city for commuters that gather for car pooling for outbound traffic.

Measure objective	Have the objective been reached
Establishment of HOV-lanes and/or use of bus lanes for HOVs (without restriction for public transport)·	Yes
Establishment of park&pool areas (parking grounds for car pools) by motorways in the region;	Yes
Establishment of a matching service for car-pools	No, it has been abandoned
Accompanying PR-and awareness raising work	Yes

Site level Mobility Management (8.4)
Among the measures for companies are:

- Days of individual mobility (trip) consulting
- Mobility information package for newcomer in companies
- Parking management
- Cycling campaigns

The city of Graz has several locations for events – one of which is the new city hall used for fairs and big concerts. It is the major concern of the event organisers to handle transport in a smooth way. Hence, a study was made to analyse the potential for a modal shift and the most efficient turning points for action.

Children as the future generation are effected in two ways by motorised transport:

1. the suffer from pollution most and are at risk by car drivers, when they walk or cycle (e.g. to school)
2. they get used to a certain modal choice and are likely to prefer the car in case they don't learn that alternatives are attractive and feasible. Hence, in Graz, mobility management measures were implemented at 4 schools consisting of car pooling within the school classes (to this end, an electronic system was set up to facilitate the foundation of car pools), analysis of the school neighbourhood with respect to traffic safety, collecting "green miles" while walking or biking to school, car free month and painting the streets, measuring speed, etc

Measure objective	Have the objective been reached
Implementation of mobility management measures for companies, schools and large scale events in order to reduce the share of single car use in favour of other modes. This will reduce energy consumption and environmental impact.	Yes

"Retail goods", Graz (9.2)
In Graz a project to consolidate retail goods to a shopping centre was implemented in Trendsetter. The project aims to consolidate goods and was performed in two stages. The consolidation started with one (virtual) storage, using ecological trucks or other intermodal transporters (trams) to reduce the number of trips into the city and urban area.

In the first step of the project the project management company (ECE) was looking for commercial partners to establish the platform company Styrialog. These partners were: forwarding companies, railway company , logistics consultant and project management for this project. The company was established with the main goal to consolidate the existing flow of the goods of the shareholders. After founding the platform company a syndicate agreement had to be established to guarantee the confidentiality of information about customers of each partner.

The actual pilot project begun in the second stage, where ECE started the project with two big partners – ITG as forwarder, located with its warehouses at the southern city border and Kastner & Öhler as the biggest shopping centre of the city.

The project aims to improve exploitation of freight capacities and to reduce the number of trips and stops. This will lead to a reduction of emissions and a better urban environment.

Measure objective	Have the objective been reached?
Improved exploitation of freight capacities	Yes
Reduction of trips and stops	Yes
Reduce noise from distribution traffic in sensitive urban and hospital areas·	Yes
Reduce fuel and energy consumption and emissions of CO2, NOx and particulates	Yes

Innovations in bicycle transport (10.1)
The modal share of the bike had increased in Graz since 1980, but the increase has slowed down. Graz would like to surpass the city of Salzburg, which is currently the Austrian city with the highest share of bike with about 17 %, whereas in Graz there are only 14.2% (1998).

A bike policy audit was realised, starting with the analysis of the status quo. It laid down priorities and measures to be implemented within TRENDSETTER. Participants: bike lobby, politician (city councillor for transport), related city departments, external consultant as moderator.

A bike map containing bike routes, repair facilities and bike shops was provided in print version and via the internet. Access is via the home page of the city.

A new information brochure "20 reasons to take the bike" was produced for the start of the bike season 2005.

All new PT stops and streets all over the city got equipped with B&R facilities. The basic equipment is bike racks, where bikes can be locked to. At the new end stops, roofed facilities are provided. New bike paths and crossings over the railway with underpasses were built or planned.

The bike training for pupils of the age group of 10 was extended and offered to all schools in Graz.

Measure objective	Have the objective been reached
Improved level of bicycle policy in Graz and growth of the modal share of bicycles – thereby reducing fuel consumption and environmental impact. Set up a quality plan, pointing out the weakest parts in the bicycle system.	*

* In general, the objectives could be reached. However, it is extremely difficult to estimate the contribution of individual bike measures to the modal split after most of the measures have been implemented within TRENDSETTER: the bike share has not grown as much as expected.

Taxi drivers as information multipliers for clean transport (10.4)
The aim of „Ökodrive – From the frying pan into the tank" has been the creation of a sustainable cycle from used frying oil as harmful waste to valuable raw material at the other hand ending up with the renewable low emission fuel bio diesel.

Taxi drivers are educated and trained to be information carriers: Using the possibility to talk to the taxi passenger they will multiply Clean urban transport information as "lay disseminators". The objective is that this will encourage mode shift and also increase the collection of waste cooking oil – thereby reducing fuel consumption and environmental impact.

Measure objective	Have the objective been reached
Taxi drivers are educated and trained to be information carriers. Using the possibility to talk to the taxi passenger they will multiply Clean urban transport information as "lay disseminators". The objective is that this will encourage mode shift and also increase the collection of waste cooking oil – thereby reducing fuel consumption and environmental impact.	No

Marketing/information and quality management (10.5)
Through quality management system for public transport as well as innovative communication, marketing and information measures about sustainable transport modes, modal shift from single car use will be encouraged. Thereby energy consumption and environmental impact will be reduced.

The PT association for the region of Styria ("Verbund") realised quality controls with so-called „mystery shoppers", who assess busses, stops, and the keeping of the time schedule by applying a catalogue of quality criteria. In case of deviations the Verbund gets in touch with the respective transport operator.

Among those measures are actions such as „Auf geht's“ (musicians in the buses, trams and railway), the mobile birthday party of the 10-year-jubilee of the Verbund, or advertising of a special PT ticket for leisure trips.

So far, an electronic system allows getting pre-trip information about connections from stop to stop. In February 2005, door-to-door information will be possible, so customers don't even need to know the closest stop anymore.

Measure objective	Have the objective been reached
Through quality management system for the public transport as well as innovative communication, marketing and information measures about sustainable transport modes, modal shift from single car use will be encouraged. Thereby energy consumption and environmental impact will be reduced.	Yes

Awareness for speed reduction and less car use (10.6)
The city of Graz aims at a higher traffic safety for people using non-motorised modes of transport. The strategy focuses on the speed reduction of passenger cars, as they are the main risk for pedestrians and bikers.

A second focus of the awareness raising activities of the city of Graz lies on the reduction of car use in favour of more sustainable modes.

Graz had introduced 30km/h speed limit for all streets in Graz apart from streets with the right of way, where cars are still allowed to go 50 km/h. Within TRENDSETTER, previous streets with the right of way were checked again and became part of the 30 km/h speed limit street network.

The concept of the car free day was changed: from closing down bigger parts of the inner city streets it was reduced to temporary closures of sections of streets in 2004.

Speed Control devices were spread all around the city, which inform drivers how fast they go without taking legal action against them in case they are too fast. It has proven a valuable and fairly simple awareness raising and speed reduction tool.

Measure objective	Have the objective been reached
The city of Graz aims at a higher traffic safety for people using non-motorised modes of transport. The strategy focuses on the speed reduction of passenger cars, as they are the main risk for pedestrians and bikers. Car drivers will receive feedback on their driving behaviour by various means, addressing different aspects. A second focus of the awareness raising activities of the city of Graz lies on the reduction of car use in favour of more sustainable modes.	Yes

Integrated Mobility Centre (10.7)
Mobil Zentral provided integrated information service, but was separate from services provided by GVB and Post-bus-lines, that only provided information on their proper network. GVB and Post also sold special tickets that could not be sold at Mobil Zentral.

Therefore a one-stop-shop, the integrated mobility centre, was opened to create bigger synergies.

Measure objective	Have the objective been reached
Achieve a reduction in solo car use and Increase usage of public transport and intermodality	Yes
Reduce operating costs by providing synergies and increase ticket sale	Yes

Technical basis for an efficient customer focussed operation and information (11.1)
The measure 'Technical basis for an efficient customer-focused operation and information' has been implemented at the 'Grazer Stadtwerke AG - Verkehrsbetriebe', the main public transport provider in Graz. The project has been elaborated together with the town-council of the city of Graz and the provincial government of Styria

270 trams and buses have been equipped with on board computers so the vehicles can be located. A computerized operational control centre has been renewed to fulfill the requirements of a modern transport company. The on board computers sends the vehicles actual position to the computerized operational control centre. Controllers at the control center can thereby get an overview of the traffic situation in the network and the location of all vehicles. Priority to public transport can also be given. Drivers will be informed about deviations from the regular timetable and can make backlogs in the schedule. It is then possible to secure the connection to another line since it will always be known exactly where the two vehicles are at the moment. Within all vehicles on-board-information is given both visually and acoustically so that also people with hearing problems or visual impairments can have access to the information. A second parallel data radio system has been installed to increase the coverage of the whole transport management system.

104 real time information signposts have been constructed to inform passengers with real time information at public transport stops. All old real time information signposts have been adapted and integrated in the new system. The displays inside and outside of the vehicle as well as the acoustic facilities are controlled by the on board computers.

The new system aims at creating an interoperable platform for optimised operation. This will allow buses from all participating companies (also small ones) to profit from the system. For the first time, the traffic operation system enables an efficient organisation of the operation of tramways and buses. Through the "re-routing" management tramway stops can be serviced by buses in case of accidents or tramway lines being obstructed by cars parked on the rails. Furthermore the use of additional buses can be initiated quickly, in cases of overcrowded or defect buses. The collected data can be used to improve timetables and vehicle usage.

Measure objective	Have the objective been reached
Efficient management of the operation of public transport in Graz, through better management tools. This will lead to fewer disruptions and a better traffic flow of public transport and an overall increase of quality of service, speed of operation and accessibility.	Yes
The optimisation of traffic flow will lead to reduced emissions and energy use as well as a reduced number of noise peaks.	Yes
The management system enables an integration of city buses and regional buses.	Yes
The measure promotes the use of public transport as it gets more attractive with higher accessibility, better quality of service, increased reliability and better internal and external information ·	Yes
The better service encourages a modal shift towards public transport thereby reducing fuel consumption and environmental impacts. The implementation of the measure will also lead to less private traffic.	Yes

Dynamic traffic management system (11.3)
As in many other cities, it has been difficult for the general public in Graz to get reliable information about the current traffic situation. In Graz there are several systems in parallel, some of them very modern: e.g. traffic control system, RBL-System (computer based vehicle location and operational control system), the street data base or the online fleet management system of the taxi operator. These systems are run by different operators and have not been interlinked. In this measure, data from various sources has been collected, processed and combined and presented in ways useful to citizens and professional drivers.

The Technical University Munich (TU München) developed an innovative methodology to combine traffic data of the fleet management system of the taxi operator 878 (floating car data; FCD) with data from automated traffic counts and of a traffic control optimizer called MOTION

The existing control of the network will be extended to enable strategic and dynamic reactions to events such as congestion, tunnel closure etc

By utilising the radio telegrammes of the on board computers of the GVB traffic management system, the traffic lights will be influenced in favour of PT.

The online and real-time information about the current traffic situation will become the basis for strategic decisions of the police traffic control centre as well as for information via internet and mobile phone to all traffic participants

Measure objective	Have the objective been reached
Reduce emissions of traffic in absolute terms, through keeping the traffic flow steady.·	Yes
Reduce congestion hours by keeping the traffic flow away from obstacles and congestion, and guide drivers to adequate parking spaces or park&ride areas, to thereby encourage a modal shift to other modes for mobility.·	Yes
These measures will reduce fuel consumption and environmental impacts.	Yes

Clean and user friendly bio-diesel bus fleet (12.3)
The collected used cooking oil is converted into biodiesel and provides the whole busfleet. The busfleet has also an optimum interior design, a better acoustic and visual information and ramps for disabled persons.

Attractiveness of the city will increase due to less exhausts by the biodiesel driven buses. Also, public transport becomes more user-friendly, especially for the disabled and other specific target groups.

The Grazer Verkehrbetriebe are interest in technical progress for better air quality, therefore this company switched the whole busfleet to biodiesel operation.

Innovative aspects include the 100 percent switch to alternative fuel for the entire bus fleet of the city of Graz is new, as well as the innovative financing scheme (leasing model for tramways and buses, including maintenance), which allows for a quick renewal of the fleet, achieving customer friendly buses, accessible also for disabled.

Measure objective	Have the objective been reached
To convert the entire PT bus fleet of Graz to bio-diesel.	Yes
To thereby reduce emissions and environmental impacts from the public transport system	Yes

Bio-diesel taxi fleet and bio diesel service station (12.7)
It has happened the first time that an entire taxi fleet of this size switches towards bio diesel. The implementation of a bio-diesel service station in 2003 provides an opportunity to raise the number of bio-diesel user due to the opening for the public.

Due to technical problems appearing at the starting phase of the project two bio diesel experts of the Department of Chemistry, at the Karl Franzens University of Graz and Institute for Internal Combustion Engines and Thermodynamics, at Technical University of Graz were contacted to get problems solved. Several working meetings with the two experts chairman of the taxi company and TRENDSETTER management team were carried out.

The change-over from fossil fuel to bio-diesel use for the emergency backup generator flew smoothly.

In Austria, Graz is the first city to switch to bio-diesel for a complete taxi fleet of this size. A new bio-diesel service station for taxis will be established to meet the increased demand for bio-diesel.

Measure objective	Have the objective been reached
Accelerate the gradual change from fossil fuel to bio-diesel in the largest taxi fleet in Graz	Yes

Optimisation of the bio-diesel collection system (12.8)
Mobile collection with toxic-waste bus, stationary collection in the district authorities and at 2 fire brigades, in the summer in the context of district clearing outs. The city of Graz

offers a clearing out service to the citizens to get rid of bulky waste, scrap metal etc., this is picked up by the city. Citizens can also get rid of their oil there and then evaluation of the awareness raising activities concerning waste cooking oil and the mobility consultation

Development of the logistics for collecting used cooking oil from restaurants, Collected used cooking oil is sold to SEEG (Südsteirische Energie- und Eiweißerzeugungsgenossenschaft) as valuable raw material for the production of biodiesel. SEEG is a concern which dissipates used cooking oil into biodiesel.

Conversion of used cooking oil to biodiesel. Biodiesel is used as renewable low emission fuel for the operation of buses in the public transport service.

It is the first time a combined consultation for edible-oil collection and a realisation of a mobility service is offered. The same applies to the combined consultation for private households about mobility services and recycling.

Measure objective	Have the objective been reached
Optimisation, improvement and extension of the system for the collection of waste cooking oil, for use as fuel for the bus and taxi fleets, in combination with mobility consultancy in private households and restaurants (similar to the well established system of collecting and recycling waste).	Yes

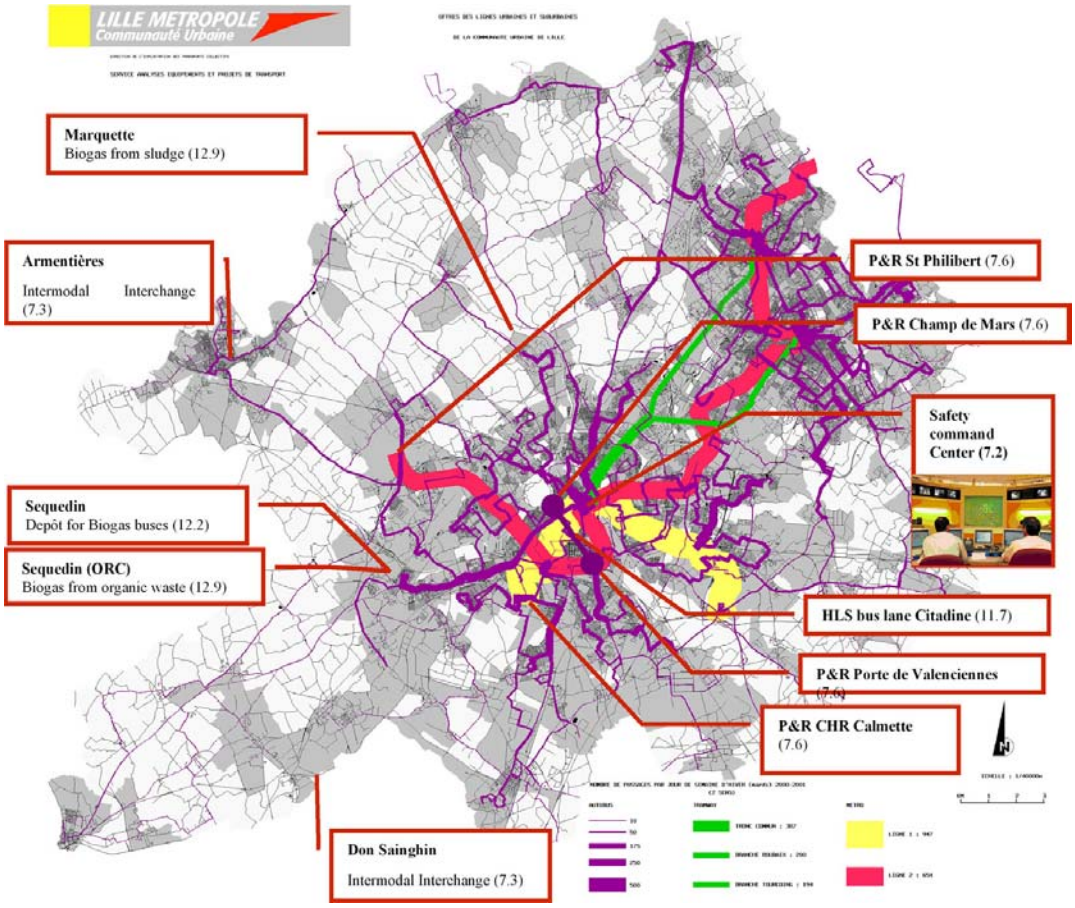
Lille

Lille has implemented 10 measures within Trendsetter. Partners in the project has been Lille Metropole and Syndicat Mixte des Transports

The following measures have been implemented in Lille within Trendsetter

Work Package	Group of measures	Measure description	Measure N°
Integrated pricing strategies (WP6)	Smart Card Systems	Smart card systems and integrated ticketing	6.2
Public Passenger Transport (WP7)	Public Transport safety	Public Transport Safety	7.2
	Public Transport intermodality	Intermodal local/regional transport interchanges	7.3
		Park & Ride facilities	7.6
New forms of vehicle use (WP8)	Car pooling/sharing	Company Mobility Plan in the administration fleet	8.2
	Awareness raising	Urban Mobility Plan	8.5
Integration of Transport Management Systems (WP11)	Improving Public Transport traffic flow	High Level Service Bus Routes	11.7
Clean Public and Privare Fleets (WP12)	Heavy vehicles	Biogas Bus Fleets	12.2
	Light vehicles	Clean Municipal Fleets	12.5
	Clean Fuel distribution	Analysis of the biogas experience	12.9

The map below shows the geographical distribution of the measures.



Lille's contribution to Trendsetter demonstration objectives

- 128 biogas buses
- 84 new clean vehicles in city fleets
- 1 new biogas refuelling stations for buses
- 1 high level service bus lane
- approximately 3 000 P&R parking places in 4 P&R facilities

Lille city objectives

The Lille City objectives, adjusted to TRENDSETTER and divided on Mobility, Energy and Environment, can be described as below.

City Objective	Have the objective been reached	Measure
Mobility		
Increase the number of passenger	Yes	**6.2, 7.2, 7.3, 7.6, 8.2, 8.5, 11.7,** 12.2, 12.5, 12.9
Increase the Public Transport quality	Yes	**6.2, 7.2, 7.3, 7.6,** 8.2, **8.5, 11.7,** 12.2, 12.5, 12.9
Increase Public Transport attractiveness	Yes	**6.2, 7.2, 7.3, 7.6,** 8.2, **8.5, 11.7, 12.2,** 12.5, 12.9
Improve intermodality between transport means	Yes	**6.2,** 7.2, **7.3, 7.6,** 8.2, **8.5,** 11.7, 12.2, 12.5, 12.9
Encourage alternative solutions to private cars	Yes	6.2, 7.2, 7.3, **7.6, 8.2, 8.5, 11.7,** 12.2, 12.5, 12.9
Energy		
Produce and use biogas (local waste and sewage treatment)	Yes	6.2, 7.2, 7.3, 7.6, 8.2, 8.5, **11.7, 12.2, 12.5, 12.9**
Accelerate the introduction of clean vehicles in the municipality fleet	Yes	6.2, 7.2, 7.3, 7.6, 8.2, 8.5, **11.7, 12.2, 12.5, 12.9**
Environment		
Reduce noise	Yes	6.2, 7.2, 7.3, 7.6, 8.2, 8.5, 11.7, **12.2, 12.5,** 12.9
Reduce pollutant emissions	Yes	6.2, 7.2, 7.3, **7.6, 8.2, 8.5,** 11.7, **12.2, 12.5,** 12.9
Increase clean vehicles ratio within municipal fleets (heavy and light vehicles)	Yes	6.2, 7.2, 7.3, 7.6, 8.2, **8.5**, 11.7, **12.2, 12.5,** 12.9

Green and bold – Measure contributed to the objectives fulfilment
Grey – Not applicable for this objective

Measure description

Smart card systems and integrated ticketing (6.2)
Fare integration, together with the intermodal interchange strategy, will allow a large promotion of Public Transport solutions and, beyond these, the increased use of Public Transport in the Metropolis. Innovative aspects include in particular payment of fares within all public transports (& P+R) with the same Smart Card.

An excellent co-operation between Lille Metropolis, the Nord/Pas-de-Calais Area Area, Transpole and the SNCF made it possible to study concrete measures in favour of fare integration. Since the end of 2002, many meetings took place, of the studies were carried out and the documents were finalized.

Now, the technical proposals for a fare integration are to be submitted to the final approval of the elected officials. Several, in-house and in exchange was studied in detail and could be implemented quickly in the event of political validation.

Measure objective	Have the objective been reached?
Improve intermodality between Public Transports (PT)	Yes
Improve attractiveness of PT	Yes

Public transport security (7.2)
To efficiently attract customers to the Public Transport, the adequate levels of security must be put in operation and made visible to the public, as this issue is viewed as a major element of Public Transport attractiveness. The measure is based on decisions taken in the Local Safety Plan from 1998. The total safety plan is involving a 40 M€ budget.

These are essentially following three directions:

- Rapid intervention in case of problems. This is managed through the localisation of intervention fleet via GPS and localisation of bus fleet, together with an increased human presence in the metro and in the buses
- Cooperation between the PT, police and court, through better communication and common actions when appropriate
- Evaluation and follow-up of the impact of these actions and corresponding feed-back and improvements

The main problems that were solved by the measure relate to the necessity of improve attractiveness of Public Transport through a higher feeling of security and safety and to the effective implementation of measures leading to such higher security and safety.

Measure objective	Have the objective been reached?
Improve security in Public Transport	Yes
Ameliorated the public opinion of public transport security &safety	Yes
Improve attractiveness of PT	Yes

Intermodal local/regional transport interchanges (7.3)
The multimodal interchanges are placed in a specific legal context:

- The law on the air of December 1996, which recognizes to anyone the right to breathe an air which does not harm its health.
- The Urban Mobility Plan (PDU) adopted by LMCU in June 1999, which aims to limit pollution of the cities by supporting the development of the alternative modes.

In addition to the development of the collective transport system, the PDU recommends improving the railway offer between Lille and the large cities and encourages the creation of multimodal interchanges for urban transport.

In order to obtain a coherent, balanced and readable urban environment, all the actions carried out in the city must contribute to the improvement of the connections in collective transport and to the opening on the Lille metropolis which is in the heart of a network

connecting six European capitals (Brussels, Bonn, the Hague, London, Luxembourg and Paris).

The project of multimodal interchange in Armentières aims to relocalise functionally and spatially the site while bringing quality and comfort and while being supported by the tremendous opportunity that Lille metropolis is the third French river port and the fourth freight airport as well as the most dense railway network France after Paris.

On Don Sainghin the objective is to requalify and emphasize "country" spaces in order to improve the accessibility of the users and to solve the problems of wild occupation of public space.

The involved actors are very numerous: organizing authorities of transport (Lille metropolis Urban Community + Nord/Pas-de-Calais Area Area + Department of North), conveyors (the SNCF, RFF, Transpole), towns of Armentières and Chappelle d' Armentières.

This measure is innovative for the Lille metropolis as it creates a pole offering a true alternative for the use of the private car on the canton of Armentières. This project must also make it possible to orient via Armentières, all the inhabitants of the area of Armentières and Western Flandres towards Lille, a major offer in terms of rail (the densest rail network after Paris). The project must consequently allow the development of economic, social and cultural perspectives.

The project aims at the development of intermodality through following elements:

- Reinforcement of the bus attractiveness: the offer must be consolidated with the purchase of a hundred additional buses before 2006. This new offer will make it possible to better structure the service on the territory of the community. In the dense zones such as Armentières the startup of high level of service bus lines is also envisaged. During the renovation of the bus fleet, the priority will be given to the vehicles accessible to reduced mobility people and functioning with "clean" fuel.
- The valorisation of transport in exclusive right of way: TER (express regional transport, the regional train offer)
  Further to the future doubling of the subway, it is envisaged an increase in capacity of the TER trains and a frequency increased at the peak hours on three lines from Lille towards Armentières, La Bassée and Seclin. Improvements will be also made to the transborder railway offer towards Courtrai and Tournai, the whole of the basin of the Western Flanders (Belgium sector of Ypres) will be thus connected via Armentières and the TER network to the high-speed trains departing from Lille
- The organization and continuity between collective and individual transport by the refitting of existing relay parks or by the creation of new sites
- Continuation of tariff integration and multimodal information in order to make the offer more coherent and more readable: to use only one single ticket within the metropolis, to propose tariffs for the short trips.

Measure objective	Have the objective been reached?
Improve intermodality between all means of transport	Yes
To limit the growth of the use of the private car and even to push it away from the city.	Yes
To double the use of collective transport from here 2010	To be evaluated after 2010

Park and Ride facilities (7.6)
In addition to the development of the collective transport system, the PDU (Urban Mobility Plan) is recommending improvement in the railway offer between Lille and the large cities and encourages the creation of multimodal interchanges for urban transport. All improvements of the connection in public transport must be in balance and readable urban environment.

A network of park & ride facilities, with specific spaces for the 2 wheelers in most cases, will allow to keep the cars away from the city and to facilitate direct access to public transport. To achieve the park & ride facilities the measure has been dealing with the following tasks. Study of a type of fence "anti-nomads" and of a system of barrier adapted with specific space for the guard, two garage with bicycles in close connection to the heavy modes (subway, tram and regional train) and installation of adequate lighting and a video monitoring connected to the guard room of the site. In case of a correspondence with the subway, this video monitoring was connected to the central post office monitoring the exploitation in order to ensure a constant surveillance.

Measure objective	Have the objective been reached
Improve intermodality with P&R facilities in Lille.	Yes

Company Mobility Plan in the administration fleet (8.2)
The plan of urban displacements (PDU), adopted by LMCU in June 2000, has slow down the growth of the motor vehicle traffic in incentive the population. Instead people have started to use public transport, practise walk and bicycle.

LMCU thus wished to open the way and to be used as example by implementing a company mobility plan (PDE) since the beginning of the year 2002. One reason for that is that employers have an essential role to encourage the employees to choose alternative modes vs. cars and work trips are a significant share of displacement in peak hour.

The PDE relates to all 2 000 Community agents and includes/understands improvement of the pedestrian and bicycle routes to the accesses of the hotel of community, the development of the car sharing, the financial support at the level of 50% of the cost of the urban and sub-urban public transport season tickets (paid by LMCU).

The interest for company mobility plans is now adopted by many other organisations in the region: Regional Authority (Conseil Régional), Department Authorities (Conseil Général), private companies such as "La Mondiale" insurances, etc.

Measure objective	Have the objective been reached
Improve car pooling in Lille Municipal fleet	Partially, time is needed to create new habits
Favour the two-wheelers	Yes
Increase the use of public transport	Yes

Urban Mobility Plan (8.5)
The measure is implemented according to a methodology defined in the main urban mobility plan (PDU)

To implement locally the PDU through "micro-PDU" charter: The "micro-PDU" charter proposes actions to implement locally actions to allow reaching the objectives of the Urban Mobility Plan. Recommendations of this charter will apply in the projects of urban development thus that in the projects of adjustment of public spaces and of road system. It is annexed to the PDU.

Pilot studies will initiate the "micro-PDU" steps: the studies will be carried out by the Lille metropolis to validate working methodologies associating more closely to projects urban development strategies and mobility by all modes. These studies will conclude on a generalization of these procedures within the Lille metropolis

The micro-PDU of the Weppes area came from a requirement to further investigate the operational modalities of the local mobility.

Measure objective	Have the objective been reached
Implement parts of Lille's Urban Mobility Plan (PDU) and increase the knowledge of the comprehensive approach to city planning, which is found in the PDU.	Yes

High Level of Service Bus Routes (11.7)
The measure aims was to improve the attractiveness of public transport in Lille and thereby reduce car traffic and emissions in the city centre. The development of the service require:

- Construction of bus lanes on the existing roads (less place for cars)
- A bus location system to give buses priority at junctions, so they can drive more frequently and speedily.
- A higher commercial quality i.e. better accessibility for the customers, layout changes of bus stops and interchanges and better timetable and journey information.

Implementation studies including technical, financial and legal specifications for four high service bus routes have been carried out. One of four bus routes have been implemented, the other three are expected to be brought into service at the end of 2007. In a longer perspective 12 bus routes are expected to be implemented. The objective of these lines is to anticipate a more ambitious project: the tram-train.

The CITADINE-line was brought into service in September 22, 2004 and operates daily from 7 AM to 8 PM (and 10.30 PM when there is a football match). The line circulates with gas buses, and is connected with three Park&Ride facilities (1 500, 390 and 330 parking places). During the first 6 months, within the framework of a promotional

campaign, Park&Ride facilities and shuttle were free. During the free start-up phase, the Citadine transported 14 000 travellers daily. Today it transports 12 000/day. The stakeholders of the CITADINE are the elected officials and the technicians of the urban community of Lille, the cities and the conveyor.

Dedicated lanes, priority at crossroads, location system and commercial quality are the common characteristics of all the High Service bus routes to be implemented in Lille Metropole in the long run. The creation of high level service bus routes is placed in specific legal context.

In addition to the development of the public transport network, the metropolitan mobility plan (PDU) defined a network of buses routes with high level of service characterized by a high commercial speed (allowing a gain from 20 to 30 % on travel time), a high frequency (every 6 minutes in peak hour), a broad amplitude and a more constant offer over the time. In the long term, a network of 60 km, serving 20 communes, comprising 12 routes has been suggested, in complementarily with the existing operations including TER (regional trains), the subway and the tram.

Measure objective	Have the objective been reached?
Launch of bus lanes with priority at crossroads to facilitate the bus circulation	Yes
Improve the attractiveness of public transport in Lille	Yes
Improve accessibility, reliability, frequency and speed, and reduce fuel consumption, in the bus service	Yes
Reduce car traffic in the city centre	Yes
Reduce emissions	Yes

Biogas Bus Fleets (12.2)

In 1990 Lille Metropolis decided to start an urban bus service, fuelled by natural and/or purified biogas, produced from the fermentation of sludge from a local sewage treatment plant. After an experimental project and a test period, it was decided to introduce a new fleet of such vehicles into full service. The final objective was to convert the entire fleet (400 buses) into buses running on this type of fuel.

By the end of year 2005, Lille Metropole has implemented 167 gas/biogas buses (50% of the bus fleet), purchased a new dual CNG and biogas compression station for the buses and built a new bus depot and modified certain lines (detectors, ventilation system, lighting), in order to guarantee bus operation and maintenance safety.

Infrastructure investments are partly financed by the Trendsetter Budget (extra-cost of the busses, the depots and the line modifications due to the use of biogas).

Measure objective	Have the objective been reached
Introduce 128 new biogas buses in public transport fleet	Yes
Bring cost per km of a gas bus equivalent to a diesel bus	Yes

Clean Municipal Fleets (12.5)
Initially, in 1997, the Urban Community of Lille decided to acquire 20 vehicles with natural gas and 10 electric vehicles per annum during three years. The decision was taken to gradually replace most of its fleet of vehicles of service using the fuels gasoline and gas oil, by vehicles with clean energy, with Natural gas and electricity.

TRENDSETTER made it possible to accelerate the introduction of clean vehicles into the fleet in service at Lille Metropole.

The reasons why GNV was chosen rather than the LPG (liquefied petroleum gas) were:

- A real diversity of provisioning. The LPG is a petroleum product, fossil energy with limited stock.
- Flexibility and safety in the provisioning (not delivered by tanker)
- The vehicles equipped present a greater guarantee of safety.
- The natural gas is made up mainly of methane which can be produced by "biomethanisation" starting from stations of purification or fermentable waste, the "bio gas" true energy renewable which can supply our vehicles GNV. This project of coherent with the project "Bio Gas Bus (Trendsetter 12-2)" carried out by the Urban Community of LILLE and the Transpole company.

For the gas vehicles, a filling station was installed on the site of the hotel of community in accordance with the initial agreement with GDF. A new compression unit will also be acquired and installed on another Community site, in order to facilitate the provisioning of the whole of the park, when volumes justify it.

For the electric vehicles, terminals of normal refill (5 to 6 hours for a normal refill) were installed on various Community sites thus facilitating the refill of the 34 vehicles on the territory of the Urban Community.

Measure objective	Have the objective been reached?
Accelerate the conversion of the Lille Metropole's heterogeneous vehicle fleet into a clean vehicle fleet	Yes

Analysis of the biogas experience (12.9)
Besides the already existing production of biogas fuel by the sewage treatment in the framework of a former Thermie project, Lille made a strong effort during the Trendsetter project to extend the supply of biogas fuelling stations. A new big organic waste plant started to be built in Nov 2004 and construction will be finished by 2007. When finished this will increase the biogas production to 3,6 M Nm^3 per year. The quality of the produced biogas, which will at least correspond to the European standard defined for the Compressed Natural Gas, will be imposed.

Innovative aspects include the local massive production and use of biogas from waste and sewage treatment and experience evaluation

The linked projects, Organic recovery centre and bus depot construction in the same area, will complete one of the biggest integrated project on alternative fuel in Europe.

Measure objective	Have the objective been reached?
To strengthen the local production and distribution of biogas	Yes
Evaluate the competitiveness and reliability of a local massive production of biogas from sewage and organic waste	Yes
Gain a local experience in the production of biogas from organic waste	Yes

Pécs

Pecs has implemented 3 measures within Trendsetter. Partners in the project has been Pecs Municipal Operations and Property Management Company

The following measures have been implemented in Pécs within Trendsetter:

Work Package	Group of Measure	Measure	Measure
Access Restrictions (WP5)	Strolling zones	Establishment of a car-free zone in the inner city	5.4
	Strolling zones	Preparation of a new traffic and transport strategy	5.5
Integrated Pricing Strategies (WP6)	Parking	Establishment of a zone-model parking in the central city area	6.5

Pecs's contribution to Trendsetter demonstration objectives

– 1 environmental restriction zones

– 1 environmentally oriented Parking zones

Pecs city objectives

City Objective	Have the objective been reached	Measure
Decrease the number of cars parking in Pécs city centre (20% decrease) – introduction of a car free zone, introducing the parking concept, i.e. the zonemodel parking system with limited time parking and heavy prices.	Yes	**5.4, 5.5, 6.5**
Decrease air and noise (3 dB(A)) pollution – limiting the number of cars accessing the centre with the above mentioned measures.	Yes	**5.4, 5.5, 6.5**
Decrease freighters access to city centre, decrease average speed in city centre, introduction of a 30 km/h limit in certain areas	Yes	**5.4, 5.5, 6.5**
Provide better access to public institutions and to the World Heritage Sites	Yes	**5.4, 5.5, 6.5**
Preserve the World Heritage – decreasing traffic, number of cars in the city centre with the measures	Yes	**5.4, 5.5, 6.5**
Provide better living, working and recreation conditions in the city centre	Yes	**5.4, 5.5, 6.5**

Green and bold – Measure contributed to the objectives fulfilment
Grey – Not applicable for this objective

Measure description

Establishment of a car-free cone in the inner city (5.4)
In the framework of measure 5.4 a car-free zone were established in the city centre around the UNESCO protected sites, named World Heritage Zone. This zone are completely closed for private cars, only the local residents – who actually live here – are permitted to access this area, their relatives and physically handicapped people may apply for permission from the municipality. (Car users must approve that they use the car for the benefit of the disabled relative in each occasion for the municipal police controlling the area permanently.) It is not possible to purchase access permission based on any other reasons in this area.

The zone is established with the ordinary use of traffic tables, signs and in certain cases the roads are blocked by jet polls and other built elements. The municipal police controls access each day, the heavy penalty supports meeting the objectives. As complementary actions a 30 km/h speed limit is introduced in the whole city centre and an access limitation of freighters over 6 tons.

The car-free zone is accompanied by two other types of zones in the centre: inside the area of the medieval town wall a limited access area is introduced, which is closed for private cars without municipal access permission. (It is easier to apply – in certain cases purchase – these permissions in this area, than in the World Heritage Zone.) Around the city wall – still in the city centre – a zone-model parking system is introduced, which contribute to the municipal control over the number of cars visiting the centre of Pécs.

Measure objective	Have the objective been reached?
decreasing traffic and the number of private cars visiting the UNESCO World Heritage sites and the city centre;	Yes
decreasing the air, noise pollution in the centre;	Yes
providing better living and working environment, better circumstances for tourists;	Yes
providing better conditions to preserve and protect the patrimony.	Yes
The measure also provides new infrastructure and motivation for “green” traffic (bicycle and strolling).	Yes

Preparation of a new traffic and transport strategy (5.5)
Due to the unexpected growth in the number of private cars and never seen traffic congestion in the City of Pécs, the traffic and transportation strategy from the mid nineties lost its validity. At present there is not enough information on the present traffic situation in the city and there are no scenarios about the possible direction of future developments.

The measure aims was to prepare a local traffic and transportation strategy in order to meet the challenges of the huge increase in traffic and to provide environmentally friendly solutions for the transportation needs of the citizens. The new strategy aims was to continue the extension of strolling-zones, car-free zones, develop public transport and replace diesel oil based public transport with electricity (tram) and biogas-fuelled vehicles. It is expected that the strategy will be implemented between 2007-2013.

The strategy focuses on two aspects: access limitations in the city centre to offer better living and recreation conditions and a paradigm change in public transportation. The

strategy investigates public transportation development from two perspectives: feasibility of the introduction of fixed track public transportation modes and the perspective of fuel change for the existing bus fleet.

The city of Pécs will analyze the central city areas in order to get more information on the present traffic situation in the city centre, to be able to prepare a new integrated strategy taking into consideration the philosophy of Civitas in city traffic planning and management, to gain new information on the future development of the parking facilities, i.e. the location of new parking houses, to gain new information on how to re-plan traffic in the city and to describe the future directions of PT development. The measure is being implemented as planned.

Measure objective	Have the objective been reached
get more information on the present situation of traffic, transportation and public transportation in the city centre;	Yes
be able to prepare a new integrated strategy taking into consideration the philosophy of CIVITAS in city traffic planning and management;	Yes
gain new information on the future development of the parking facilities, i.e. the location of new parking houses;	Yes
gain new information on the alternatives of re-planning traffic in the city;	Yes
describe the future directions of public transportation development.	Yes

Establishment of a zone-model parking in the central city area (6.5)
In the framework of measure 6.5 a zone-modell parking system in the central areas of Pécs has been established, closely linked to the car-free zone and the access limited zone. The three parking zones are accompanied by a limited access area in the buffer-zone of the city-centre and the car-free World Heritage Zone.

As Trendsetter does not support large-scale infrastructure developments only the complementary actions of the establishment of the zone-model are included in the project: the actions related to traffic planning and operation, some small scale infrastructure developments (positioning of the traffic signs tables and the establishment of free parking spaces in the P+R car parks). The actions contribute to significant decrease in private car use in the centre and by that a reduction in the number of cars accessing the centre, the emission of GHG and noise pollution**.**

Pecs has used the easiest technology to achieve traffic reduction in the city, namely the municipality's legal power has been utilized for limiting access, private car usage in the city centre. Based on the principles of democracy all stakeholders and affected citizens have been invited to the planning of the municipal resolution and all political powers supported the actions contributing to the improvement of the environmental and living conditions in the city-centre.

Elaborating and introducing a completely new integrated traffic strategy in Pecs is innovative, because it builds upon a modal shift from private transportation to public transportation, it investigates and proposes alternative fuel use and it introduces a completely new PT infrastructure (fixed track – rail based).

The actions of the measures result in certain areas 100% decrease in the number of cars accessing the city centre and thus a significant decrease in GHG and noise pollution-

emission. The quantifiable outputs are: 95% reduction in the number of freighters, 20-100% reduction in traffic and 3% reduction in noise pollution is expected in the city centre.

Measure objective	Have the objective been reached
Reduced emissions through decreased traffic in the central areas of Pecs (-20 to 80% depending on the exact location of the zone)	Yes
Decrease in the average time of parking in the centre (-20 to 30%)	Yes
Decreased use of private cars	Yes
Reduce the air and noise (-3%) pollution in the centre	Yes
Better living and working environment, better circumstances for tourists	Yes
Better conditions to preserve and protect the UNESCO World Heritage sites	Yes

Prague

Prague has implemented 3 measures within Trendsetter. Partner in the projects has been City of Prague.

The following measures have been implemented in Prague within Trendsetter:

Work Package	Group of Measure	Measure	Measure nr
Access Restrictions (WP5)	Environmental Zones	Widening of Environmental Zone for vehicles > 6 tons	5.2
Public Passenger Transport (WP7)	PT intermodality	Linking different ways of public transport	7.7
Integration of Transport Management Systems (WP11)	Improving PT traffic flow	More adaptive signal control in a bus priority system	11.6

Prague's contribution to Trendsetter high level objectives

- 1 bus priority signal systems
- 1 Environmental restriction zones
- 1 City bus line

Prague city objectives

City Objective	Have the objective been reached	Measure
Shift in modal split from private car transport towards public means of transport with emphasis on improving public bus service transport (using new and alternative approaches) to the same high level service as other means of transport (underground, tramways) in the City	Yes	5.2, **7.7, 11.6**
Reduction of heavy transport (over 6 tonnes) in certain areas of the City and therefore reduction of traffic strain in these areas regarding some of the final stages of the City ring road construction	Yes	**5.2,** 7.7, **11.6**

Green and bold – Measure contributed to the objectives fulfilment
Grey – Not applicable for this objective

Measure description

Widening of the Environmental Zone for vehicles over 3.5 tons (5.2)
Increasing volumes and densities of urban car traffic have negative impacts on the environment, especially due to hazardous emissions and noise. This condition is influenced significantly by heavy haulage, which, additionally, affects adversely both the flow of traffic and its security. For these reasons, city governments adopt regulatory measures in order to limit the heavy haulage volumes at least in some neighbourhoods. The end is achieved by means of creating environmental zones with restricted access of heavy traffic. A portion of traffic that used to transit the zone, is expected to move over, after the measures are implemented, outside of the zone to other roads that are of greater capacities and more capable of reducing the adverse effects of traffic. Additionally, implementing such measures creates pressure to make transporters gradually renew their fleet for modern, light and medium goods vehicles that produce less hazardous emissions, less noise and affect less the other urban traffic.

Measure objective	Have the objective been reached
Decrease emissions and noise in the city·	Yes
Less energy consumption due to a shift of vehicle fleets towards cleaner and more efficient vehicles·	Yes
Increase acceptance of clean vehicles·	Yes
A more attractive city centre	Yes

Linking different ways of public transport (7.7)
The aim of this measure was to introduce a regular bus line to satisfy basic transport demands within Karlov area with en emphasis on persons with reduced mobility, sick

persons or persons with various handicaps. This locality houses a number of medical centers and facilities of General Teaching Hospital. Local street network makes this area unaccessible for normal buses used in standard public transport. As a result, no basic transport services had been practically available within this area until the introduction of the new city-bus line. Patients, visitors as well as employees of medical centers had to walk from distant public transport stations (stops). The initial stage of the project implementation included preparation of possible routing of the new line, facilitating integration of important intermodal interchanges, i.e. Karlovo Square (intermodal interchanges between Metro line B, 11 tram lines and 1 bus line) and I.P.Pavlova (intermodal interchanges between Metro line C and 7 tram lines) and providing transport services within the entire area concerned by means of appropriately located bus stops with an emphasis on easy accessibility of medical centers. The proposal included several options, which were consulted with relevant municipal authorities and representatives of General Teaching Hospital. Following such discussions an optimum option was chosen meeting requirements of specifically designed transport services and at the same time being in line with operational and technical conditions for regular bus service. With regard to specific physical configuration of the relevant area with majority of narrow streets it was quite obvious that it would be necessary to use easily accessible, small-sized vehicles (so called "midi-buses") for the new line. Existing offer of vehicles was subject to a public tender and low-floor Karosa-Ikarus E 91 bus with a platform was chosen for the line. The actual implementation of the bus line was preceded by several local surveys and other discussions in order to specify location of stops, traffic signs etc. A decision was taken to furnish stops with atypical lighted stop posts with the aim to emphasize the specific nature of this new line. Information campaign was launched in daily press, in the magazine published by the Municipal District Authority of Prague 2 accompanied by an extensive leaflet campaign. After meeting all requirements and obtaining a valid license DP Prague started to operate the new line on 18 April 2003.

Measure objective	Have the objective been reached
Accessibility of medical facilities in the city centre for target groups of citizens (i.e. patients of medical centres, including children and people with reduced mobility) by means of low floor midi buses as an integral part of Prague Integrated Transport system.	Yes

More adaptive signal control in a bus priority system (11.6)
Active detection system facilitates to give priority to buses when passing through the crossroads and is based on a radio communication between the vehicle and signal timing controller; it consists of a stationary part and a mobile part. An infrared beacon located in front of the crossroads is used to localize vehicles.

Priority system is linked to timetables of particular lines thus facilitating to assess real time location of the bus against the timetable and based on the time difference identified to allocate an appropriate level of priority on a case-by-case basis. Based on such pre-defined conditions, priority is thus provided only to vehicles, which need it.

Measure objective	Have the objective been reached?
Faster and smoother flow of bus traffic through elimination of time losses at intersections with signal control system	Yes

6 Work packages

The table below shows the eight Demonstration Work Packages and the Work Package leaders responsible for each WP Evaluation

Table 2 Work packages and Work package leaders

WP number	Description	Responsible authority	WP leader
5	Access Restrictions	TK, Stockholm	Eva Schelin, Sweco AB
6	Integrated Pricing Strategies	MF, Stockholm	Anna Hadenius, Inregia AB
7	Public Passenger Transport	LMCU	Yves Baesen, LMCU
8	New Forms of Vehicle Use	City of Graz	Gerhard Ablasser, City of Graz
9	New Concepts for the Distribution of Goods	MF, Stockholm	Björn Hugosson, MF
10	Innovative Soft Measures	City of Graz	Karl-Heinz Posch, FGM-AMOR
11	Integration of Transport Management Systems	MF, Stockholm	Eva Schelin, Sweco AB
12	Clean Public and Private fleets	LMCU	Yves Baesen, LMCU

Below are the work packages described with a short description of the WP and the results. For more information about the measures, results and achievements, see the City evaluation reports and the Work package evaluation report, se annex 1 for the report list. There are also more information available at the website www.trendsetter-europe.org.

Access Restrictions (WP5)

As can be seen in the table below, some of the measures in WP5 can be put in two subgroups, environmental zones and strolling zones. The measures regarding a new transportation strategy and congestion charging are the two remaining measures.

Group of measures	Measures within WP5	Site
Environmental zones	5.1 Widening of the Environmental Zone	Stockholm
	5.2 Widening of Environmental Zone for vehicles > 3.5 tons	Prague
Strolling zones	5.3 Implementation of strolling zones	Graz
	5.4 Car-free zone, extension of strolling-zone and bicycle road network	Pécs
	5.5 Preparation of a new traffic and transportation strategy	Pécs
	5.6 Congestion charging	Stockholm

Measures within WP5 Access Restriction are just a part of the approach for reaching a sustainable transport system through transport demand methods (TDM). Within this WP problems regarding pollution, noise and congestion in city areas have been solved through different types of access restriction, such as environmental zones and strolling zones, but also through congestion charging and through formulating an integrated transportation strategy. The access restrictions will affect the demand for transport and steer towards sustainable transport modes, and thus less emissions, noise and congestion.

Environmental zones
Since heavy-duty vehicles cause an unproportional part of emissions and noise in inner cities, banning some of them results in better air and living quality. Both Prague and Stockholm have environmental zones that prohibit either too old or too heavy vehicles to drive in parts of the city. The police make random checks to see that the rules are followed.

During Trendsetter, the obedience level in Stockholm has increased to 96 percent due to better cooperation between the city and the police department. Also, emissions and energy use have been reduced.

Prague has widened its environmental zone significantly, which has sped up the transporters' shift to more modern and environmentally friendly vehicles. This has decreased energy use and emissions, especially local emissions of NOx and particulate matter, but also CO2.

These zone systems in Prague and Stockholm show that environmental zones can help cities to fulfil parts of the European air quality directive.

Strolling zones
City centres with very few cars are usually lively, with people strolling, shopping and enjoying outdoor cafes. Reducing the space for cars by establishing strolling zones can make inner-cities more pleasant and healthier. Within Trendsetter, Graz has created new strolling zones outside the city's large pedestrian area and Pècs has introduced a car-free zone in the centre. Also, Pécs has extended its strolling area and plan for a bicycle road network in the inner city.

In Graz, mobility in the city has improved and the city centre has transformed. The new strolling zones have boosted commercial activity like bars and shops and left more space for people on the streets instead of cars.

Pécs used to have severe car traffic in the city centre, but due to Trendsetter projects, the traffic has decreased between 80 and 100 percent. Noise is down and the air quality is much better.

Congestion charging
Besides environmental zones and strolling zones, congestion charging is a powerful method to restrict and direct traffic flow. When a vehicle enters or leaves the congestion charge zone compromising Stockholm City, the owner of the vehicle is charged a fee. The purpose is to reduce congestion and improve mobility.

Congestion charges are being tested in Stockholm from January to July 2006. Within Trendsetter, the congestion-charging scheme has been prepared and the potential of it investigated. The expected results are reduced traffic, congestion and emissions as well as decreased energy use and more people choosing public transport, biking or walking.

Traffic and transportation strategy
The strategy measure tries to solve the problem of taking a comprehensive view on the transportation system of Pécs and formulating a sustainable strategy for the future.

WP objectives - Access Restrictions (WP5)

There are overall objectives especially for the evaluation of the measures in Work Package 5 – Access Restrictions

Work package objective	Have the objective been reached?
Demonstrate and evaluate various projects on access restrictions of inner cities aiming at promoting cleaner vehicles, thereby reducing emissions, noise and energy use	Yes
Promoting sustainable modes for mobility in central cities – aiming toward less emission, less noise, higher quality of living and for the protection of sensitive historical parts of the city	Yes
By introducing the access restrictions and promoting sustainable modes of transport provide best practice examples to follower cities	Yes

Integrated Pricing Strategies (WP6)

In WP6 – Integrated Pricing Strategies, projects dealing with fees and pricing are clustered. The Work package consists of five measures, grouped in two sub-groups; Smart Card system and Parking, see table below.

Group of measures	Measures within WP 6 – Integrated Pricing Strategies	Site
Smart Card System	6.1 Smart card systems and integrated ticketing	Stockholm
	6.2 Smart card systems and integrated ticketing	Lille
Parking	6.3 Reduced parking fees to promote clean vehicles	Stockholm
	6.4 Integrated pricing strategy for parking zones – differentiation between polluting and non-polluting vehicles	Graz
	6.5 Establishment of a zone-model parking in the central city area	Pécs

To achieve a more sustainable transport system, a combination of different measures is needed. Fare integration and intelligent payment systems in the Public Transport as well as parking fees as tools to favour clean vehicles or to reduce overall traffic, are examples of measures needed to achieve the Trendsetter aim to improve mobility, air quality and quality of life while reducing noise pollution and traffic congestion.

Smart cards make paying for public transport quicker and more convenient. All transport operators could also be integrated into the same system. Trendsetter promotes this, as well as a shift to cleaner vehicles by reduced parking fees.

Cities can use fees and pricing as a way to encourage people to use public transport. In order for buses, metro, trams and trains to attract passengers, different operators should integrate their fare systems and create an easy fare structure. Another way to promote alternatives to regular cars is to give clean vehicles parking discounts.

The amount of cars in city centres could also be reduced with zone-model parking. Graz, Lille, Pécs and Stockholm have tried some of these pricing strategies. The projects either deal with intelligent payment systems like smart cards or different parking fee systems.

Smart cards
One single card for all different kinds of public transport systems is not only convenient for the passengers, but for the operators, who can manage their income easier. A smart card can also collect exact information about how and when people travel. This information can be used to improve the planning of public transport.

Stockholm has started to introduce a smart card system, which is expected to increase the number of trips with public transport and make more people choose buses, metro or trains instead of car. This would lead to reduced emissions, noise levels and energy use.

Four operators who used to have their own tariffs and ticketing system carry out public transport in Lille Metropole. Within Trendsetter, a single pricing scheme has been established and operators have agreed to integrate their fare systems. The next step is to introduce a smart card for travelling throughout the system. This would make public transport more attractive and contribute to improved air quality.

Parking
Reduced parking fees can boost the interest in clean vehicles and zone-model parking can drastically change the traffic pattern in a city so that emissions are reduced. Stockholm, Graz and Pécs have established new parking fee systems within Trendsetter. The measure in Stockholm aim at promoting clean vehicles fuelled by renewable fuels, the measure in Graz promotes both renewable fuels and low polluting fossil fuelled vehicles. In Pécs, the parking restrictions have reduced the traffic in the city centre, not differentiating on emission levels.

Stockholm had to define "clean vehicle" before the introduction of free parking. Political disagreement caused heavy delays, but free parking for vehicles with renewable fuel was finally introduced in May 2005. During the first eight months, approximately 1 350 permits were issued. The number is expected to rise, which would mean fewer air pollutants and green house gases.

The discounted parking tariffs for low-polluting vehicles in Graz have led to only 41 permits in one and a half year. The main reason is that few cars fulfil the set criteria and that car producers and car sellers do not promote these cars.

A new parking fee system with zones has reduced the traffic in Pécs inner city considerably and made more people use public transport. The environmental, living and working conditions have improved a lot. Parking used to be free but is now expensive in the centre. The income from the new fees finance Park&Ride facilities and other free parking outside the centre.

WP objectives - Integrated Pricing Strategies (WP6)

There are overall objectives especially for the evaluation of the measures in Work Package 6 – Integrated Pricing Strategies.

Workpackage objective	Have the objective been reached?
Achieve a modal shift from private cars to public transport through simpler and accurate pricing of PT, i.e. Smart Card system	Partly, since not fully implemented yet
Promoting clean vehicles by introducing parking incentives	Yes
By modal shift and shift to clean vehicles reduce emissions, noise levels and energy use	Yes

Public Passenger Transport (WP7)

Below is a list of the measures within WP7 – Public Passenger Transport. The measures are divided into the sub packages Information to passengers, Public transport safety and Public Transport intermodality.

Group of measures	Measures within WP 7	No	City
Information to passengers	Increasing public transport passengers	7.1	Stockholm
	Customer friendly stops for bus and tram	7.5	Graz
Public transport safety	Public transport security	7.2	Lille
PT intermodality	Intermodal local/regional transport interchanges	7.3	Lille
	Seamless linkage of modes	7.4	Graz
	Park and Ride facilities	7.6	Lille
	Linking different ways of public transport	7.7	Prague

Information to passengers
Marketing and image-strengthening activities are good ways to keep customers and attract more public transport passengers. Trendsetter shows some examples of innovative and flexible marketing initiatives.

In Stockholm, a travel guarantee has resulted in a lot of goodwill for the operator and satisfied customers. The guarantee secures travellers from time-delays at major traffic disturbances since they are compensated for the taxi cost. Furthermore, a direct marketing campaign for new habitants has resulted in new passengers. Contact is also made directly to large companies. Overall, the number of public transport passengers in Stockholm and their opinion about the service is increasing.

Graz has rebuilt and improved bus and tram stops. The stops were provided with shelters and surfaces that made access easier for mobility impaired. According to passengers, public transport has become more attractive through the reconstruction. The only complaints concern lack of green areas in the surroundings.

Public transport safety
In order for public transport to be safe, there should be rapid intervention in case of problems and more human presence. Lille has introduced “friendly agents” in the metro and on buses and trains. The agents and the drivers have modern communication equipment and can call for help immediately if there is an emergency. There is also bus localisation service and better cooperation between the public transport operators and the police. The investment costs are high but have led to significant savings in managing the security at Lille metropolis level. Also, the feeling of security is rising on buses and trams.

Public transport intermodality
Smooth and well-planned interchanges are vital for passengers. Crossing streets must be safe and there need to be enough parking spaces. Also, it should be easy for travellers to shift between different kinds of public transport as well as between public and individual transport.

Lille is making big investments in a large area in order to improve intermodality. Twelve intermodal nodes are planned, with connections between buses, taxi, trains, cars and bicycles. The transformation is not ready, but the citizens are expected to cut a lot of travel time with the new infrastructure. Private car use is also supposed to decrease.

Both Graz and Lille have set up new Park&Ride facilities within Trendsetter. At the same time, Graz has reorganized bus lines and introduced new ones. Together, the measures have improved the public transport services in Graz and led to satisfied customers. As for Lille, the new Park&Ride lots have been a big success and made more commuters leave their car and continue with public transport.

Prague has established a new city bus line with small city buses for an area with narrow and winding roads. The area has a lot of hospitals and clinics. Therefore, the buses are adapted to disabled by special boarding. The line also connects to important transport nodes. In spite of some doubt, the new bus line has been a success.

WP objectives - Public Passenger Transport (WP7)

There are overall objectives especially for the evaluation of the measures in Work Package 7 – Public Passenger Transport.

Work package objective	Have the objective been reached?
Improve the PT travellers / passengers information	Yes
Ameliorate the PT security	Yes
Strengthen the PT intermodality	Yes
Enforce the PT attractiveness	Yes
Save energy and emissions through increase use of PT	Yes

New Forms of Vehicle Use (WP8)

Below is a list of the measures within WP8 – New forms of vehicle use. The measures are divided into the sub packages Special customer groups, Car pooling/sharing and Awareness rising.

Group of measures	Measures within W 8	No	City
	New services and services for special customer groups	8.1	Graz
Car pooling/sharing	Company mobility plan in the administration fleet	8.2	Lille
	Increasing car occupancy	8.3	Graz
Awareness rising	Site level Mobility Management	8.4	Graz
	Urban Mobility Plan	8.5	Lille

Many people automatically reach for their car keys when going somewhere. To affect peoples' commuting and traveling habits, new forms of vehicle use can be introduced, like car-pooling and car-sharing. Implementing new night buses and bus lines has also been successful within Trendsetter.

These and other ways of transportation can be marketed systematically for employees at work places, pupils at schools and event visitors. Graz and Lille have worked with new forms of vehicle use and tried to make more people aware of them.

Car-pooling and car-sharing

The number of cars can be cut down if more people travel together in the same car, using car-pooling. Another way to bring down single car use is car-sharing, i.e. when several families or persons own a car together.

About 20 car-pooling groups have been formed at the administration of Lille Metropole after a company mobility plan was implemented. Car-sharing cars have also been introduced, but they are seldom used. Other measures within the mobility plan are company bicycles and a financial support for public transport.

Graz has tried to raise the number of passengers in private cars by establishing a fast lane into the city centre that vehicles with three or more passengers can use. The lane has not been needed yet since there is no congestion, but a new shopping centre is expected to change this. Also, about 30 car poolers now make use of a new Park&Pool facility north of the city.

Awareness rising
Mobility management develops strategies and actions for fulfilling transport needs for individuals, institutions and companies. This can make people aware of other transport options, but it takes long and systematic marketing work to really make people change their travelling habits.

In Graz, companies, event locations and schools have been the targets for successful mobility management. Single car use has decreased at two large companies and awareness rising activities at four different schools have also reduced car usage and made public transport more popular.

In Lille Metropole, an urban mobility plan makes it compulsory to discuss mobility and travel when exploiting and developing the cities. Within Trendsetter, a so-called "micro urban mobility plan" was set up for one of the city districts, but no measures have been put into practice yet.

Improved public alternatives
Graz has introduced a night bus system on weekends, a new taxi line for disabled and elderly and two new bus lines beyond the city border. This has made public transport much more attractive and resulted in better user-friendliness. A lot of people use the new transportation options and are satisfied with the service.

WP objectives - New Forms of Vehicle Use (WP 8)
There are overall objectives especially for the evaluation of the measures in Work Package 8 – New Forms of Vehicle Use.

Work package objective	Have the objective been reached?
Achieve a reduction in solo car use and in increase of sustainable modes with well tuned packages of soft & hardware measures, demand side measures (company based), supply side measures (PT company) and regulation measures (City), for example urban mobility plans	Yes
Increase use of sustainable modes by disabled & elderly as well as by young people	Yes
Demonstrate the cost-effectiveness of such measures	?

New Concepts for the Distribution of Goods (WP9)
There are three measures in Work Package 9.

Measures within WP9	No	City
Material logistic centre – to optimise freight deliveries at construction site	9.1	Graz
Distribution of goods - Green city logistics	9.2	Stockholm
Logistic centre for Old Town of Stockholm	9.3	Stockholm

The number of goods transportation vehicles increases in many European cities. The delivery vehicles clog the shopping areas in big cities and are often only partly loaded.

But half empty trucks and small delivery vans from different suppliers could reload their goods and co-transport it to the customers. This has been done at three logistics centres in Stockholm and Graz. The result is better load rates and more efficient distribution, which mean fewer vehicles in the area and thereby better living and working conditions.

Construction materials
One logistics centre was built at the entrance of one of the largest constructions sites in Stockholm where 8,000 apartments are being built. Since people started to move into their new apartments during the construction period, the goods transportation on the site had to be reduced. Therefore, all goods were unloaded at the logistics centre and delivered more efficiently or stored for later just in time delivery.

The project has cut down the number of delivery vehicles remarkably. Both emissions and congestion have decreased a lot compared to a situation without a logistics centre. The carbon dioxide emissions were reduced by 90 percent. The logistics centre also offered storage, which the customers valued highly and are willing to pay for. The storage protects goods from getting stolen of damaged by rain.

Retail goods
In Graz, a logistics centre was established to avoid chaos when a five-level garage was being built beneath the city's largest shopping centre. Deliveries to the shopping centre were coordinated and then co-transported by low emission vehicles from an external warehouse at the southern city border.

The number of vehicle kilometres was reduced by 56 percent, which also has more than halved the emissions and energy use. The project has not needed as many vehicles and storage facilities as first presumed. This means extra cost savings and environmental savings, which further point towards the big potential for the system. Graz will now extend the project to the hospital area.

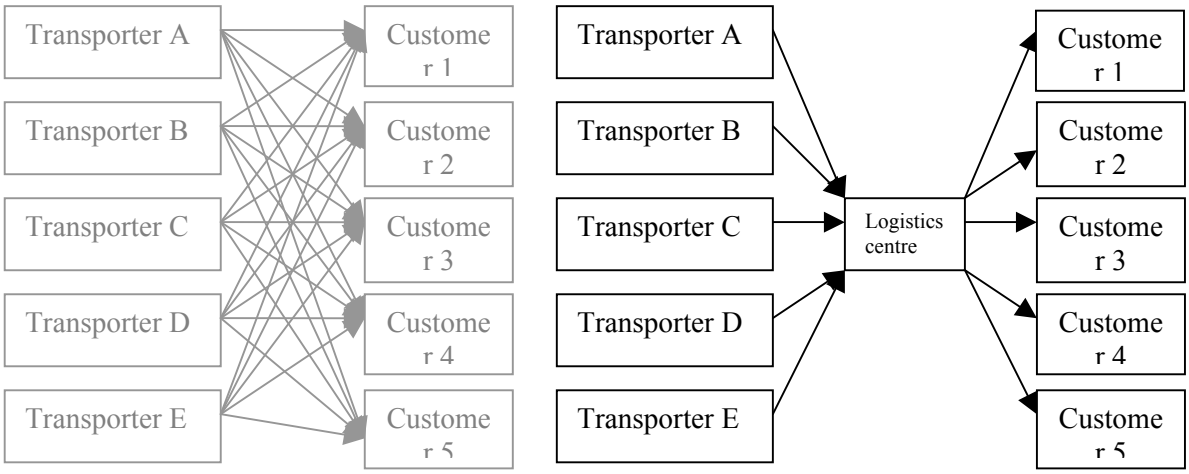
Restaurant supplies
Small and very narrow streets in the Old Medieval Town of Stockholm make distribution traffic chaotic and cause environmental problems. A logistic centre was set up nearby the Old Town, where restaurant supplies are reloaded and co-transported with small biogas-fuelled vehicles.

As a result, the average number of deliveries to each restaurant is down from six to only one delivery per day. There is a big potential to reduce the total number of vehicle kilometres further if more restaurants join the project.

In general, logistics centres tend to be profitable when a critical mass of users/customers is reached. However, laws and regulations can cause problems and delays when logistics centres are established and put into operation. Anti-trust regulations might be one obstacle; another is special delivery circumstances and permits for food deliveries.

A main conclusion from all three projects is that a logistics centre is more efficient and successful when the area is well defined and has evident clogging problems, like the narrow streets of European old cities.

Figure 1 A schematic model of an ordinary distribution system compared to coordinated and consolidated transports via a Logics Centre.



WP objectives - New Concepts for the Distribution of Goods (WP9)

There are overall objectives especially for the evaluation of the measures in Work Package 9 – New Concepts for the Distribution of Goods.

Work package objective	Have the objective been reached?
Demonstrate measures to increase the efficiency of goods distribution in various environments (construction site, inner city and hospital area)	Partly, no implementation in hospital area, but at a shopping mall in Graz. Full implementation in Stockholm
Demonstrate how energy consumption, emissions and noise from freight traffic can be reduced in sensitive areas using more efficient logistics and alternative means of transport	Yes
Provide examples of "Green city logistics", how it can be implemented and the possible incentives for commercial operators	Yes

Innovative Soft Measures (WP10)

Below is a list of the measures within WP10 – Innovative Soft Measures. The measures are divided into the subpackages Bicycle measures, Trip planning and Awareness of clean transport and safety.

Group of measures	Measures within WP10	No	City
Bicycle measures	Innovations in bicycle transport	10.1	Graz
	Make bicycling attractive (B&R information on the Internet)	10.2	Stockholm
Trip planning	Creation of a visitor web for optimal trip planning	10.3	Stockholm
	Marketing/information and quality management	10.5	Graz
Awareness of clean transport and safety	Awareness for speed reduction and less car use	10.6	Graz
	Taxi drivers as information multipliers for clean transport	10.4	Graz

It can be quite expensive and take a lot of time and effort to change a city's infrastructure so it favours pedestrians, bicyclists and public transport instead of cars. Complementary

ways to affect peoples' travel habits are for example inventive marketing campaigns or education for children. These kind of soft measures are often cheaper than changing the infrastructure and can have good effects.

Graz and Stockholm have combined a variety of projects in order to promote bicycling, make trip planning easier and make more people aware of clean transport and safety.

Bicycling
If people would choose the bike more often, also in combination with public transport, air quality and congestion in cities could improve. Both Graz and Stockholm try to make bicycling more attractive.

In Graz, bike training in real traffic is offered to all primary schools in Graz. The training is praised by teachers and directors, who find the traffic environment very good for teaching the children how to deal with real traffic situations. Also, public transport stops have been equipped with theft protected and, in some places, sheltered cycle racks. The occupancy of these Bike&Ride facilities varies between 33 and 75 percent and has changed some people's commuting behaviour.

Bicyclists in Stockholm can easily check what route to take if they want to go fast and safe from one place to another. A web site gathers different maps with cycle tracks in the city and several municipalities around Stockholm.

Trip planning
More people might choose public transport if they easily could get information about how to go from A to B and how long it takes. Stockholm and Graz use the latest technology to provide such planning tools and other traffic information on the web.

For Stockholm, the web site includes all kinds of information about the traffic situation in and around Stockholm, public transport, parking and bike routes. People can even get traffic information on their cell phone. Another innovative aspect is real-time travel time and smart choices for combined transports.

The Grazer web page provides trip planning from door-to-door with public transport. The service is popular and the number of users has increased steadily.

When developing systems like these, all involved operators must cooperate and several data sources be integrated.

Awareness of clean transport and safety
New target groups might be reached if new messengers provide the information. Graz has educated taxi drivers to inform passengers about the advantages of biodiesel. This means thousands of personal contacts yearly and a chance that taxi customers become more aware of clean transport.

To make traffic safer, Graz has tried to reduce the car speed. Within Trendsetter, more streets have become a part of 30 km/h speed limit street network. This has contributed to a large reduction of accidents. Also, the city has bought speed control devices, which show the drivers their current speed on displays. This can reduce speed with about 10 percent on average.

Integrated mobility centre
All information service about a city's public transport could be gathered under one roof. If travellers could find out tariffs and timetables, buy all kinds of tickets and plan their

whole trip at one place, public transport would be more attractive. A new mobility centre in Graz combines the ticket selling of three former ticket vending centres and has been a success. Investments in a mobility centre pay off in less than a year since the service make more people travel by public transport. However, it can be difficult to gather several operators if they are very different from each other.

WP objectives - Innovative Soft Measures (WP10)

There are overall objectives especially for the evaluation of the measures in Work Package 10 – Innovative Soft Measures.

Work package objective	Have the objective been reached?
Achieve a reduction in solo car use and in increase of sustainable modes with high quality information pre trip and on trip, awareness raising campaigns for less car use and speed reduction under involvement of opinion multipliers and the use of the web.	Yes
Increase use of sustainable modes by disabled & elderly as well as by young people	Yes
Demonstrate the cost effectiveness of such measures	Yes

Integration of Transport Management Systems (WP11)

Work package 11, Integration of Transport Management Systems, problems regarding information support have been solved and measures within traffic management and control developed. The measures have been divided into two subgroups; Traffic Information and Control and Improving Public Transport flow.

Group of measures	Measures within WP11	City
Traffic information and control	11.2 Traffic monitoring and supervision	Stockholm
	11.3 Dynamic traffic management system	Graz
	11.4 Accessible road network (street) data	Stockholm
Improving PT traffic flow	11.5 More adaptive signal control in a bus priority system	Stockholm
	11.6 More adaptive signal control in a bus priority system	Prague
	11.7 High level service bus routes	Lille
	11.1 Technical basis for an efficient customer focussed operation and information	Graz

Measures within WP11 Integration of Transport Management Systems are just a part of the approach for reaching a sustainable transport system. Within this WP, problems regarding information support have been solved and measures within traffic management and control developed. Different modes can now i. e. bee chosen for traffic management, so a better traffic flow and less emission can be achieved. The use of transport net can thereby be optimized.

Traffic information and control

The traffic situation depends on congestion, weather, accidents, road works, time of day, etc. Information from different sources and systems about the current situation can be collected and used for traffic management. The collected data also forms a basis for traffic planning overall.

Stockholm has introduced a system for traffic management, which will be used to predict the traffic and manage it the best way possible. Several data sources are used and will eventually be connected to a control system for e.g. lane closure, speed advice and traffic signals. This will make the whole road transport system more efficient, which also can have good environmental effects. Furthermore, Stockholm has set up a digital road network where data is linked together and made available.

Graz is also introducing a new traffic management system, which includes information from different sources and use different channels to distribute the information. The system was delayed for two years, but is expected to reduce emissions and congestion due to better traffic flow.

A common experience from Stockholm and Graz is that it takes longer than planned to build a traffic management system. One reason is that the system is technically complex and dependent on so many sources. Another reason is the large number of involved stakeholders.

Improving PT traffic flow

Buses that get stuck in traffic jams cause irritating delays for passengers and make it harder for drivers to keep the timetable. One solution is a control system that gives buses priority at intersections. This reduces delays at traffic lights and increases the average speed. Another solution is high level service bus lines.

Dynamic bus priority systems have been introduced in Stockholm and Prague within Trendsetter. The systems are based on computers at major traffic crossings that optimise the priority for every bus arriving at the traffic lights. For buses in Stockholm, the travel time has decreased 15–20 percent and for cars 10 percent due to the installation of the new system at eleven intersections. In Prague, five traffic lights have installed the new system and the reliability of the bus service is now 100 percent. The speed for buses has increased as well as the number of trips with public transport. The quality of service is considered to be very high. Emissions and energy use are reduced as well.

A high service bus route in Lille Metropole has made public transport more popular among commuters and reduced the car traffic in the city centre. The buses have priority at crossroads and the reduction in travel time is estimated to 20 percent. Twelve routes are expected long-term.

Graz has introduced new technology on trams and buses in order to manage and control public transport better. The vehicles have been equipped with on board computers so they can be located and a control centre has been renewed.

WP objectives - Integration of Transport Management Systems (WP11)

There are overall objectives especially for the evaluation of the measures in Work Package 11 – Integration of Transport Management Systems..

Work package objective	Have the objective been reached?
Implementation and demonstration of new systems for traffic management in urban environment. The Work package measures comprise data collection, improved traffic management systems, improved systems for public transport operation, priority systems for public transport in terms of adaptive signal priority systems and dedicated lanes for PT followed by real-time information accessible through different media.	Yes
End users benefit from improved information systems with real-time information, P&R facilities, parking guidance systems, dynamic signs with traffic information and faster, more reliable and thus more attractive public transport.	Yes
Reduction of fuel consumption, less emissions, less noise and a modal shift to sustainable transport modes is the objectives for the measure.	Yes
By introducing the measures provide best practice examples to follower cities.	Yes

Clean Public and Private fleets (WP12)

Below is a list of the measures within WP12 – Clean Public and Private fleets. The measures are divided into the sub packages Heavy clean vehicles, Light clean vehicles and clean fuel distribution.

Group of measures	Measures within WP12	No	City
Heavy vehicles	Clean and efficient heavy vehicles	12.1	Stockholm
	Biogas bus fleets	12.2	Lille
	Clean and user friendly bio-diesel bus fleet	12.3	Graz
	Waste collection with biogas-vehicles	12.6	Stockholm
Light vehicles	Clean municipal fleets	12.4	Stockholm
	Clean municipal fleets	12.5	Lille
	Bio-diesel taxi fleet and bio diesel service station	12.7	Graz
	Making clean vehicles less expensive	12.11	Stockholm
	Earlier 12.12 fused into 12.11	12.12	
	Increasing clean vehicle use in private company fleets	12.13	Stockholm
	Web-portal for drivers of clean vehicles	12.14	Stockholm
Clean fuel distribution	Optimisation of the bio-diesel collection system	12.8	Graz
	Analysis of the biogas experience	12.9	Lille
	Improved biogas refuelling infrastructure	12.10	Stockholm

Graz, Lille and Stockholm have worked in different ways to introduce and promote both heavy-duty and light clean vehicles as well as new fuelling infrastructure for biofuels.

Heavy vehicles
Within Trendsetter, biogas buses have been introduced in Lille and Stockholm. The results are lower noise levels, healthier air and much lower emissions of CO2. Drivers in Stockholm are very satisfied and recommend others to drive heavy biogas vehicles. Both cities produce biogas locally from their waste and sewage treatment plants. Lille has also proved that a bus fleet operating on biogas does not have to cost more than operating diesel buses.

In Graz, the whole public bus fleet has switched to biodiesel operation, saving tonnes of fossil CO2 and particles each year. In the Old Town of Stockholm, waste collection lorries with biogas fuel have been a success – both the drivers and the citizens appreciate better air and lower noise levels.

Light vehicles
Municipalities, taxi companies and other private companies can be encouraged to transform their fleets into clean fleets. This increases the demand for clean cars, which spurs the car manufacturers and fuelling companies to provide more clean cars and a better biofuel infrastructure.

Lille and Stockholm have introduced clean passenger cars into their city fleets. Energy consumption and emissions are down and the drivers are satisfied. The disadvantage has been a somewhat higher maintenance cost. However, Stockholm has managed to reduce the price of the vehicles by buying large quantities, gathering many buyers from all over Sweden in joint procurements. Lille, on the other hand, has not been able to replace as many cars as planned during Trendsetter due to lack of sellers. In Graz, the largest taxi fleet has switched to biodiesel cars. The taxi filling station is available also for the public.

Stockholm has tried a variety of ways to raise the interest for clean vehicles. Subsidies for companies, sales promotion activities, free testing of clean cars, education for vehicle retailers and contacts with journalists are some of the activities. Also, a detailed national website for potential buyers of clean vehicles has been launched. Altogether, these measures have rapidly increased the interest among both companies and citizens for clean cars and sales figures are up.

Fuel distribution
New kinds of fuel can mean new and innovative ways to produce and distribute them. In Graz, biodiesel is made out of used cooking oil from restaurants and private households. The collection system has been improved during Trendsetter. Both the amount of collected oil and the knowledge about the collecting system has increased.

Lille builds a new big waste plant for production of biogas fuel. The plant will use organic waste from the city and the neighboring area. The fuel is linked through a short pipeline to a bus depot nearby.

In Stockholm, four new biogas fuel stations have been built within Trendsetter. This has improved the fuelling infrastructure for drivers of biogas cars and given private companies a chance to choose biogas in their fleet.

WP objectives - Clean Public and Private fleets (WP12)

There are overall objectives especially for the evaluation of the measures in Work Package 12 – Clean Public and Private fleets.

Workpackage objective	Have the objective been reached?
Accelerate the heavy vehicles transition from a classical fossil fuel to clean fuel solution	Yes
Accelerate the light vehicles take-up from a larger audience (PT, Municipality, private companies)	Yes
Improve the clean fuel production and distribution	Yes

7 Overall conclusions, lessons learnt and recommendations

The overall conclusions, lessons learnt and recommendations from Trendsetter are listed below. Additional and more detailed conclusions, lessons learnt and recommendations can be found in the Work package evaluation reports and City evaluation reports (see annex 1 for the report list).

Conclusions

Overall conclusions

- Trendsetter has contributed to developing attractive cities and improved quality of life for citizens. Congestion has been reduced as well as emissions, greenhouse gases, energy consumption and noise levels. Mobility has improved.
- Trendsetter measures can be used to support Kyoto protocol and European air quality directives.
- The Trendsetter project has been a strong driving force for politicians and officials in the cities to implement new measures. Graz and Lille, being cultural capitals during the Trendsetter time period, have used the project to advance measures already planned. Pécs used the World Heritage title as a driving force.
- The Trendsetter experience can be used as a model when discussing Sustainable Urban Transport Plans (SUTP).

Convenient access to public transport

- For cities with several public transport operators using different pricing systems, fare integration is vital to facilitate travelling.
- Smart cards make it possible to create databases with travel patterns, which can improve the planning of public transport.
- Park&Ride facilities and secure parking places for bikes are efficient in order to make interchanges for passengers fewer and smoother and keep the private cars away from city centre.
- Traffic signal control systems giving priority to public transport is a very successful, easy and relatively cheap measure to introduce in a city. Bus priority could be started at only a few crossings and still have positive effects.
- Well-tuned traffic signals – also without bus priority – are very efficient instruments to reduce traffic congestion.
- Safety/security, punctuality and cleanliness are very important for passenger acceptance of public transport services. Quality management could be used more frequently by operators, in order to reach a higher standard in public transports.
- Innovative and relatively inexpensive measures can make public transport more attractive. Examples: Small city buses serving visitors to the local hospitals in Prague and a travel guarantee in Stockholm that safeguards travellers from time-delays in case of major traffic disturbances.

- Quality of service should be benchmarked if entrepreneurs are used in the public transport system. Operators showing positive results in passenger surveys or other forms of quality measurement may be awarded bonuses.

Trip planning for smartest choice

- Real-time information systems that show when a bus or metro arrives and keep track of delays, make passengers more flexible and provide greater safety since the position of all public transport vehicles is known all the time.
- Development of web-based trip planning based on real-time information is a cheap measure with big value for travellers, who can make smart choices for mode of transportation.
- Integrated mobility centres might lead to a modal shift, which can lead to more revenue for the public transport companies.

Traffic management

- The existing infrastructure is used more efficiently through traffic management systems, which are cheaper than investing in new roads. But communication and operation costs can be high.
- Traffic management systems are recommended in larger cities where different sub-systems need to be coordinated.
- There are risks for increased traffic when congestion decreases. Sticks and good traffic management systems are needed to prevent this.
- Knowledge from earlier projects financed by EU funds can be used as a basis for successful traffic management systems.
- Public transport and commercial fleet owners benefit directly from supervising their fleets, while road administrations do not have the same economic incentive. Cooperation between these players is recommended to achieve a well-functioning system.
- It is important to have an organisation that supports good cooperation and operation between stakeholders, who need to focus on opportunities offered by the new system instead of focusing on building and maintaining roads.
- Different sub-systems must be able to work together when connected to a larger traffic management system. Open interfaces, open specifications and good documentation are essential variables to ensure this.

Cycling

- A long-term approach to increase safety for pedestrians and cyclists is needed to increase the share of cyclists.
- A combination of soft measures (e.g. marketing, children's education) and hard measures (e.g. B&R, bicycle lanes) is successful to increase cycling.
- Health and safety arguments are often more successful than environmental arguments. Other arguments of more interest are that cycling saves time and money and does not require car parking space.

- Infrastructure for cyclists should continuously be increased.
- Sheltered and theft-protected bicycle racks, especially close to metros, commuter trains and bus stops, are effective measures.
- Bicycle training for children should be supported. This can establish suitable travel habits for future generations.

Access restriction

- Access restrictions leads to less traffic, improved mobility and less noise, resulting in an attractive city centre with more outdoor cafés and restaurants. Less traffic also increases accessibility for the disabled, families and others, especially in strolling zones.
- Strong political will is needed to implement access restrictions.
- Environmental zones can be a tool for cities to fulfil the European air quality directive.
- Acceptance is high among citizens and politicians before implementation of environmental zones, while low among transport companies. This usually changes after some time of operation, when the transport companies also become more positive.
- Local infrastructure needs to be adjusted to the implementation of restricting zones. Drive-through corridors might be needed in certain cities depending on geography. Also, consideration is needed on how to handle long-distance and international transports.
- Different requirements are possible within an environmental zone. If only vehicles of a certain age are allowed, renewal of the fleet will be accomplished and emissions reduced. If trucks over a certain weight are prohibited, congestion and noise decreases.
- When restricting old and polluting vehicles, reasonable requirements should be used and the actors given time to adjust to the regulations. Information is important and stakeholders must be included. Also, changes in national legislation are often needed to implement environmental zones.
- Compliance within the environmental zone must be controlled and enforced.
- Citizens and shop owners normally object before implementation of car-free or strolling zones, but are most often satisfied afterwards. Very important to gain approval by politicians and citizens.
- Public transport close to strolling zones should be increased.
- Congestion charging reduces traffic, leads to improved mobility as well as reduced emissions and energy consumption.
- Congestion charging should be part of a transport package with complementing measures like improved public transport and park & ride facilities.
- Coordinate congestion charges with other environmental schemes, to gain increased efficiency. Municipal efforts to support clean vehicles can be combined with charge exceptions or reductions.

- To achieve interoperability in the future, new congestion charging systems should be designed with consideration to international standards and good practice, if such have been developed by that time. To cooperate with other cities is necessary.
- The timetable should be generous enough to allow bottlenecks to be eliminated in good time. Do not underestimate the time needed for this type of measure.
- A congestion-charging scheme should be transparent and user-friendly. Citizens must experience the current traffic situation and air quality as a problem in order to support implementation of congestion charges. The main objectives should also be reflected in the system.
- An evaluation plan should be adopted at an early stage, designed to provide accessible, comprehensive and reliable information on the efficiency of the scheme.

Marketing attractive alternatives

- Communication, information and marketing are important when trying to increase travel with public transport and other modes of sustainable transport. It takes time to change peoples' behaviour. Soft measures are cheap and efficient, especially when combined with infrastructure investments.
- Information on services and free trials are successful ways to obtain new customers. New residents are a priority target group.
- Mobility management can be a tool for changing travel patterns. School mobility management helps raise awareness among parents and teachers.
- Companies do not regard journeys to and from work as a company responsibility. Measures work well in combination with an extension of paid parking or limited access zones.
- By setting own examples, city administrations can convince companies to take part in mobility management.
- High financial incentives for commuters driving their cars to work constrain the ambitions of mobility management. Do not set up car user-friendly framework conditions, which support car usage.

Improved goods distribution

- Visitors and citizens experience improved mobility, safer traffic situation, less emissions and less noise when deliveries are co-transported. Restaurants and shops also gain from it.
- Long-term benefits for participants are fewer deliveries, more attractive surroundings, a possibility for suppliers to lower their prices due to lower transport cost, etc.
- The right location for a logistics centre differs from city to city, but the area should be well defined and have evident problems.
- Cities need to take the lead and inform, coordinate schemes, provide initial funding and offer assistance with administrative and legal issues, etc.
- Extra services, e.g. storing facilities, deliveries on time, packing/unpacking of goods, hanging of clothes and price tagging can increase the benefits from the scheme.

- At least one strong actor should preferably be involved, to serve as a good example. The project can be increased step-by-step by attracting additional actors when benefits have been shown.
- Positive incentives could be used, like better loading zones, access to bus lanes, reduced costs and extended delivery hours.
- Initial funding is often needed to overcome initial resistance.
- Positive effects increase when different departments in the city cooperate well.

Clean vehicles – a way to reduce emissions

- Clean vehicles are a cheap and suitable way to reduce emissions from traffic that cannot be substituted by other modes of transport.
- Trendsetter has proved that it is possible to change a whole city bus fleet in a few years.
- Local authorities are key players and need to take the lead. They are able to initiate market development. Incentives, definitions and initiatives at national and EC levels are necessary in the long run, but local authorities can start today.
- European cooperation is necessary to continue the development. Single country markets are too small to carry the development.
- Clean vehicles can be introduced step-by-step, starting with the cities' own fleet, continuing with private fleets such as taxi, and then addressing a broader public when the fuelling infrastructure is in place.
- A long-term perspective is necessary – on incentives, infrastructure and all communication with stakeholders.
- The procurement power is increased if many buy together. Joint procurement of light and heavy vehicles as well as fuels should be encouraged. Transport services should be required to be clean.
- Setting up a sufficient number of filling stations is crucial for creating a market for biofuel vehicles.
- Incentives are needed and incentives related to parking and access are specifically effective.
- National incentives are extremely helpful – work to obtain them.
- Subsidies for vehicles may be needed initially.
- Increasing production capacity in Europe (biogas, biodiesel, ethanol) should be supported, as should construction of infrastructure for alternative fuels.
- Tax legislation that favours clean vehicles and fuels should be created.
- There is a need for national definitions on clean vehicles.
- It is good to create a clear strategy for a large-scale introduction of clean vehicles.

Lessons learnt

Overall lessons learnt

- Information and early involvement of relevant stakeholders is vital for the success of many measures.
- Legislation and regulations must be checked before implementing any activity.
- The variety of measures complicates the evaluation of initiatives. A combination of qualitative and quantitative methods is needed.
- Communication, information and marketing directed at different target groups are important for success. Soft measures can be cheap and efficient, especially when combined with infrastructure investments.
- Time is needed to create new habits.
- The measures implemented in Trendsetter vary in their degree of innovation. Both innovative and non-innovative measures have been successful.

Important lessons learnt from measures

- When using public transport, passengers strive for smooth and few interchanges. Measures targeted at developing this are vital in order to make public transport more attractive, e.g. easy and integrated ticketing with smart card systems, Park&Ride facilities, secure parking places for bikes, real-time information systems at stations and web-based trip planning tools.
- Communication, information and marketing are important when trying to increase the use of public transport and other modes of sustainable transport. Soft measures are inexpensive and efficient, especially when combined with infrastructure investments.
- With traffic management systems, existing infrastructure is used more efficiently. A traffic management system is a good tool for reaching goals regarding congestion, emissions and traffic volume. For example, well-tuned traffic signals are very efficient for reducing congestion. Traffic signals giving priority to public transport is also a successful, easy and relatively inexpensive measure. It is cheaper to implement traffic management systems than to invest in new roads.
- To increase cycling in cities, a combination of soft measures (e.g. marketing, children's education) and hard measures (e.g. B&R, bicycle lanes) is successful. Increase infrastructure and provide sheltered and theft protected cycle racks, especially close to metros, commuter trains and bus stops. Information on the Internet is also useful, as well as campaigns and education. Health arguments and the fact that cycling saves time and money often work better than environmental arguments.
- Access restrictions can lead to less traffic, improved mobility and less noise, which means higher quality of life with a more accessible and attractive city centre. It is important to gain approval for car-free zones and strolling zones, both by politicians and citizens.
- Environmental zones can be good tools for reducing heavy traffic in cities. By only allowing fairly new vehicles, a renewal of the fleet will be accomplished and emissions reduced. By prohibiting trucks over a certain weight, congestion, emissions and noise decrease.

- Local authorities are key players for promoting clean vehicles. They can start the market development by making municipal fleets and city bus fleets clean. Private fleets such as taxis can follow, and a broader public can be addressed once there are sufficient fuelling stations, car models, incentives, etc.
- A complete value chain of biogas from its production from organic waste to its use to fuel public transport buses is technically feasible and economically viable.

Recommendations to the European Commission

Overall recommendations

- There are immense efforts going on in Europe to achieve sustainable societies and transport systems. There is a large potential for dissemination of best practice, worst practice and lessons learnt, to other cities.
- European cooperation is essential and should be supported.
- Establish an informal forum where the local and European levels can meet, discuss and find ways to solve European concerns of urban mobility, energy and emissions. EC should also support European workshops in different areas.
- Continue supporting applicant countries and prospective EU members to enable them to gain as much knowledge as possible from other countries/cities. Experienced EU cities also need financial support for the transfer of knowledge.
- Support development of new methods concerning cost-benefit analysis, also taking soft parameters into account.

Trip planning for smartest choice

- Support initiatives of local authorities to install door-to-door information in their city or region.

Traffic management

- Demand re-use of output from earlier projects when giving resources to new projects.
- Support development of new methods concerning cost-benefit analysis, taking all soft parameters into account.

Access restriction

- Harmonise the standard for environmental zones in Europe. Use the Euroclass standards as a basis, as they are directly related to the emissions. Make sure that retrofitted vehicles can also meet the requirements.

Marketing attractive alternatives

- Make mobility plans mandatory for companies over a certain size.

Clean vehicles – a way to reduce emissions

- Make the Biofuels Directive compulsory.

- Ensure that EU legislation does not hinder member states from using tax reductions to support biofuels.
- Suggest EU framework for national tax reductions and other economic measures promoting a shift from fossil fuels to biofuels.
- Facilitate European cooperation, especially joint procurement and shared experience.
- Implement actions to encourage public organisations and private companies to use environmental requirements in the procurement of transport services.
- Support the development of new cost-effective methods to produce and upgrade biofuels.
- Implement standards for biofuels, storage/distribution and vehicles.
- Support research and technology for using electric-hybrid technology in bio-fuelled vehicles.
- Adopt a common definition of clean vehicles for Europe.

Annex 1 – Report list

Below is a list of the Work package evaluation reports and city evaluation reports

Report	Trendsetter report number
Evaluation report - Access Restrictions (WP5)	2005:3
Evaluation report - Integrated Pricing Strategies (WP6)	2005:4
Evaluation report - Public Passenger Transport (WP7)	2005:5
Evaluation report - New Forms of Vehicle Use (WP8)	2005:6
Evaluation report - New Concepts for the Distribution of Goods (WP9)	2005:7
Evaluation report - Innovative Soft Measures (WP10)	2005:8
Evaluation report - Integration of Transport Management Systems (WP11)	2005:9
Evaluation report - Clean Public and Private fleets (WP12)	2005:10
Evaluation report – Stockholm local activities	2005:11
Evaluation report – Lille local activities	2005:12
Evaluation report – Prague local activities	2005:13
Evaluation report – Pécs local activities	2005:14
Evaluation report – Graz local activities	2005:15

Annex 2 – List of indicators

	Measure no	City	Reduce				
			CO2	Energy	NOX	PM	Noise
			ton /year	TJ / year	ton/year	ton/year	dB(A)
Measures in Graz							
Implementation of strolling zones	5.3	Graz	14,0	0,3	0,1	↓	↓
Integrated pricing strategy for parking zones	6.4	Graz	435,0	10,4	1,7	0,1	N.A.
Seamless linkage of modes	7.4	Graz	33,0	0,8	0,1	↓	↓
Customer friendly stops for bus and tram	7.5	Graz	13,0	0,3	0,1	↓	↓
New services and services for special customer groups	8.1	Graz	330,0	7,9	1,3	0,1	↓
Increasing car occupancy	8.3	Graz	↓	↓	↓	↓	↓
Site level Mobility Management	8.4	Graz	26,0	0,6	0,1	0,0	↓
Distribution of goods - Green city logistics	9.2	Graz	1,0	0,0	0,1	0,2	↓
Innovations in bicycle transport	10.1	Graz	300,0	7,2	1,2	0,1	↓
Taxi drivers as information multipliers for clean transport	10.4	Graz	↓	↓	↓	↓	↓
Marketing/information and quality management	10.5	Graz	60,0	1,4	0,2	↓	↓
Awareness for speed reduction and less car use	10.6	Graz	268,0	6,4	1,0	0,1	↓
Integrated Mobility Centre	10.7	Graz	3,2	0,1	↓	?	↓
Technical basis for an efficient customer focussed operation and information	11.1	Graz	241,0	5,8	1,0	0,1	↓
Dynamic traffic management system	11.3	Graz	-	-	-	-	-
Clean and user friendly bio-diesel bus fleet	12.3	Graz	4 803,0	↓	↓	↓	↓
Bio-diesel taxi fleet and bio diesel service station	12.7	Graz	93,0	↓	↓	↓	↓
Optimisation of the bio-diesel collection system	12.8	Graz	5 600,0	↓	0,0	2,0	↓
Total Graz			**12 220**	**41**	**7**	**3**	
Measures in Lille							
Smart card systems and integrated ticketing	6.2	Lille	↓	↓	↓	↓	N.A.
Public transport safety	7.2	Lille	-	-	-	-	-
Intermodal local/regional transport interchanges	7.3	Lille	↓	↓	↓	↓	↓
Park and Ride facilities	7.6	Lille	↓	↓	↓	↓	↓
Company mobility plan in the administration fleet	8.2	Lille	↓	↓	↓	↓	↓
Urban Mobility Plan	8.5	Lille	↓	↓	↓	↓	↓
High level service bus routes	11.7	Lille	↓	↓	↓	↓	↓
Biogas bus fleets	12.2	Lille	↓	↓	↓	↓	↓
Clean municipal fleets	12.5	Lille	↓	↓	↓	↓	↓
Analysis of the biogas experience	12.9	Lille	6 500,0	40,0	24,0	0,7	↓
6.2. 7.2, 7.1, 6.6, 11.7,		Lille	25 500,0	90,0	58,0	↓	↓
Total Lille			**32 000,0**	**130,0**	**82,0**	**0,7**	
Measures in Pécs							
Establishment of a car-free zone in the inner city	5.4	Pecs	120,0	9,0	20,0	0,9	↓
Preparation of a new traffic and transport strategy	5.5	Pecs	NA	NA	NA	NA	NA
Establishment of a zone-model parking in the central city area	6.5	Pecs	↓	↓	↓	↓	↓
Total Pecs			**120**	**9**	**20**	**1**	
Measures in Prague							
Widening of Environmental Zone for vehicles > 3.5 tons	5.2	Prague	1 650,0	12,2	43,5	3,0	↓
Linking different ways of public transport	7.7	Prague	↓	↓	↓	↓	↓
More adaptive signal control in a bus priority system	11.6	Prague	0	3	0	0	↓
Total Prague			**1 650**	**16**	**44**	**3**	
Measures in Stockholm							
Widening of the Environmental Zone	5.1	Stockholm	300,0	2,0	30,0	0.40	↓
Congestion charging	5.6	Stockholm	↓	↓	110,0	37,0	↓
Smart card systems and integrated ticketing	6.1	Stockholm	(↓)	(↓)	(↓)	(↓)	(↓)
Reduced parking fees to promote clean vehicles	6.3	Stockholm	↓	↓	↓	↓	↓
Increasing public transport passengers	7.1	Stockholm	↓	↓	↓	↓	0
Material logistic centre – to optimise freight deliveries at construction site	9.1	Stockholm	110,0	1,4	0,7	0,0	↓
Logistic centre for Old Town of Stockholm	9.3	Stockholm	1,0	0,0	0,0	0,2	↓
Make bicycling attractive (B&R information on the Internet)	10.2	Stockholm	↓	↓	↓	↓	↓
Creation of a visitor web for optimal trip planning	10.3	Stockholm	↓	↓	↓	↓	0
Traffic monitoring and supervision	11.2	Stockholm	↓	↓	↓	↓	↓
Accessible road network (street) data	11.4	Stockholm	2 000,0	21,0	9,0	0,2	↓
More adaptive signal control in a bus priority system	11.5	Stockholm	400,0	5,0	1,0	1,0	N.A.
Clean and efficient heavy vehicles	12.1	Stockholm	1 551,0	21,0	10,0	0,0	↓
Clean municipal fleets	12.4	Stockholm	409,0	0,0	0,0	2,5	↓
Waste collection with biogas-vehicles	12.6	Stockholm	165,0	2,0	0,0	0,0	↓
Improved biogas refuelling infrastructure	12.10	Stockholm	↓	↓	↓	↓	↓
Making Clean Vehicles less expensive	12.11	Stockholm	430,0	1,0	0,0	↓	↓
Increasing clean vehicle use in private company fleets	12.13	Stockholm	5400,0	12,0	1,0	±0	↓
Web-portal for drivers of clean vehicles	12.14	Stockholm	↓	↓	↓	↓	N.A.
Total Stockholm			**10766**	**65**	**162**	**41**	
Total (all sites)			**56 756**	**261**	**314**	**48**	

Note: 5.6: The results presented are expected results, calculated before the implementation in January 2006. Preliminary results now show a larger decrease than expected.

The European project Trendsetter involves 50 individual projects, all of which aim to; improve mobility, quality of life, air quality, and reduce noise and traffic congestion. Five European cities participate to ensure real impact, by setting good examples and encouraging others to follow.

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Read more about Trendsetter at www.trendsetter-europe.org.
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