Evaluation Plan

February 2004

External Deliverable No D 4.1

CiViTAS
Cleaner and better transport in cities

STOCKHOLM · GRAZ · LILLE · PRAGUE · PECS

Contract No: NNE-2001-00323

Contractors

1. City of Stockholm, Environment and Health Administration
2. City of Graz
3. Lille Metropole
4. City of Prague
5. Stockholm Transport
6. Spedition- und Internationale Transport GmbH
7. Swedish National Road Administration, Stockholm Region
8. Stockholm Real Estate and Traffic Administration
9. Public Transport Company of Graz
10. Taxi Group 878 Cityfunk Ltd.
11. Styrian Transport Association STVG Ltd.
12. Erlach Consulting & Engineering
13. Province of Styria
14. Austrian Mobility Research
15. City of Pécs
16. Pécs Municipal Operations and Property Management Company
17. Syndicat Mixte des Transports
18. Statoil Detaljhandel AB
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www.trendsetter-europe.org

Foreword

The TRENDSETTER project aims to improve mobility, air quality and quality of life while reducing noise pollution and traffic congestion by promoting:

- innovative management methods,
- improved logistics for greater energy efficiency,
- the use of public transport and car sharing and
- increased use of zero and low emission vehicles.

The TRENDSETTER evaluation will determine which measures demonstrate the most promising initiatives and to measure progress towards achieving stated objectives. Thus a common evaluation approach is needed within the project. The Evaluation Plan describes the planned evaluation within TRENDSETTER, including methodologies and relevant indicators to be measured.

The Evaluation Plan has been prepared within the TRENDSETTER project. The Evaluation Manager has co-ordinated the work. The Work Package leaders have planned the evaluation of respective Work Package. Measure leaders and local co-ordinators have also contributed to the Plan.

February 2004

Gustaf Landahl

Co-ordinator TRENDSETTER

Contents

1 Executive summary

TRENDSETTER is one of four demonstration projects within the CIVITAS I initiative. The other demonstration projects are VIVALDI, TELLUS and MIRACLES.

Evaluation is a horizontal task (work package 4) within the TRENDSETTER project. This Evaluation Plan is one of the deliverables within WP4. The deliverables are:

- TRENDSETTER Evaluation Plan (D4.1)
- WP reports of demonstration Work Packages(D4.3 a-h)
- Local Evaluation Report (D4.4)
- Draft Evaluation Report (D4.5)
- Input to METEOR (D4.6)
- Report on Evaluation Results (D4.7)

This Evaluation Plan describes the evaluation framework and the planned evaluation activities. Chapter 2 gives a short introduction of the Evaluation approach within TRENDSETTER. Chapter 3 describes the Evaluation Plan and the Evaluation organisation. Chapter 4 describes the European Evaluation. The objectives at different levels are described in chapter 5 and the indicators in chapter 6. The plans for reporting results is presented in chapter 7. Chapter 8 contains the planned evaluation within each work package.

The following appendices are attached to the Evaluation Plan:
Appendix 1- Demonstration and Scientific / Technical Objectives
Appendix 2 – Objectives and Evaluation on City Level
Appendix 3 – List of Measures
Appendix 4 – TRENDSETTER Methodology sheets
Appendix 5 – CIVITAS/METEOR Common Core Indicators
Appendix 6 – Indicators for each Measure

2 Introduction

The goal of TRENDSETTER is to reduce energy use and environmental impact, with retained or increased mobility.

TRENDSETTER's overall strategy is to combine advanced mobility management schemes with clean vehicle fleets, which can achieve both short-term energy and emissions reductions and long term optimisation of public transport and effective urban goods flows. TRENDSETTER is a large demonstration project focusing both on heavy vehicles (buses, lorries and vans) and on private cars. The projects will demonstrate best practices, in two major fields:

- better transport mobility management and
- fleets of clean, cost-effective and energy-efficient vehicles.

The TRENDSETTER demonstration measures will all be thoroughly evaluated. These evaluations may be qualitative or quantitative. The overall evaluation will conclude which measures demonstrate the most promising initiatives and will measure progress towards achieving stated objectives. Objectives include those of CIVITAS, TRENDSETTER, each participating city, Work Packages and each measure.

Evaluations will also be co-ordinated with METEOR, especially the cross-site evaluation (CIVITAS/METEOR Common Core Indicators) comprising all cities within the CIVITAS initiative. We also have close cooperation with METEOR concerning the Do-nothing-scenario, estimates for the ITEMS model etc.

The Evaluation Plan describes concrete activities resulting in an ex-post evaluation. The plan describes how project baseline values will be defined and measured. The plan also defines how the objectives of the different measures will be followed up, as well as what methods, frequencies, indicators and units will be used.

The TRENDSETTER evaluation follows a bottom-up procedure, i.e. the evaluation originates within the demonstration measures. Each measure is evaluated with indicators at several levels:

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

The indicators at all three levels are harmonised with the CIVITAS/METEOR Common Core Indicators when applicable and possible. TRENDSETTER, as other CIVITAS demonstration projects, consider the Evaluation Plans as non-static. We foresee fruitful discussions within Trendsetter as well as within the Evaluation Liaison group.

The indicators are presented in two compilations; measure level (Appendix 6) and WP-level (Chapter 8). The two compilations serve different purposes. The description of indicators in Appendix 6, used to evaluate individual measures provides an overview of each measure and serves as a tool for the measure leaders. The compilation at the WP-level shows synergies among measures within the same work package and accentuates opportunities for closer co-operation.

3 Evaluation plan and organisation

This Evaluation Plan should not be seen as a static document. Although the main evaluation methodology is to be considered definitive, some parts may need to be modified as the project progresses. In such a project as complex and extensive as TRENDSETTER, changes will occur and new approaches may be developed. Some aspects of the Evaluation Plan must also be open for discussion and negotiations among the four CIVITAS projects, METEOR and the European Commission. The cross-site evaluation also need to be further discussed. The Evaluation Plans states the intentions of each demonstration project and can serve as a starting point for further harmonisation.

3.1 Structure of the Evaluation Plan

The remaining sections in the Evaluation Plan are structured as follows.

Chapter 2 gives a short introduction of the Evaluation approach within TRENDSETTER. Chapter 3 describes the Evaluation Plan and the Evaluation organisation. Chapter 4 describes the European Evaluation. The objectives at different levels are described in chapter 5 and the indicators in chapter 6. The plans for reporting results is presented in chapter 7. Chapter 8 contains the planned evaluation within each work package.

The following appendices are attached to the Evaluation Plan:
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Appendix 6 – Indicators for each Measure

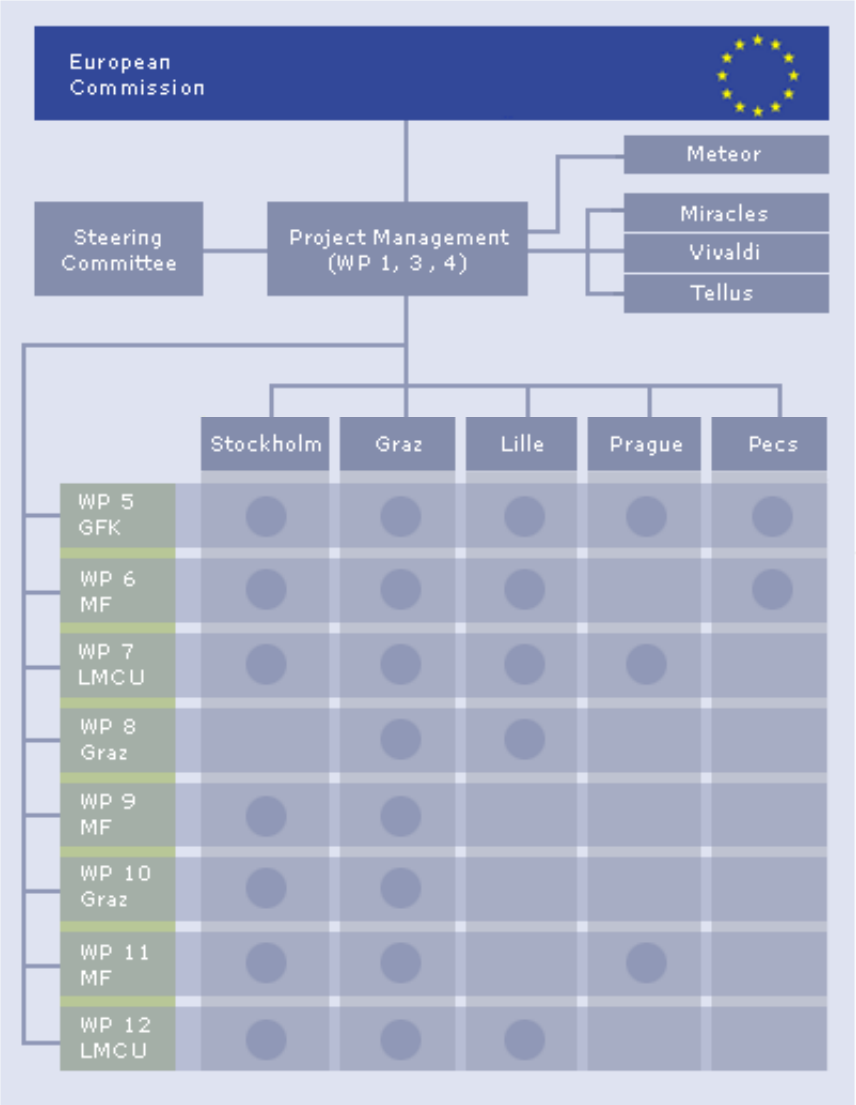
3.2 The TRENDSETTER Project

TRENDSETTER, MIRACLES, TELLUS and VIVALDI within the CIVITAS Initiative, aim at setting examples for radical urban transport strategies.

Within TRENDSETTER, five cities implement 50 measures that combine advanced mobility management schemes with clean vehicle fleets, which can achieve both short-term energy and emissions reductions and long term optimisation of public transport and effective urban goods flows. The five sites are Stockholm, Graz, Lille, Prague and Pécs.

The 50 measures are divided into the eight demonstration work packages within CIVITAS; Access Restrictions, Integrated Pricing Strategies, Public Passenger Transport, New Forms of Vehicle Use, New Concepts for the Distribution of Goods, Innovative Soft Measures, Integration of Transport Management Systems and Clean Public and Private Fleets.

A compilation of all measures can be seen in Appendix 3, List of Measures.



Picture 1 Organisation of TRENDSETTER and the interaction between different actors

3.3 Preparation of the Evaluation Plan

The preparation of the Evaluation Plan has been carried out in steps. First, evaluation plans for each work package were produced as input to a total WP Evaluation Plan. The WP Evaluation Plan was then expanded to create an overall Evaluation plan.

The Evaluation Plan was elaborated following the time schedule below:

- Example of Draft Evaluation Plan from Co-ordination (month 3)
- Draft WP Evaluation Plans WP 5 - 12 by WP-leaders (month 5)
- Workshop in Graz (month 5, June 24)
- Updated WP Evaluation Plans by WP-leaders (month 7)
- Draft WP Evaluation Plan from Co-ordination (month 8)
- Meeting in Evaluation Liaison group (month 11)
- Draft Evaluation Plan from co-ordination (month 11)
- Final Evaluation Plan from co-ordination (month 12)

After receiving the Evaluation Plan Assessment, the work updating the Evaluation Plan started.

- Evaluation Plan Assessment from EC (month 16)
- Evaluation meeting with all WP leaders (month 20)
- Decisions on evaluation process in Steering Committee meeting (month 21)
- Meeting in Evaluation Liaison group (month 23)
- Finalising the updated Evaluation Plan (month 23)
- Delays caused by new measures (month 24)
- Updated Evaluation Plan to EC (month 25)

3.4 Evaluation at different levels

The TRENDSETTER project will be evaluated in different levels. The TRENDSETTER evaluation follows mainly a bottom-up procedure, i.e. the evaluation originates within the demonstration measures.

Table 1 Evaluation levels, objectives and responsibilities

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 will be evaluated with indicators at several levels:

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

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

This Evaluation Plan is one of the deliverables within WP4. The remaining deliverables are listed below, together with their delivery date and information about who is responsible for the production of the deliverables.

No	**Deliverable**	**Delivery (month)**	**Responsibility**
D4.3 a-h	WP reports of demonstration Work Packages	M40 *Draft M36*	WP leaders
D4.4	Local Evaluation Report	M42 *Draft M37*	City Evaluation Managers
D4.5	Draft Evaluation Report	M44	Evaluation Manager
D4.6	Input to METEOR	M44	Evaluation Manager City Evaluation Manager
D4.7	Report on Evaluation Results	M48	Evaluation Manager

Former D4.2 is integrated in D4.1

3.5 Tools for Evaluation

The TRENDSETTER project uses a set of tools to perform an efficient evaluation at the different levels. The tools are:

- Objectives
- Indicators
- Methods
- Evaluation organisation

The evaluation of TRENDSETTER determines how well the project has fulfilled various **objectives** of the CIVITAS Initiative, the TRENDSETTER project itself, participating cities, the work packages and individual measures. The production of the Evaluation Plan highlighted a need to clarify objectives for each work package and measure. The measure and work package objectives were therefore redefined focusing on three cornerstones: environment, energy and mobility.

To perform the **indicator** based evaluation, indicators are used at different levels; CIVITAS/METEOR Common Core Indicators, TRENDSETTER common core indicators, WP common indicators and Individual indicators for each specific measure.

The **methods** are harmonised mainly concerning evaluation of the TRENDSETTER common core indicators and the WP common indicators. The Methodology sheets produced by METEOR is used for many of the indicators, when applicable. The Meteor Methodology sheets can be found in the Meteor deliverable D2 Assessment Framework and Evaluation Guidelines for Data Collection. TRENDSETTER Methodologies are described in TRENDSETTER Methodology sheets (Appendix 4) and briefly in Appendix 6.

The strategy within TRENDSETTER is to perform the evaluation with good quality and harmonised methods. When national methods increase the quality of the evaluation, the TRENDSETTER approach is to use the national methods instead of harmonising the methods. One example of this is calculation of emissions. National emission models and emission factors will be used when available, instead of the European Copert model, as stated by the Meteor Methodology sheets.

The **evaluation organisation** includes many persons involved at different levels.The TRENDSETTER project have defined responsible persons for the different levels of evaluation, see below. The names of those responsible at measure level can be found in chapter 8. Contact information to all persons within TRENDSETTER can be found at www.trendsetter-europe.org.

3.6 Evaluation organisation

Evaluation is a central part of TRENDSETTER. The evaluation process is complex due to the size of the project, with many individuals involved at the different sites, as well as ambitions to produce evaluations at different levels. Therefore, the responsibility for each evaluation has been clearly defined. Those responsible for coordinating the various parts of the evaluation are listed below.

Table 2 Responsibility for the Evaluation at various levels

Evaluation	Responsibility
Measure Evaluation	Measure leader
WP Evaluation	WP-leader
City Evaluation	Co-ordinators in each city
Trendsetter Evaluation	Evaluation Manager
European Cross-site Evaluation	METEOR, in association with the Evaluation Liaison Group

The *Measure evaluation* will:

- evaluate whether or not the measure has fulfilled its goals and reached the objectives
- evaluate whether or not the measure represents a "best practice" example useful to other European cities
- provide input to the cross-WP and the cross-site evaluations, as well as the city evaluation

Each measure contributes to fulfilling 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.

The WP leaders are responsible for the co-ordination of the evaluation of the measures in respective work packages – *the WP Evaluation*. At the work package level, the evaluations have been harmonised with the cross-site evaluation. As the project progresses, the WP leaders will focus on ensuring that the TRENDSETTER common indicators and the WP common indicators are evaluated correctly.

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

Table 3 Work packages and Work package leaders

WP number	Description	Responsible authority	WP leader
5	Access Restrictions	GFK, 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

The Work Packages were not optimized for evaluation purposes. TRENDSETTER choose to move some measures between the different WPs and create sub packages within the “new” sets of measures within each WP, in order to make the work packages more suitable for evaluation purposes.

The main tasks for the WP leaders are :

- Produce a WP report of each demonstration WP (D4.3 a-h) in month 40
  The report should present clear results showing if the WP objectives are reached. The report shall contain results from the evaluation of the TRENDSETTER indicators and the WP common indicators as well as comparisons between similar measures.
- Participating in arranging thematic dissemination workshops as well as meetings with technicians/measure leaders
- Continuously gather results from the measures and reporting them on the Evaluation database on TS Net
- Participate in discussions comparing results in different WPs
- Warn the TRENDSETTER coordination and the City coordination if they find the scientific quality too poor. Scientific experts might then be involved.

The *City Evaluation* determines whether or not local measures fulfil the objectives set by each city. The objectives for each participating city are found in Appendix 2, as well as a compilation showing which of the measures affects the different city objectives. The local co-ordinator for each city is responsible for the overall performance of the city evaluation. The local measure leaders are responsible for evaluating each measure based on city-objectives, if applicable.

TRENDSETTER has formed an *Evaluation group* consisting of representatives from the participating cities and the Evaluation manager. The group is a complement to the WP-leaders and the contact persons for METEOR for purposes of evaluation (cross-site, ITEMS etc). Nevertheless METEOR must inform the co-ordination of all direct contacts with partners in the project.

Table 4 TRENDSETTER Evaluation group

Participants of the TRENDSETTER evaluation group	
Evaluation Manager	Anna Hadenius
Graz	Gerhard Ablasser
Stockholm	Eva Sunnerstedt Nina Ekelund (2003)
LMCU	Yves Baesen
Prague	Zdenek Zuta
Pecs	Peter Merza

Finally, the METEOR project is responsible for producing a *European Cross-site evaluation* comparing all the CIVITAS projects. TRENDSETTER, as well as the other CIVITAS demonstration projects, participates in an Evaluation Liaison group, organised by METEOR. The group serves important needs for discussion and resolution of common problems. The goal is a co-ordinated evaluation across all projects, in order to optimise learning and spread results to other cities, organisations, and the EC.

3.7 Evaluation risks

The CIVITAS initiative as well as TRENDSETTER and its measure have associated risks. The main identified evaluation risks in TRENDSETTER are:

- The large size and the complexity of the demonstrations
- Timing of the implementation process
- Inconsistency of data across the measures
- Delays prohibiting the evaluation process
- Lack of awareness of the importance of the evaluation on different levels.

The evaluation risks will be handled during the whole project period by:

- Data collection instructions
- Ongoing supervision of implementation of measures
- Evaluation meetings within the consortia
- Evaluation meetings within the Evaluation Liaison group
- Involvement of Scientific experts when needed

Scientific experts are to be used within TRENDSETTER if needed. Since the TRENDSETTER project is so large and complex, containing 50 measures in eight thematic themes, the need of Scientific experts will vary during the project. TRENDSETTER has chosen not to have a fixed group of experts associated to the project. Experts with the right experience and qualifications will be involved when needed.

4 European Evaluation

4.1 European approach

METEOR is an accompanying measure designed to support the European Commission with the monitoring, evaluation and dissemination of the CIVITAS demonstration projects. METEOR are responsible for the cross-site evaluation, while the CIVITAS demonstration projects are responsible for the evaluation at project, city, work package and measure level.

Within MAESTRO (Monitoring Assessment and Evaluation of Transport Policy Options) specific characteristics of transport projects have been considered. The following phases was defined by MAESTRO in 1999:

- Identify need to carry out a P/D project
- Define objectives of a P/D project
- Conduct and evaluate P/D projects
- Apply and utilise the outcomes

According to the above, the evaluation is one stage within life cycle of a transport project. The other phases provide the context for the evaluation. Like defining the objectives of the project.

The CIVITAS initiative, upon specific indication of the European Commission (EC) is to be evaluated according to the guidelines set out by the MAESTRO project. The latter essentially identifies three main evaluation phases:

- Initial evaluation
- Ex-ante evaluation
- Ex-post evaluation

In compliance with the MAESTRO approach, METEOR proposes the following elements:

Ex-ante evaluation aiming at estimating the likely impacts of the CIVITAS Projects before their implementation. The ex-ante evaluation contains the following elements:
- The identification of a *Baseline*;
- The production of estimations through a custom-tailored model for a *Do-nothing Scenario* and a *CIVITAS Scenario*

On-going monitoring of measure implementation including rounds of data collection;

Ex-post evaluation aiming at analysing the actual impacts of the CIVITAS Projects comparing the estimated and real life results, feeding results into the chosen evaluation methods, consider whether the project has met its objectives.

For more details, see Meteor deliverable D2Assessment Framework and Evaluation Guidelines for Data Collection. In chapter 9 in this Evaluation Plan, the TRENDSETTER approach to the European evaluation is presented.

4.2 Trendsetter approach

METEOR has prepared Evaluation Guidelines, including the CIVITAS/METEOR Common Core Indicators. The purpose of the Evaluation Guidelines is to illustrate the main concepts steering the evaluation exercise at the CIVITAS (Pan-European) level while also supplying a reference framework for the development of the Evaluation Plans of the CIVITAS Projects.

TRENDSETTER does not anticipate problems in following the overall METEOR guidelines. However if the guidelines and indicator sheets are meant to be followed to the letter, we foresee problems.

The large number of METEOR common core indicators, as well as the proposed methods and frequencies, will affect the quality of the evaluation already planned within the TRENDSETTER measures. This issue must be further discussed and priorities must be defined. Moreover, many core indicators are possible to evaluate but are not relevant since the expected changes are insignificant. Some indicators, if measured at the city level, will not be sensitive enough to record the changes expected. It will also be prohibitively expensive to collect all required data.

TRENDSETTER has given priority to evaluating the measures at the demonstration area level and not the city level. Extrapolation to the city level must be further discussed on a case by case basis.

Within the Ex-ante evaluation, METEOR will use a model (ITEMS) to evaluate a Do-nothing Scenario, (e.g. a scenario projecting the estimated situation *without* the CIVITAS initiative). The ITEMS model has been designed to support policy decisions in the field of urban transport, in relation to their impacts on energy and environment. The use of the ITEMS model for the Do-nothing scenario has been discussed within all

CIVITAS projects. The steering committee of TRENDSETTER has decided to co-operate with METEOR concerning delivering data as input to the model. Only already existing data is used as input i.e. no new studies will be performed to collect new data in this phase of the project. Stockholm, Graz, LMCU and Prague have all sent data to METEOR as input to the ITEMS model.

Further discussions with METEOR are needed to determine, on a case by case basis, which indicators are essential. To ensure that the TRENDSETTER cities can produce a high quality evaluation each city is using its own approach based on local constraints (such as the availability of local data, project design and geography).

5 Objectives

The evaluation of TRENDSETTER determines how well the project has fulfilled various objectives of the CIVITAS Initiative, the TRENDSETTER project itself, participating cities, the work packages and individual measures. The evaluation must also support the cross-site evaluation with needed input.

The production of the Evaluation Plan highlighted a need to clarify objectives for each work package and measure. The measure and work package objectives were therefore redefined focusing on three cornerstones: environment, energy and mobility.

5.1 CIVITAS objectives

Quality of life in cities is deteriorating because of congestion, pollution, stress and because of the socio-economic costs related to these problems. With a few exceptions, all negative trends characterising the performance of the urban transport system and their impacts on the quality of urban life appear to be all but curbed. In order to change this situation, CIVITAS elaborated the following major objectives:

- Reduce urban and peri-urban congestion;
- Improve the accessibility of vital economic functions;
- Reduce air pollution and noise;
- Reduce energy consumption;
- Increase use of public transport;
- Increase new forms of car ownership and vehicle use;
- Establish sustainable and efficient logistic services;
- Inform citizens and travellers to achieve modal shift towards sustainable energy efficient modes;
- Improve living conditions for urban residents.

The CIVITAS Initiative addresses the challenge to achieve a radical change in urban transport through the combination of technology and policy-based instruments and measures. Eight policy or urban transport application fields have been identified as the basic building blocks of an urban transport strategy, and have been turned into the following work packages for the CIVITAS Projects: *Access restrictions; Integrated pricing strategies; Public passenger transport; New forms of vehicle use; New concepts for distribution of goods; Innovative soft measures; Integration of transport management systems, Clean public and private fleets*.

5.2 The TRENDSETTER Project Objectives

The TRENDSETTER project objectives derive from city-based objectives and the CIVITAS goals. The TRENDSETTER project objectives are characterised as

- High-level objectives
- Demonstration objectives
- Scientific/technical objectives

High-level objectives

Trendsetter's objectives are to ameliorate urban air quality and noise levels, and congestion while supporting exceptional mobility and urban quality of life. Specifically, objectives are to:

Provide examples

- Provide input to European policy making and promote a sustainable transport future in Europe
- Provide other cities with feasible best practice strategies to curb unsustainable traffic growth by using advanced mobility management schemes combined with clean vehicle fleets.
- Increase acceptance of bio-fuels among citizens and encourage operators, politicians and social groups for innovative, low-noise and low emission technology.

Increase Mobility

- Promote the use of public transport and other alternatives to private cars
- Demonstrate new ways to improve urban goods logistics and efficiency.

Enhance Environment

- Reduce annual fossil $C0_2$ emissions by 5% in demonstrating cities, approximately 75 000 tonnes per year.
- Reduce NO_x emissions by 900 tonnes/year and particulate matter by at least 1800 tonnes/year
- Reduce noise levels in demonstrating cities

Save Energy

- Save over 850 TJ (≈ 20 300 TOE) energy per year

Below is a table showing how the different sites contribute to the high level objectives.

	Sthlm	**Graz**	**Lille**	**Prague**	**Pécs**
Provide examples					
Provide input to European policy making and promote a sustainable transport future in Europe	X	X	X	X	X
Provide other cities with feasible best practice strategies to curb unsustainable traffic growth by using advanced mobility management schemes combined with clean vehicle fleets.	X	X	X	X	X
Increase acceptance of bio-fuels among citizens and encourage operators, politicians and social groups for innovative, low-noise and low emission technology.	X	X	X	X	
Increase Mobility					
Promote the use of public transport and other alternatives to private cars	X	X	X	X	X
Demonstrate new ways to improve urban goods logistics and efficiency.	X	X			
Enhance Environment					
Reduce annual fossil $C0_2$ emissions by 5% in demonstrating cities, approximately 75 000 tonnes per year.	X	X	X	X	X
Reduce NO_x emissions by 900 tonnes/year and particulate matter by at least 1800 tonnes/year	X	X	X	X	X
Reduce noise levels in demonstrating cities	X	X	X	X	X
Save Energy					
Save over 850 TJ (≈ 20 300 TOE) energy per year	X	X	X	X	X

Demonstration Objectives

TRENDSETTER will use large-scale demonstrations to reach the high-level objectives. The demonstrations will prove that cities can meet the Kyoto goals/Bonn commitments of achieving a 5% annual CO_2 reduction solely by using biogas from waste/sewage and bio-fuels from organic waste products. The demonstration objectives are listed as Appendix 1.

Scientific and Technical Objectives

Scientific and technical objectives focus on testing the feasibility of various innovative technologies and policies in practice, see Appendix 1.

5.3 City objectives

The participating cities Stockholm, Graz, Lille, Prague and Pécs are of different size, national status and political structure. However, they share a determination to improve the quality of life for their citizens, achieve European climate goals and save energy. The city-based objectives for each participating city are listed as Appendix 2, together with tables showing which measures affect which city objectives.

5.4 Work Package objectives

The eight demonstration work packages (WP 5 – 12) each have unique main objectives, which derive from the high level objectives. The measures comprising each Work Package are designed to fulfil one or several Work Package objectives.

5.5 Measure objectives

The measure objectives are not listed in this report, but can be found in the Inception Report. Indicators chosen for the evaluation of each measure reflect measure objectives.

6 TRENDSETTER indicators

6.1 Introduction

The TRENDSETTER evaluation will measure and describe the extent to which objectives for the CIVITAS initiative, the TRENDSETTER project, the Cities, the Work Packages and the specific measures have been fulfilled. The evaluation will also to support the cross-site evaluation with input.

The evaluation within TRENDSETTER follows a bottom-up procedure, i.e. the evaluation originates in the demonstration measures. Each measure is evaluated with indicators at several levels:

- TRENDSETTER common indicators
- WP common indicators
- Individual indicators for each measure

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

The indicators are presented in two compilations; measure level (Appendix 5) and WP-level (Chapter 8). The two compilations serve different purposes. The description of indicators used to evaluate individual measures provides an overview of each measure and serves as a tool for the measure leaders. The compilation at the WP-level shows synergies among measures within the same work package and accentuates opportunities for closer co-operation.. The indicator list in Appendix 5 includes more detailed descriptions of the indicators than Chapter 5. In Chapter 8, the indicators are grouped, to provide an overview of the evaluation as a whole.

The spatial scale for evaluating measures is normally the demonstration area. Part of the evaluation is at the city scale. Since not all indicators are evaluated at a city scale, as preferred by METEOR in the cross-site evaluation, some results may need to be extrapolated to this wider scale. These cases will be discussed with METEOR.

6.2 TRENDSETTER Common Indicators

The indicators used in the evaluation are described under the headings:

- Evaluation area
- Name of indicator
- Description of indicator
- Unit
- Methodology
- Frequency
- Target group

The indicators are divided into six *Evaluation Areas*:

- Economy
- Energy
- Environment
- Society
- Transport
- Mobility

The *methodology* used in the different measures varies, including:

- Calculations
- Estimations
- Counts
- Measurements
- Questionnaires
- Interviews

Irrespective of which method is used, indicator will be evaluated before/after the implementation of a measure. The evaluation must show the effect of implemented measures in demonstration sites or cities. If the evaluation frequency has been determined, it is indicated in Appendix 5. For some measures a pre-evaluation might not be applicable. The evaluation may be qualitative or quantitative.

The TRENDSETTER common indicators will be evaluated within most measures. Since an overall objective of Trendsetter is to reduce energy use and environmental

impact, with retained or increased mobility, the Trendsetter indicators concern energy, environmental impact and mobility. The common indicators are:

Energy
- Energy use (total and renewable)

Environment
- Emissions of NOx
- Emissions of fossil CO_2
- Emissions of particulate matter
- Noise levels

Mobility
- No of trips per mode
- Travel time per mode
- Quality of service per mode
- Acceptance per mode

Energy use will be measured in terms of both total consumption and the consumption of renewable sources, allowing the calculation of both total energy savings as well as the share of renewable energy.

Environmental impact will be measured through the emission indicators (NOx, CO_2 and particulate matter) and noise levels.

Mobility is one of the three cornerstones of TRENDSETTER. Thus we need to evaluate whether mobility has increased, decreased or stayed the same. The mobility will be described using the four indicators stated above. Those indicators will be assessed quantitative or on a qualitative five degree scale (-- - 0 + ++). The mobility indicators should be used for applicable modes chosen from the modes PT, Cars, Delivery vehicles and Pedestrians/cyclists.

Methodology sheets for the TRENDSETTER indicators can be seen in Appendix 4.

6.3 WP Common Indicators

The WP Common Indicators are specific to each Work Package and represent more than one measure within the work package. The estimation of WP common indicators will require close cooperation among measure leaders and between WP leader and measure leaders.

6.4 Individual Indicators for each Measure

In addition to the estimation of indicators needed to aggregate results at the WP, project and cross-site levels, most measures also require unique indicators. These indicators require no harmonisation with those of other measures. The measure leader is responsible for carrying out the evaluation of these measure-specific indicators.

6.5 CIVITAS/METEOR Common Core Indicators

METEOR will produce a cross-site evaluation of all four CIVITAS demonstration projects. The cross-site evaluation will be produced at the city level. The indicators used in the cross-site evaluation are listed in the METEOR Evaluation Guidelines (see Appendix 4). The list contains 28 indicators representing Economy, Energy,

Environment, Society and Transport. The list is the result of an Impact analysis produced by METEOR and discussions within the Evaluation liaison group.

The TRENDSETTERs approach has been to harmonise its indicators with the CIVITAS/METEOR Common Core Indicators when possible and applicable. However, not all 28 indicators will be evaluated within TRENDSETTER. Other indicators are applicable only to a few measures or will be evaluated using another unit or frequency than that suggested by METEOR. For a more detailed list of the CIVITAS/METEOR Common Core Indicators, see Appendix 3.

7 Reporting results

7.1 Reporting TRENDSETTER results

The reporting of TRENDSETTER results will be a continuous process during the evaluation phase. Within Trendsetter an internal web application has been built up and implemented (TSNet). The TSNet is for Trendsetter participants only and requires a login procedure.

The TSNet will be used for many different purposes. The most important application for Evaluation purposes will be an Evaluation database for reporting results. That application will only be available for those responsible for evaluation matters.

Since the time schedules for implementation of the different measures vary a great deal, the reporting of results must be a continuously ongoing process. It is of great importance that results are reported while the measures still are active and the measure leaders still are deeply involved in the measure.

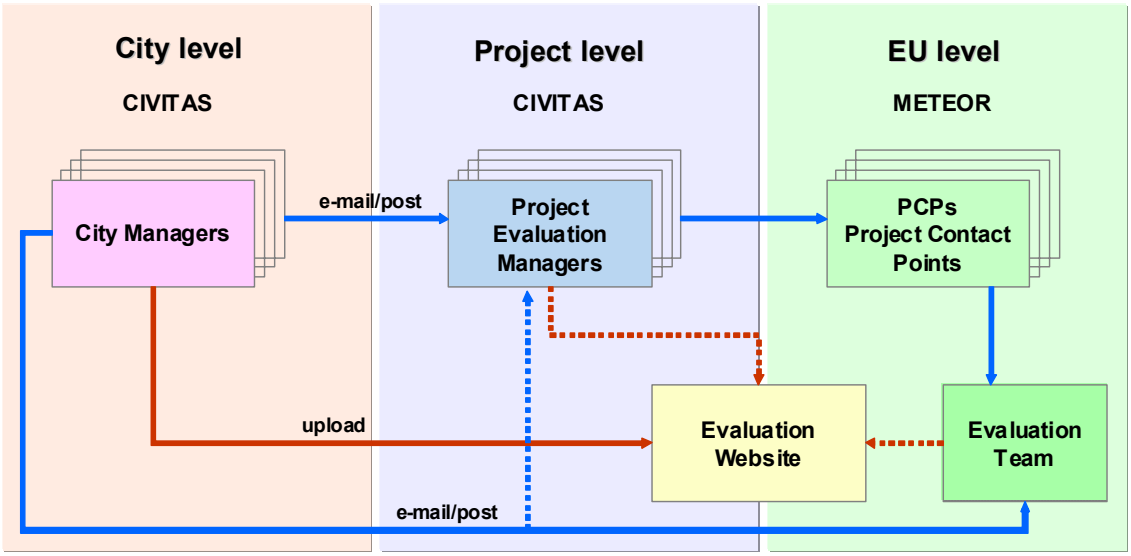
The following indicators will be reported in the evaluation database on the TSNet:

- TRENDSETTER common indicators
- WP common indicators
- Applicable remaining CIVITAS/METEOR Common Core Indicators
- Measure specific indicators (on a voluntary basis)

7.2 Reporting results to METEOR

TRENDSETTER intend to use the evaluation database on the TSNet for reporting results to METEOR. Only the CIVITAS/METEOR Common Core Indicators will be reported to METEOR. Thus, only parts of the evaluation database will be available for METEOR.

Meteor have presented different possible scenarios for reporting results between the CIVITAS demonstration project and METEOR. The figure below shows the different alternatives. The figure is from Meteor deliverable D2 Assessment Framework and Evaluation Guidelines for Data Collection. The TRENDSETTER approach using TSNet corresponds most with the alternative where the Project Evaluation Manager report applicable data to an Evaluation website used by METEOR.



Picture 2 Different alternatives how to report results to METEOR.

8 Evaluation within TRENDSETTER

8.1 WP 5 Access Restrictions

Below is a list of the measures within WP5 – Access Restrictions. The measures are divided into the sub packages Environmental zones and Strolling zones. Stockholm Real Estate and Traffic Administration is the Work Package leader.

Table 5 Measures within WP 5

Group of measures	**Measures within WP 5**	**City**
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 Car-free zone, extension of strolling-zone and bicycle road network	Pecs
	5.5 Preparation of a new traffic and transportation strategy	Pecs

Table 6 Persons responsible for evaluation in WP 5

	Person responsible for evaluation	**Organisation**
WP leader	Eva Schelin	SWECO
5.1	Lars-Göran Jansson	Stockholm Real Estate and traffic Administration
5.2	Vladimír Kadlec	Ústav dopravního inženýrství Praha
5.3	Astrid Wilhelm Gerhard Ablasser (CC)	FGM-AMOR City of Graz
5.4	Peter Merza	Municipality of the City of Pécs - European Development Office
5.5	Peter Merza	Municipality of the City of Pécs - European Development Office
5.6	Joanna Dickinsson	Miljöavgiftskansliet, Stockholms stad

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 7 Target groups and spatial scales in WP 5

	Target group	**Spatial scale**
5.1	Restrictions: Transport operators and drivers Environmental improvements: Citizens of Stockholm	Environmental zone in the city of Stockholm
5.2	The city authorities, they will decide about the traffic organization to improve the environment of inhabitants.	Prague city centre and its closest neighbouring areas.
5.3	Shop keepers, passers-by, delivery to shops	Around the Kunsthaus and Karmeliterplatz Neutorgasse in Graz.
5.4	Citizens of Pecs	Inner city of Pecs
5.5	Citizens of Pecs	Inner city of Pecs
5.6	Road-users in the county of Stockholm	County of Stockholm

Objectives WP 5

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

- Demonstrate and evaluate various projects on access restrictions of inner cities aiming at promoting cleaner vehicles, thereby reducing emissions, noise and energy use
- 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
- By introducing the access restrictions and promoting sustainable modes of transport provide best practice examples to follower cities

Indicators WP 5

The table below shows in which of the measures in WP 5 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 8 Indicators within WP 5

Evaluation area	**Indicator**	**Unit**	**5.1**	**5.2**	**5.3**	**5.4**	**5.5**	**5.6**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*X*	*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*	*M8*
Environment	*Emissions of NOx*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*	*M6*
Environment	*Emissions of PM*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*	*M11*
Environment	*Noise levels*	*dB(A)*	*X*	*X*	*X*	*X*	*X*	*X*	*(M12)*
Mobility	*No of trips*	*No or Qualitative 5-degree scale*			*X*	*X*	*X*	*X*	*M21, 22, 25)*
Mobility	*Travel time*	*Minutes or Qualitative 5-degree scale*				*X*	*X*	*X*	*(M23)*
Mobility	*Quality of service*	*Qualitative 5-degree scale*			*X*	*X*	*X*	*X*	*M19*
Mobility	*Acceptance*	*Qualitative 5-degree scale*			*X*	*X*	*X*	*X*	*M14*
Environment	Emission of S	Tons/year			X	X	X		
Environment	CO levels	ppm or g/m^3			X				M5
Transport	Modal split	% /mode	X		X	X	X	X	M26, 27
Transport	Traffic volumes within the zones	Veh/hour or veh/day	X	X		X		X	M21,22
Transport	Percentage of the heavy vehicles within the zone with permission	%	X	X					

8.2 WP 6 Integrated Pricing Strategies

Below is a list of the measures within WP6 – Pricing Strategies. The measures are divided into the sub packages Smart card systems and Parking.

Table 9 Measures within WP 6

Group of measures	Measures within WP 6	City
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	Pecs

Table 10 Persons responsible for evaluation within WP6

	Person responsible for evaluation	Organisation
WP leader	Anna Hadenius	Inregia AB
6.1	Kicki Roos	Stockholm Transport (SL)
6.2	Jean-Pierre Guiraud Jorge Vieira da Silva	LMCU MTA
6.3	Eva Sunnerstedt	Environment and Health Administration
6.4	Astrid Wilhelm Gottfried Pobatschnig (cc)	FGM-AMOR City of Graz
6.5	László Soó	Pecs Property

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 11 Target groups and spatial scales in WP 6

	Target group	Spatial scale
6.1	PT users	Stockholm County
6.2	PT users	Demo area
6.3	Drivers of clean vehicles	City of Stockholm
6.4	Drivers of low emission vehicles	City of Graz
6.5	Citizens of Pécs	Car free zone (200 000 m2)

Objectives WP 6

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

- Achieve a modal shift from private cars to public transport through simpler and accurate pricing of PT, i.e. Smart Card system
- Promoting clean vehicles by introducing parking incentives
- By modal shift and shift to clean vehicles reduce emissions, noise levels and energy use

Indicators WP 6

The table below shows in which of the measures in WP 6 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 12 Indicators within WP 6

Evaluation area	**Indicator**	**Unit**	**6.1**	**6.2**	**6.3**	**6.4**	**6.5**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M8*
Environment	*Emissions of NOx*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M10*
Environment	*Emissions of PM*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M11*
Environment	*Noise levels*	*dB(A)*					*X*	*M12*
Mobility	*No of trips*	*No or Qualitative 5-degree scale*	*X*	*X*	*X*		*X*	(M21, 22, 25)
Mobility	*Travel time*	*Minutes or Qualitative 5-degree scale*						*(M235)*
Mobility	*Quality of service*	*Qualitative 5-degree scale*	*X*				*X*	*M19*
Mobility	*Acceptance*	*Qualitative 5-degree scale*	*X*		*X*	*X*	*X*	*M14*
Society	Changes in living and working conditions						X	
Society	Acceptance of preference of low parking costs for less pollutiong vehicles	Degree				X		
Transport	Average time of parking in the centre						X	
Transport	Modal split (cars – PT, between PT modes)	%	X	X			X	M26, 27
Transport	No. of parking tickets, applications, permits for all vehicles, permits for clean vehicles	No.			X	X		
Transport	Number of cars using parking facilities in the centre	No. cars					X	
Transport	Number of vehicles within specified area	No. Clean veh.No. private cars			X	X		
Transport	Number of public transport users	Public transport users	X					
Transport	Consumption and distribution of magnetic card blanks	No card blanks	X					
Transport	Number of purchased parking machines						X	

8.3 WP 7 Public Passenger Transport

Below is a list of the measures within WP 7 – Public Passenger Transport. The measures are divided into the sub packages Information to passengers, Public transport safety and PT intermodality.

Table 13 Measures within WP 7

Group of measures	**Measures within WP 7**	**City**
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 security	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

Table 14Persons responsible for evaluation in WP 7

	Person responsible for evaluation	**Organisation**
WP leader	Yves Baesen	LMCU
7.1	Helena Sundberg	Stockholm Transport
7.2	Jacques Delebarre Jorge Vieira da Silva	LMCU MTA
7.3	Serge Mullier with Nathalie Elies Jorge Vieira da Silva	LMCU MTA
7.4	Astrid Wilhelm Thomas Fischer (cc)	FGM-AMOR City of Graz
7.5	Astrid Wilhelm Thomas Fischer (cc)	FGM-AMOR City of Graz
7.6	André Broutin Jorge Vieira da Silva	LMCU MTA
7.7	Vladimir Kadlec Zdenek Suta (interface)	Institute of Transportation Engineering Prague City Hall

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 15 Target group and spatial scale in WP 7

	Target group	**Spatial scale**
7.1	PT users	County of Stockholm
7.2	All PT network (passengers and PT agents)	All network (metro, tram, bus)
7.3	PT operator and PT users	Demo area : 1 – Armentières 2 – Don Sainghin
7.4	PT passengers, P&R users	Demo are : Andritz, Mariatrost (tramlines 1 and 5)
7.5	PT passengers, disabled persons	Demo area
7.6	Park and Ride users	Not decided yet, but different areas (P&R) are foreseen
7.7	PT users	Prague's central part

Objectives WP 7

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

- Improve the PT travellers / passengers information
- Ameliorate the PT security
- Strengthen the PT intermodality
- Enforce the PT attractiveness
- Save energy and emissions through increase use of PT

Indicators WP 7

The table below shows in which of the measures in WP 7 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 16 Indicators used in WP 7

Evaluation area	**Indicator**	**Unit**	**7.1**	**7.2**	**7.3**	**7.4**	**7.5**	**7.6**	**7.7**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M4*
Environment	*Emissions of fossil CO2*	*(Tons/year) and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M8*
Environment	*Emissions of NOx*	*(Tons/year) and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M10*
Environment	*Emissions of PM*	*(Tons/year) and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M11*
Mobility	*N° of trip per mode*	*No or Qualitative 5-degree scale*		*X*	*X*		*X*	*X*		*(*M21, 22, 25)
Mobility	*Travel time per mode*	*Minutes or Qualitative 5-degree scale*				*X*		*X*		*(M23)*
Mobility	*Quality of service per mode*	*Qualitative 5-degree scale*				*X*	*X*	*X*		*M19*
Mobility	*Acceptance per mode*	*Qualitative 5-degree scale*				*X*	*X*	*X*		*M14*
Economy	Cost of vandalism	Euro		X						
Energy	Energy use (per person & vehicle)	Joule/vehicle or Joule/passenger		X	X			X		M4
Society	Acceptance (satisfaction)		X			X	X		X	M14
Society	Awareness (knowledge)	%				X				M13
Society	Image of PT	-	X			X	X		X	
Society	Quality of PT service		X			X	X		X	M19
Society	Perception of PT security (passengers and non passengers)			X						M17
Society	Level of estimated comfort of interchange areas	%			X					
Society	Level of use of exchange points	Passengers			X					
Society	Satisfaction level concerning the intermodality	%			X					
Society	Number of physical harms (agents, passengers)	Harms		X						
Society	Creation of additional services (car wash, etc ...)	Services						X		
Society	Material damages	Damages		X						
Society	Time required for action when incident	Minutes		X						
Transport	No of PT users	Users (different categories)	X			X			X	
Transport	Traffic levels PT (trips, travels, journeys)	Trips/year etc	X	X	X	X	X	X	X	M21,22
Transport	Occupancy rate of the parking places	Percentage				X		X		
Transport	Number of high level stops	Stops				X				
Transport	Number of places made (cars, 2-wheelers)	Places						X		
Transport	Rate of connections between train-bus	%			X					
Transport	Level of use of new services	Passenger				X				
Transport	Number of passengers in the concerned area	Passenger				X				

8.4 WP 8 New Forms of Vehicle Use

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.

Table 17 Measures within WP 8

Group of measures	Measures within WP 8	City
	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

Table 18 Persons responsible for evaluation in WP 8

	Person responsible for evaluation	Organisation
WP leader	Gerhard Ablasser	City of Graz
8.1	Astrid Wilhelm Thomas Fischer (cc)	FGM-AMOR City of Graz
8.2	André Broutin Jorge Vieira da Silva	LMCU MTA
8.3	Astrid Wilhelm Thomas Fischer (cc)	FGM-AMOR City of Graz
8.4	Astrid Wilhelm Thomas Fischer (cc)	FGM-AMOR City of Graz
8.5	Pierre Lebrun Jorge Vieira da Silva	LMCU MTA

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 19 Target group and spatial scales in WP 8

	Target group	Spatial scale
8.1	PT passengers	Demo area: Puntigam/Seiersberg, GAST- range
8.2	Employees of LMCU	Demo area
8.3	Car passengers / internet users	Demo area: participating elementary schools
8.4	Effected pupils/ employees/ visitors	Demo area: 4 schools, 5 companies/university/concert hall in Graz West
8.5	LMCU and Organisations interested by the measure	Demo area (simulations, paper studies for micro-PDU)

Objectives WP 8

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

- 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
- Increase use of sustainable modes by disabled & elderly as well as by young people
- Demonstrate the cost-effectiveness of such measures

Indicators WP 8

The table below shows in which of the measures in WP 8 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 20 Indicators used in WP 8

Evaluation area	**Indicator**	**Unit**	**8.1**	**8.2**	**8.3**	**8.4**	**8.5**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*		*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M8*
Environment	*Emissions of Nox*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M10*
Environment	*Emissions of PM*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*M11*
Environment	*Noise levels*	*dB(A)*				*X*		*M12*
Mobility	*No. of trip*	*No or Qualitative 5-degree scale*	*X*	*X*	*X*	*X*	*X*	*(*M21, 22, 25)
Mobility	*Travel time per mode*	*Minutes or Qualitative 5-degree scale*		*X*			*X*	*(M23)*
Mobility	*Quality of service*	*Qualitative 5-degree scale*	*X*					*M19*
Mobilit/Society	*Acceptance*	*Qualitative 5-degree scale*	*X*		*X*	*X*		*M14*
Transport	Vehicle occupancy	Persons/vehicle		X	X			M28
Transport	Degree of correct HOV-lane use	Cars, passengers, violations			X			
Transport	Page imprint on web site	Imprints			X			
Transport	Vkm (saved by modal split)	km				X		M21,22
Transport	Modal split			X	X	X	X	M26, 27
Transport	Occupancy of park&pool lots	No. of cars			X			
Society	Awareness level	%	X			X		M13
Environment	Fossil energy savings	Mjoule		X			X	
Energy	CO level	Ppm			X	X		

8.5 WP 9 New Concepts for the Distribution of Goods

Below is a list of the measures within WP 9 – New Concepts for the Distribution of Goods.

Table 21 Measures within WP 9

Measures	**City**
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

Table 22 Person responsible for evaluation in WP 9

	Person responsible for measure evaluation	**Organisation**
WP leader	Björn Hugosson	Environment and Health Administration, Stockholm
9.1	Johan Briswall	Stockholm Real Estate and Traffic Administration
9.2	Astrid Wilhelm Gerhard Ablasser (cc)	FGM-AMOR City of Graz
9.3	Jessica Troedson	Home 2 You AB

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 23 Target groupsand spatial scales in WP 9

	Target group	**Spatial scale**
9.1	Suppliers to construction site, Construction companies, Freight companies and Inhabitants in the area	Demo area
9.2	Shop owners	Demo area
9.3	Owners of restaurants, shops and hotels	Demo area (Old Town of Stockholm)

Objectives WP 9

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

- Demonstrate measures to increase the efficiency of goods distribution in various environments (construction site, inner city and hospital area)
- 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
- Provide examples of "Green city logistics", how it can be implemented and the possible incentives for commercial operators

Indicators WP 9

The table below shows in which of the measures in WP 9 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 24 Indicators within WP 9

Evaluation area	Indicator	Unit	9.1	9.2	9.3	METEOR
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*tons/year*	*X*	*X*	*X*	*M8*
Environment	*Emissions of NOx*	*tons/year*	*X*	*X*	*X*	*M10*
Environment	*Emissions of PM*	*tons/year*	*X*	*X*	*X*	*M11*
Environment	*Noise levels*	*dB(A)*	*X*	*X*	*X*	*M12*
Mobility	*No of trips (*Total no of goods vehicles moving in demo areas)	*No or Qualitative 5-degree scale*	*X*	*X*	*X*	*M25*
Society	Living conditions	Noise hours	X			
Society	Working environment	Noise hours	X			
Transport	Vkm by vehicle type (peak/off peak or total)	Vkm per day	X	X	X	M21, M22
Transport	Vehicle load factor	%	X	X	X	
Transport	Queuing time/stop time	Minutes/ trip	X			
Transport	Small deliveries	Vehicles/day	X		X	
Transport	Vehicle fleet	Vehicles		X		
Transport	Total distance	Km/trip		X		(M21,22)

8.6 WP 10 Innovative Soft Measures

Below is a list of the measures within WP 10 – Innovative Soft Measures. The measures are divided into the subpackages Bicycle measures, Trip planning and Awareness of clean transport and safety.

Table 25 Measures within WP 10

Group of measures	Measures within WP 10	City
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

Table 26 Persons responsible for evaluation in WP 10

	Person responsible for evaluation	**Organisation**
WP leader	KarlHeinz Posch	FGMAMOR
10.1	Astrid Wilhelm Helmut Spinka (cc)	FGMAMOR City of Graz
10.2	Alf Peterson	Swedish national road administration, Stockholm Region
10.3	Alf Peterson	Swedish national road administration, Stockholm Region
10.4	Astrid Wilhelm Sylvia Loibner (cc)	FGM AMOR Taxi 878
10.5	Astrid Wilhelm Reinhard Hofer (cc)	FGMAMOR Steirischer Verkehrsverbund
10.6	Astrid Wilhelm Peter Kostka (cc)	FGMAMOR City of Graz

Contact information to the persons above can be found on www.trendsettereurope.org

Table 27 Target groups and spatial scales in WP 10

	Target group	**Spatial scale**
10.1	Bikers	Demo area: Mitterstraße/Kepplerstr., Graz West
10.2	Visitors to the Web site, testers of web site	(web site traffic all visitors)
10.3	PDA users, testers of web sites	(testers of PDAs and web site)
10.4	Taxi drivers and their customers	Demo area: city wide
10.5	PT passengers / internet users	Demo area: city wide, focus on central transport hub (around Jakominiplatz), some questions: Styria wide
10.6	General public	Demo area: city wide

Objectives WP 10

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

- 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.
- Increase use of sustainable modes by disabled & elderly as well as by young people
- Demonstrate the cost effectiveness of such measures

Indicators WP 10

The table below shows in which of the measures in WP 10 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 28 Indicators used in WP 10

Evaluation area	**Indicator**	**Unit**	**10.1**	**10.2**	**10.3**	**10.4**	**10.5**	**10.6**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*		*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year*	*X*	*X*	*X*		*X*	*X*	*M8*
Environment	*Emissions of NOx*	*Tons/year*	*X*	*X*	*X*		*X*	*X*	*M10*
Environment	*Emissions of PM*	*Tons/year*	*X*	*X*	*X*		*X*	*X*	*M11*
Environment	*Noise levels*	*dB(A)*	*X*					*X*	*M12*
Mobility	*No. of trips*	*No or Qualitative 5-degree scale*		*X*	*X*				*(*M21, 22, 25)
Mobility	*Travel time*	*Minutes or Qualitative 5-degree scale*	*X*	*X*	*X*		*X*		*(M23)*
Mobility	*Quality of service*	*Qualitative 5-degree scale*		*X*	*X*		*X*		*M19*
Mobility	*Acceptance*	*Qualitative 5-degree scale*		*X*	*X*	*X*	*X*	*X*	*M14*
Energy	Fuel consumption (reduced fuel caused by bike related measures)	Km/litres	X						(M4)
Society	Awareness level						X		M13
Society	Degree of meeting the self set criteria by PT association	Depends on system					X		
Society	Page imprint on web site	Page imprints	X	X	X		X		
Transport	Usage of PT (Development of number of customers in comparison to previous years)	Number of PT customers					X		
Transport	Number of participants (no of taxi drivers, no of containers, % of containers by different target groups, litres collected, no of brochures diss by taxi drivers)s					X			
Transport	Modal split (bike related measures taken, incl. B&R, CFD)	% of mode	X					X	M26,27
Transport	Usage of infrastructure		X	X					
Transport	Vkm (reduced vkm caused by bike related measures)	km	X						
Transport	Average vehicle speed	Km/h						X	M 21/22

8.7 WP 11 Integration of Transport Management Systems

Below is a list of the measures within WP 11 – Integration of Transport Management. The measures are divided into the sub packages Traffic information and Improving PT traffic flow.

Table 29 Measures within WP 11

Group of measures	Measures within WP 11	City
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

Table 30 Persons responsible for evaluation in WP 11

	Person responsible for evaluation	Organisation
WP leader	Eva Schelin	SWECO
11.1	Astrid Wilhelm Thomas Fischer (cc) Johann Müller (cc)	FGMAMOR City of Graz GVB
11.2	Alf Peterson	Swedish National Road Administration
11.3	Astrid Wilhelm Winfried Höpfl (cc)	FGMAMOR GVB
11.4	Helene Andersson	Stockholm Real Estate and traffic Administration
11.5	Fredrik Davidsson Tobias Johansson (cc)	MOVEA Stockholm Real Estate and traffic administration
11.6	Suta Zdenek	Prague City Hall, Department of Transport Development
11.7	Serge Mullier with Nathalie Elies Jorge Vieira da Silva	LMCU MTA

Contact information to the persons above can be found on www.trendsettereurope.org

Table 31 Target groups and spatial scale in WP 11

	Target group	Spatial scale
11.1	PTusers	City of Graz
11.2	PTusers, cars, delivery vehicles	Selected routes; E4 to Arlanda, E4 to Fittja, E18 to Stäket/Kungsängen, Road 73 up to Farsta, Värmdöleden up to Skuru, Norrtälje road up to Arninge, Sveavägen, Lidingövägen, Klarastrandsleden
11.3	Car drivers, PTusers	Roads with the system, Graz
11.4	Service providers, citizens of Stockholm, PT customers, visitors etc.	Demo area if Stockholm's ISA, otherwise whole Stockholm
11.5	PT passengers, car drivers, pedestrians/cyclists, citizens of Stockholm	Lower Kungsholmen, Stockholm
11.6	PTusers	Two crossroads, Prague
11.7	Bus users PT operator	Streets/sections of streets in Lille city

Objectives WP 11

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

- 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.
- 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.
- Reduction of fuel consumption, less emissions, less noise and a modal shift to sustainable transport modes is the objectives for the measure.
- By introducing the measures provide best practice examples to follower cities.

Indicators WP 11

The table below shows in which of the measures in WP 11 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 32 Indicators used in WP 11

Evaluation area	**Indicator**	**Unit**	**11.1**	**11.2**	**11.3**	**11.4**	**11.5**	**11.6**	**11.7**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*		*M8*
Environment	*Emissions of NOx*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*		*M10*
Environment	*Emissions of PM*	*Tons/year*	*X*	*X*	*X*	*X*	*X*	*X*		*M11*
Environment	*Noise levels*	*dB(A)*			*X*					*M12*
Mobility	*No of trips*	*No or Qualitative 5-degree scale*		*X*			*X*	*X*	*X*	*(*M21, 22, 25)
Mobility	*Travel time*	*Minutes or Qualitative 5-degree scale*	*X*	*X*	*X*		*X*	*X*	*X*	*(M23)*
Mobility	*Quality of service*	*Qualitative 5-degree scale*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*M19*
Mobility	*Acceptance*	*Qualitative 5-degree scale*	*X*	*X*	*X*	*X*	*X*		*X*	*M14*
Energy	Energy use per bus	Joule/bus							X	M4
Energy	Energy use per passenger	Joule/passenger							X	M4
Society	Available traffic information at web site, performed evaluation of number of hits per months	No.			X					
Society	Modal split							X		M26,27
Society	Safety (Effects on cyclists and pedestrians)	% safe utilization					X			M20
Society	Safety for pedestrians	% walking on red					X			M20
Transport	Commercial speed							X	X	M23,24
Transport	Reliability of bus service							X		M18

Evaluation area	Indicator	Unit	11.1	11.2	11.3	11.4	11.5	11.6	11.7	METEOR
Transport	Changes in overall number of buses put in service each day							X		
Transport	Quality of service (stop and delay for PT and other vehicle)	Veh hours or veh minutes					X			M19
Transport	Quality of service (Improvement of the bus traffic flow (enhanced schedules and less delays)	Traveltime/veh					X			M19
Transport	Quality of service (Reliability of bus service)	Time headway distribution (minutes or sec)					X			M19
Transport	Traffic flow within the test site area	Veh/hour					X			(M21,22)
Transport	Quality of service (measured headway between buses, frequency	Minutes					X			M19
Transport	Modal shift	Yes/no/same			X					M26,27
Transport	Available normal traffic flow data for the main road network	Vehicles/hour on selected links		X	X					
Transport	Available normal travel data/real time travel data for the road network, productivity	Minutes/route		X	X					
Transport	Available real-time traffic flow data for the main road network	Vehicles/hour on selected links		X	X					
Transport	Available real-time travel data for the main road network	Minutes/route		X	X					
Transport	Usage and acceptance of the information system/data base				X					M14
Transport	Integration of all inner-city lines (GVB and others) into the urban traffic operation system	%	X							
Transport	Predictions of travel times in a short horizon perspective	Minutes/route		X						
Transport	Reduce the “parking traffic”, i.e. people looking for parking spaces	No. of vehicles								
Transport	Swift reaction (manual and automatic) in case of malfunctions, defects and deviations form the regular timetable.		X							
Transport	Congestion levels	No of vehicles or meters					X			M23, 24
Society	Knowledge of existence of system		X							M13
Transport	Accuracy PT time keeping		X							M18
Transport	Guaranteed connections between trams/buses		X							(M18)
Transport	Evolution of commercial speed								X	(M23,24)
Transport	Traffic volumes (traffic in roads concerned)								X	(M21,22)

8.8 WP 12 Clean Public and Private fleets

Below is a list of the measures within WP 12 – Clean Public and Private fleets. The measures are divided into the sub packages Heavy clean vehicles, Light clean vehicles and Clean fuel distribution.

Table 33 Measures within WP 12

Group of measures	Measures within WP 12	City
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
	12.12 Earlier 12.12 fused into 12.11	
	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

Table 34 Persons responsible for evaluation in WP 12

	Person responsible for evaluation	Organisation
WP leader	Yves Baesen	LMCU
12.1	Sven Alexandersson	City of Stockholm, Environment and Health Administration
12.2	Yves Baesen Jorge Vieira da Silva	LMCU MTA
12.3	Astrid Wilhelm Johann Seiler (cc)	FGMAMOR GCB
12.4	Sven Alexandersson	City of Stockholm, Environment and Health Administration
12.5	Claude Legrand Jorge Vieira da Silva	LMCU MTA
12.6	Nils Lundkvist	Waste Management Administration
12.7	Astrid Wilhelm Sylvia LoibnerR (cc)	FGMAMOR Taxi 878
12.8	Astrid Wilhelm Peter Gspaltl (cc)	FGMAMOR City of Graz
12.9	Yves Baesen Jorge Vieira da Silva	LMCU MTA
12.10	Sven Alexandersson	City of Stockholm, Environment and Health Administration
12.11	Björn Hugosson	City of Stockholm, Environment and Health Administration
12.13	Björn Hugosson	City of Stockholm, Environment and Health Administration
12.14	Helen Carlsson	City of Stockholm, Environment and Health Administration

Contact information to the persons above can be found on www.trendsetter-europe.org

Table 35 Target groups and spatial scales in WP 12

	Target group	**Spatial scale**
12.1	Private and public companies using heavy vehicles	The city of Stockholm
12.2	Employees driving, maintaining the buses	LMCU (Transpole) buses fleet
12.3	PT passengers	Demo area
12.4	Vehicles in the fleet of the City och Stockholm	City of Stockholm
12.5	Employees using LMCU vehicules	LMCU vehicules
12.6	Citizens of Stockholm	Mainly the Inner city of Stockholm
12.7	Taxi drivers and their costumers	Demo area (in the taxis)
12.8	People consulted	Demo area
12.9	All users (sources, production, consumption) of biogas fuel	Lille Metropolis
12.10	Oil and gascompanies	The city of Stockholm
12.11	Private companies	Stockholm city
12.13	Private companies	Stockholm city
12.14	1. companies, authorities and enterprises (citizens) driving/owning/leasing vehicles 2. media, consultants, NGOs and other actors having impact of choice of vehicles in companies, organisations and enterprises	Sweden (web information is globally available but information is in Swedish, and mainly focused on a national and to some extent local scale (Malmö, Göteborg, Stockholm)

Objectives for WP 12

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

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

Indicators WP 12

The table below shows in which of the measures in WP 12 the different indicators will be evaluated. The indicators in *Italics* are the TRENDSETTER common indicators.

Table 36 Indicators used in WP 12

Evaluation area	**Indicator**	**Unit**	**12.1**	**12.2**	**12.3**	**12.4**	**12.5**	**12.6**	**12.7**	**12.8**	**12.9**	**12. 10**	**12. 11**	**12. 13**	**12. 14**	**METEOR**
Energy	*Energy use (total and renewable)*	*Joule/year*	*X*	*X*	*X*	*X*	*X*	*X*	*X*		*X*		*X*	*X*		*M4*
Environment	*Emissions of fossil CO_2*	*Tons/year and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*				*X*	*X*		*M8*
Environment	*Emissions of NOx*	*Tons/year and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*				*X*	*X*		*M10*
Environment	*Emissions of PM*	*Tons/year) and g/vkm or g/kWh*	*X*	*X*	*X*	*X*	*X*	*X*	*X*				*X*	*X*		*M11*
Environment	*Noise levels*	*dB(A)*	*X*	*X*	*X*		*X*	*X*					*X*	*X*		*M12*
Mobility	*No of trip per mode*	*No or Qualitative 5-degree scale*		*X*			*X*									*(M21, 22, 25)*

Evaluation area	**Indicator**	**Unit**	**12.1**	**12.2**	**12.3**	**12.4**	**12.5**	**12.6**	**12.7**	**12.8**	**12.9**	**12. 10**	**12. 11**	**12. 13**	**12. 14**	**METEOR**
Mobility	*Quality of service per mode*	*Qualitative 5-degree scale*			*X*								*X*	*X*		*M19*
Mobility	*Acceptance per mode*	*Qualitative 5-degree scale*			*X*				*X*	*X*						*M14*
Economy	Maintenance costs	Euros/km	X	X	X	X	X	X	X				X			(M2)
Economy	Energy costs	Euros/km	X	X	X	X	X	X	X				X			(M2)
Economy	Investment costs	Euros/km	X	X	X	X	X	X	X			X	X			(M2)
Economy	Cost of water recycling	Euro								X						
Economy	Estimated cost of produced gas	Euro									X					(M2)
Economy	Advantages of industrial production										X					
Economy	Regularity of produced gas										X					
Energy	Level of fossil energy savings	(Joule/year)	X	X	X	X		X	X				X			M4
Energy	Consumption of energy per vehicle	Joule/vehicle		X	X	X	X						X			M3
Energy	Consumption of energy by the TP (per km, by passenger)	Joule/veh. or Joule/passenger		X			X									M3
Energy	Maximum potential estimated of the quantity of gas to produce locally	Nm3									X					
Energy	Energy evaluation of the production of gas										X					
Energy	Number of participating restaurants	Restaurant								X						
Energy	Quality of produced gas										X					
Energy	Production of biogas	Nm3									X					
Energy	Quantity of biogas sold	Nm3										X				
Energy	Quantity of collected oil in households	tons								X						
Energy	Quantity of collected oil in restaurants	Tons								X						
Energy	Request for special containers	requests								X						
Environment	Emissions of HC	(Tons/year)	X	X	X	X	X	X	X				X			
Environment	Emissions of CO	(Tons/year)	X	X	X	X		X	X				X			M9
Environment	Emissions of Sulphur (S)	(Tons/year)	X	X	X		X									
Environment	Quality of air	Ppm or g/m3		X												M5,6,7
Society	Awareness	%								X						M13
Society	Acceptance (satisfaction)	%					X	X							X	M14
Transport	Reliability	Scale (0 + ++)		X	X		X	X								M18
Transport	Motor oil consumption							X								
Transport	Number of breakdowns	Breakdowns	X	X		X	X	X					X			
Transport	No of vehicles in circulation	vehicles	X	X	X	X	X	X	X				X	X		
Transport	Percentage of vehicle in fleet	%		X	X	X	X		X							

9 Appendices

APPENDIX 1 Demonstration and Scientific / Technical Objectives

Demonstration Objectives

Trendsetter will use large-scale demonstrations as means to reach the High-level objectives. The demonstrations will also prove that cities can meet Kyoto goals/Bonn commitments and achieve up to 5 % annual CO_2 reduction solely by using biogas from waste/sewage and bio-fuels from organic waste products. The demonstration will show that public transport can be operated with clean vehicles and that cities can be the driving force for light clean vehicles. The demonstrations will also show that cities, by using different policy and legal measures can increase the use of Public transport and the modal split. Specific demonstration objectives are:

Public transport bus fleets

- 128 biogas buses (Lille)
- Leasing of 56 gas diesel buses (Euro 4 standard), conversion of 41 diesel buses for operation on bio-diesel (Graz)

Clean vehicles and infrastructure

- 320 new clean vehicles (biogas, electric, electric-hybrid, ethanol) in city fleets (Stockholm and Lille)
- 5 new biogas refuelling stations (4 Stockholm, 1 Lille)
- 7 biogas waste freighters (Stockholm)
- 120 taxis converted to bio-diesel (Graz)
- 100 clean vehicles in private company fleets (Stockholm)
- 300 substituted clean vehicles in company fleets (biogas, electric, electric-hybrid, ethanol)
- 26 clean and efficient heavy vehicles (buses, lorries and/or refuse trucks)

Transport and mobility management

- 1 High level service bus lane (Lille)
- 2 Bus priority signal systems (Stockholm, Prague)
- 4 Environmental restriction zones (Stockholm, Prague, Graz and Pecs)
- 3 Environmentally oriented Parking zones (Graz, Pecs, Stockholm)
- 1 Smart Card system in full scale (Stockholm)
- 4 Improved intermodal links (Graz, Lille)
- 60 High customer friendly bus and tram stops (Graz)
- Approximately 1100 P&R parking places in 4 P&R facilities (Lille)
- 1 Logistic Centre including 8 clean vehicles (Euro 4 standard)

- 2 IT based logistic management systems
- Several IT-based transport information systems and traffic management systems

Scientific and technical objectives

Scientific and technical objectives focus on testing the feasibility of various innovative technologies and policies in practice:

- Produce a total amount of 11 million Nm^3 biogas by the end of the project.
- Reduce the commercial cost of biogas fuel by 20% in demonstrating cities
- Implement a complete biogas technology chain in Stockholm and Lille, from production to end use
- Evaluate the feasibility and effectiveness of using electric hybrid lorries for urban goods transport in Stockholm
- Test the use of ICT solutions such as smart cards systems, bus signal systems, traffic control and supervision
- Evaluate the effectiveness of web-based information and telematics as means to save energy and emissions in urban transport, and facilitate traffic flows.
- Evaluate the effectiveness and political acceptability of environmental zones
- Develop integrated city mobility plans integrating environmental protection, traffic and public health policies

APPENDIX 2 Objectives and Evaluation on City Level

The participating cities; Stockholm, Graz, Lille, Prague and Pecs represent cities with different size, national status and political government. But they all have in common their determination to help improve the quality of life for their citizens, achieve European climate goals and save energy.

The city based objectives for each participating city are listed below.

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 µg/m^3 by 2006
- Reduce the emissions of particulates, reaching a daily average not exceeding 100 µg/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:

- Reducing annual fossil CO_2 emissions by 9 300 tonnes by 2005
- Reducing annual NO_x emissions by 70 tonnes by 2006
- Reducing annual particulate emissions by 1 850 tonnes by 2005
- Reducing the share of residents exposed to noise maximums higher than recommended level to 10 % within the environmental zones
- Increasing the number of public transport passengers by 100,000 by 2005
- Increasing the number of clean vehicles to 5,000 by 2005
- Increasing cooperation with other European Cities

This will be done through a combination of measures aiming at:

- Improving logistics in goods transport
- Improving traffic flow by new innovative means such as adaptive signals and trip planning
- Implementing push/pull measures to create a market for clean vehicles
- Increase the attractiveness of public transport
- Demonstrating the possibilities to use clean vehicles in a large scale. Over 60% of the municipal fleet of Stockholm shall be vehicles running on renewable fuels at the end of year 2004
- Replacing 2,5 % of the entire diesel fuel consumption in Stockholm County by biogas until year 2005
- Providing an infrastructure for filling of clean vehicles.

As heavy-duty vehicles are responsible for 50 % of the emissions and most of the noise maximums, many of the city's activities are directed towards commercial traffic and heavy-duty vehicles

Stockholm – City Evaluation

The measures effecting the different City objectives are listed below. For some of the measures, it will be hard to estimate the impact.

Table 37 City evaluation in Stockholm

	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**	**12.1**	**12.11**	**12.13**	**12.14**
Reduce emissions of fossil CO_2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reduce emissions of NO_x	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reduce emissions of PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reduce residents exposed to high noise levels	X	X				X	X					X	X	X	X	X	X	X	
Increase public transport passengers		X	X		X				X			X							
Increase number of clean vehicles				X			X						X	X	X	X	X	X	X
Increase cooperation with European cities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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:

Environmental objectives:

- Reduction of fuel consumption of 4700t per year when the measures of TRENDSETTER are introduced.
- Reduction of transport related fossil CO_2 emissions by 24.700t/year.
- Reduction of transport related emissions (HC 103t/y, NOx 69t/y, and particulate matters 8t/y)
- Duplication of the volume of collected edible oil in households

All reductions are calculated against the prevailing trend.

Safety goals:

- 3% reduction of the accidents with bodily injury within TRENDSETTER.
- 20% increase of compliance with speed regulations.

Mobility goals:

- 20% increase of participation of handicapped people in public transport.
- Break the trend of decrease of public transport use from the last three years.
- Increase of bicycle traffic of about 5% within TRENDSETTER.
- Increase of combined modes B&R and P&R of 25%.
- Reduction of car use for the home to school traffic of 20%

Awareness goals:

- Increasing level of satisfaction with the quality of PT of 15% (users)
- Increasing level of satisfaction with the quality of bicycle policy of 12% (users)
- To reach a recognition rate for edible oil collection actions of 70% of the households.

This will be done through a combination of measures aiming at a:

- 100% CO_2 free bus fleet (biodiesel, unique in Europe). Combination of collection of waste (edible oil), mobility consultancy and supporting of sustainable modes
- At year 2005: 60% of the taxis in Graz run on locally produced biodiesel
- Increase in the use of public transport beyond the city boarders by introduction of new PT services.
- 50% increase in car occupancy with respect to commuters crossing the city boarders in Graz and a reduction of cars used for the ways to school by 2030 %
- Increase of bicycle use by implementing a bicycle quality plan (bike&ride, digital bicycle map, bicycle training, reduction of barriers).
- Reduction of environmental negative effects by encouraging social and environmental friendly modes (awareness campaigns).

- Reduction of congestion hours by keep the traffic flowing and by reduction of parking search traffic (traffic management system, guidance system).
- Improved logistics in inner urban freight transport.
- Improvement of collection system for edible oil for households and restaurants.
- Implementing of quality assurance for PT and improving the linkage of PT with other modes and PTstops.
- Increase of punctuality of Public Transport by prioritisation by using telematics for PT

Graz – City Evaluation

The City objectives of Graz; environmental objectives, safety goals, mobility goals and awareness, will be followed up on a city level. All Graz measures effects the environmental objectives

Table 38 City evaluation in Graz

	5.3	**6.4**	**7.4**	**7.5**	**8.1**	**8.3**	**8.4**	**9.2**	**10.1**	**10.4**	**10.5**	**10.6**	**11.1**	**11.3**	**12.3**	**12.7**	**12.8**
Environmental objectives	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Safety goals	X		X	X	X							X	X	X			
Mobility goals			X	X	X		X		X	X	X	X	X	X	X		
Awareness			X	X	X		X		X	X	X	X	X	X	X	X	X

Lille – City Objectives

The City objectives of Lille are:

- 85% clean public transport journeys in year 2005
- Rise of 21% in PT passenger travels from 1998 to 2005
- The clean vehicles fleets will permit to cut pollution:
  - reduction of fossil CO_2 emissions up to 41,000 tons a year by 2005
  - reduction of NOx emissions up to 850 tons a year by 2005
  - reduction of particulate matters up to 26 tons a year by 2005
  - reduction of 50% of the bus noise level.

TRENDSETTER will contribute to the above objectives by:

Increasing biogas production and usage

- increasing massively the biogas production (locally from waste and sewage treatment) up to 3 M Nm3 per year by 2005
- 128 new clean busses in Lille Metropole fleet replacing diesel busses, adaptation of the bus depots and lines and construction of a new compression unit
- 120 new clean vehicles in the staff pool and a new compression unit

Encouraging public transport use by introducing a combination of new infrastructure that improve quality and incentives

- 1 new High service Bus Route
- 2 Intermodal interchanges points
- development of a pricing scheme for all PT, an integrated ticketing and specifications for a smart card system
- increased PT safety and reliability

- increase intermodality between the different PT means and between private cars / PT
- development of an efficient cooperation between all PT authorities (local consortium)
- company mobility plan for LMCU staff, development of a comprehensive approach on the metropolitan level between the requirements of mobility (cars, public transport and freight transport).

Lille – City Evaluation

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

Mobility

- Increase the number of passenger
- Increase the PT quality
- Increase PT attractiveness
- Improve intermodality between transport means
- Encourage alternative solutions to private cars

Energy

- Produce and use biogas (local waste and sewage treatment)
- Accelerate the introduction of clean vehicles in the municipality fleet

Environment

- Reduce noise
- Reduce pollutant emissions
- Increase clean vehicles ratio within municipal fleets (heavy and light vehicles)

The measures effecting the different objectives above are listed below.

Table 39 City evaluation in Lille

		5.3	**6.2**	**7.2**	**7.3**	**7.6**	**8.2**	**10.9**	**12.2**	**12.5**	**12.9**
Mobility	To increase the number of passengers	X	X	X	X	X					
	To increase the quality of the PT (circulation, safety…)	X	X	X	X	X					
	To increase the attraction of the PT	X	X	X	X	X					
	To improve the intermodality between the means of transport		X		X	X					
	To encourage alternative solutions to the private car						X	X			
Energy	Production and use of biogas (local treatment of water and waste)								X	X	X
	To accelerate the introduction of clean vehicles into the municipal fleets								X	X	X
Environment	To reduce the noise	X							X	X	
	To reduce the pollutant emissions	X					X		X	X	
	To increase the clean rate of vehicles within the municipal fleets (heavy and light vehicles)								X	X	

Prague – City Objectives

- 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
- 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

Prague – City Evaluation

The measures effecting the different City objectives are listed below.

Table 40 City evaluation in Prague

	5.2	**7.7**	**11.6**
Modal split		X	X
Reduction of heavy transport	X		X

Pécs – City Objectives

- 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.
- Decrease air and noise (3 dB(A)) pollution – limiting the number of cars accessing the centre with the above mentioned measures.
- Decrease freighters access to city centre, decrease average speed in city centre, introduction of a 30 km/h limit in certain areas
- Provide better access to public institutions and to the World Heritage Sites
- Preserve the World Heritage – decreasing traffic, number of cars in the city centre with the measures
- Provide better living, working and recreation conditions in the city centre

Pécs – City Evaluation

The measures effecting the different City objectives are listed below.

Table 41 City evaluation in Pécs

	5.4	**5.5**	**6.5**
Decrease the number of cars parking in city centre	X	X	X
Decrease air and noise pollution	X	X	X
Decrease freighters access to city centre	X	X	X
Provide better access to institutions and sites	X	X	X
Preserve the World Heritage	X	X	X
Provide better conditions in city centre	X	X	X

APPENDIX 3 List of Measures

During the process working with the Evaluation Plan, the measures have been restructured compared to the Description of Work. Below is the restructured list of all measures within TRENDSETTER, deployed in Work Package 5 – 12.

Table 42

Project number	WP description/measures	City
	WP5 ACCESS RESTRICTIONS	
	WP leader: GFK, Stockholm	
	Environmental zones	
5.1	Widening of the Environmental Zone	Stockholm
5.2	Widening of the Environmental Zone for vehicles over 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 Transportation Strategy in Pecs	Pecs
	WP6 INTEGRATED PRICING STRATEGIES	
	WP leader: MF, Stockholm	
	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 nonpolluting vehicles	Graz
6.5	Establishment of a zonemodel parking in the central city area	Pécs
	WP7 PUBLIC PASSENGER TRANSPORT	
	WP leader: LMCU	
	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 security	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

Project number	WP description/measures	City
	WP8 NEW FORMS OF VEHICLE USE	
	WP leader: City of Graz	
	Special customer groups	
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	
	WP leader: MF, Stockholm	
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
	WP10 INNOVATIVE SOFT MEASURES	
	WP leader: City of Graz	
	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	
10.4	Taxi drivers as information multipliers for clean transport	Graz
10.6	Awareness for speed reduction and less car use	Graz
	WP11 INTEGRATION OF TRANSPORT MANAGEMENT SYSTEMS	
	WP leader: MF, Stockholm	
	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	
11.1	Technical basis for an efficient customer focussed operation and information	Graz
11.5	More adaptive signal control in a bus priority system (SPOTproject)	Stockholm
11.6	More adaptive signal control in a bus priority system	Prague

11.7	High level service bus routes	Lille
Project number	**WP description/measures**	**City**
	WP12 CLEAN PUBLIC AND PRIVATE FLEETS	
	WP leader: LMCU	
	Heavy vehicles	
12.1	Clean and efficient heavy vehicles	Stockholm
12.2	Biogas bus fleets	Lille
12.3	Clean and user friendly biodiesel bus fleet	Graz
12.6	Waste collection with biogasvehicles	Stockholm
	Light vehicles	
12.4	Clean municipal fleets	Stockholm
12.5	Clean municipal fleets	Lille
12.7	Biodiesel 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	Webportal for drivers of clean vehicles	Stockholm
	Clean fuel distribution	
12.8	Optimisation of the biodiesel collection system	Graz
12.9	Analysis of the biogas experience	Lille
12.10	Improved biogas refuelling infrastructure	Stockholm

APPENDIX 4 TRENDSETTER Methodology sheets

Indicator	Energy use (total and renewable)
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Energy
Impact	Energy use
Short description of indicator:	Annual energy use by traffic. In many measures divided on vehicle categories or modes of transport. The energy use should be divided into total energy use and use of renewable sources.
Unit	Joule per year
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Calculation, estimation in some (supportive) measures

Indicator	Emissions of NOx
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Environment
Impact	Air pollution
Short description of indicator:	Annual emissions of NOx (nitrogen oxides) from traffic. In many measures divided on vehicle categories or modes of transport.
Unit	Tons per year
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Calculation, estimation in some (supportive) measures National emission models and emission factors are used when available and preferred by the site. The Copert software could be used to estimate emissions of all regulated air pollutants produced by different vehicle categories (passenger cars, light duty vehicles, heavy duty vehicles, mopeds and motorcycles) on the basis of fuel consumption. See http://vergina.eng.auth.gr/mech/lat/copert/copert.htm

Indicator	Emissions of fossil CO2
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Environment
Impact	Air pollution

Short description of indicator:	Annual emissions of CO2 (carbon dioxide) from traffic. In many measures divided on vehicle categories or modes of transport.
Unit	Tons per year
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Calculation, estimation in some (supportive) measures National emission models and emission factors are used when available and preferred by the site. The Copert software could be used to estimate emissions of all regulated air pollutants produced by different vehicle categories (passenger cars, light duty vehicles, heavy duty vehicles, mopeds and motorcycles) on the basis of fuel consumption. See http://vergina.eng.auth.gr/mech/lat/copert/copert.htm

Indicator	**Emissions of PM**
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Environment
Impact	Air pollution
Short description of indicator:	Annual emissions of PM 10 (particulate matter) from traffic. In many measures divided on vehicle categories or modes of transport. PM 10 are particles with a diameter less then 10 µm
Unit	Tons per year
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Calculation, estimation in some (supportive) measures National emission models and emission factors are used when available and preferred by the site The Copert software could be used to estimate emissions of all regulated air pollutants produced by different vehicle categories (passenger cars, light duty vehicles, heavy duty vehicles, mopeds and motorcycles) on the basis of fuel consumption. See http://vergina.eng.auth.gr/mech/lat/copert/copert.htm

Indicator	**Noise levels**
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator (noise perception)
Evaluation Category	Environment
Impact	Noise
Short description of indicator:	Noise levels in dB(A) Outdoor noise: unwanted or harmful outdoor sound, including noise emitted from traffic.

Unit	dB(A)
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Calculations, measurements or estimations.

Indicator	**Number of trips**
Indicator Category	TRENDSETTER indicator (CIVITAS/METEOR Common Core Indicator)
Evaluation Category	Mobility
Impact	Mobility
Short description of indicator:	Number of trips per mode within a specified area
Unit	The evaluation of this indicator could be quantitative or qualitative. Quantitative: No of trips per year divided on the applicable modes; PT, Cars, Delivery vehicles and Pedestrians/cyclists. Qualitative: five degree scale, divided on the applicable modes; National emission models and emission factors are used when available and preferred by the site -- - 0 + ++
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Measurements, calculation or estimations

Indicator	**Travel time**
Indicator Category	TRENDSETTER indicator (CIVITAS/METEOR Common Core Indicator)
Evaluation Category	Mobility
Impact	Mobility
Short description of indicator:	Travel time pr mode within a specific area
Unit	The evaluation of this indicator could be quantitative or qualitative. Quantitative: travel time divided on the applicable modes; PT, Cars, Delivery vehicles and Pedestrians/cyclists. Qualitative: five degree index, divided on the applicable modes; PT, Cars, Delivery vehicles and Pedestrians/cyclists. -- - 0 + ++
Frequency	Minimum level: before and after implementation of the measure

Spatial scale	Demonstration area in most measures
Methodology	Measurements, calculation or estimations

Indicator	**Acceptance**
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Mobility
Impact	Acceptance
Short description of indicator:	Acceptance of the implemented measure
Unit	Qualitative scale: five degree index, divided on the applicable modes; PT, Cars, Delivery vehicles and Pedestrians/cyclists. -- - 0 + ++
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Questionnaires, interviews, estimations

Indicator	**Quality of service**
Indicator Category	TRENDSETTER indicator CIVITAS/METEOR Common Core Indicator
Evaluation Category	Mobility
Impact	Quality of service
Short description of indicator:	Quality of the implemented service/measure
Unit	Qualitative scale: five degree index, divided on the applicable modes; PT, Cars, Delivery vehicles and Pedestrians/cyclists. -- - 0 + ++
Frequency	Minimum level: before and after implementation of the measure
Spatial scale	Demonstration area in most measures
Methodology	Questionnaires, interviews, estimations

APPENDIX 5 CIVITAS/METEOR Common Core Indicators

Table 43 List of Common Core Indicators

NO.	EVALUATION AREA	IMPACT CATEGORY	IMPACT SUBCATEGORY	INDICATOR	DESCRIPTION	DATA /UNITS	COMMENTS
	ECONOMY						
1		**Benefits**	Operating Revenues	Operating revenues	Revenues per PT pkm	Euros/pkm, quantitative, derived or measurement	▪ Data on costs and revenues easy to collect (for the PT option considered); ▪ Pkm easy to derive from vkm and occupancy rate data.
2		**Costs**	Operating Costs	Operating costs	Costs per PT pkm	Euros/pkm, quantitative, derived or measurement	
	ENERGY						
3		**Energy use**	Fuel Consumption	Vehicle fuel efficiency	Fuel used per vkm, per vehicle type	MJ/vkm, quantitative, derived or measurement	Vehicle fuel efficiency is more appropriate than total fuel use to assess improvements produced by the measures.
4				Fuel mix	Energy used per type of fuel, per vehicle type	MJ, quantitative, derived or measurement	No comments.
	ENVIRONMENT						
5		**Pollution/Nuisance**	Air Quality	CO levels	CO concentration	Ppm or g/m3, quantitative, measurement	General consensus on the fact that coherence between air quality and emissions indicators must be granted; emissions are important to evaluate concentrations data. Agreement on the inclusion of NOx levels and CO emissions: ▪ NOx levels are important to assess air quality both for their own toxicity and for their contribution, under certain conditions, to particulate level (which would not be otherwise taken into account). ▪ CO emissions per vkm are very easy to calculate; thus, it would be convenient to derive them in order to have a full outline of the effects of the measures on emissions.
6				NOx levels	NOx concentration	Ppm or g/m3, quantitative, measurement	
7				Particulate levels	Particulate (pm10) concentration	Ppm or g/m3, quantitative, measurement	
8			Emissions	CO_2 emissions	CO_2 per vkm	G/vkm, quantitative, derived	
9				CO emissions	CO per vkm	G/vkm, quantitative, derived	
10				NOx emissions	NOx per vkm	G/vkm, quantitative, derived	
11				Small particulate emissions	Pm10 per vkm	G/vkm, quantitative, derived	
12			Noise	Noise perception	Perception of noise	Index, qualitative, collected, survey	Perception (scales of values, total, day/night) is much more suitable to point out contingent changes in the level of noise. Indeed the measurement of noise level can be made only for very small areas and it is unlikely to be properly modeled.

NO.	EVALUATION AREA	IMPACT CATEGORY	IMPACT SUBCATEGORY	INDICATOR	DESCRIPTION	DATA /UNITS	COMMENTS
	SOCIETY						
13		**Acceptance**	Awareness	Awareness level	Degree to which the awareness of the policies/measures has changed	Index, qualitative, collected, survey	Awareness level includes information and knowledge of the measures. Acceptance level includes satisfaction about the measures and therefore Satisfaction level was excluded.
14			Acceptance	Acceptance level	Attitude survey of current acceptance with the measure	Index, qualitative, collected, survey	
15		**Accessibility**	Spatial Accessibility	Perception of PT accessibility	Attitude survey of perception of physical accessibility of PT network (distance to nearest PT stops)	Index, qualitative, collected, survey	User feeling of inclusion was deemed too generic, difficult to define and scarcely revealing of the equity impact category. Such category (complex to measure) was replaced with the easier "accessibility" impact category. Two measures of accessibility have been introduced: spatial (user perception of PT accessibility) ▪ economic (PT relative cost)
16			Economic Accessibility	PT services relative cost	Cost of PT related to average personal income (i.e. cost of a weekly, monthly or annual pass in proportion of the average weekly, monthly or annual income, respectively)	Index, quantitative, measurement	
17		**Security**	Security	Perception of PT security	Perception of security when using PT options	Index, qualitative, collected, survey	The perception of security is critical to the improvement of the attractiveness of PT.
	TRANSPORT						
18		**Quality of Service**	Service reliability	Accuracy of PT timekeeping	Percentage of services arriving/departing on time compared to timetables (each city should fix the interval of time considered as a delay compared with timetable)	%, quantitative, collected, measurement	Important to assess whether the implemented measures have improved the attractiveness of PT. Data are quite easy to collect or calculate.
19			Quality of service	Quality of PT service	Perception of quality of PT services	Index, qualitative, collected, survey	
20		**Safety**	Transport Safety	No. of injuries and deaths caused by accidents	General transport accident no. within the city causing injured and deaths	Quantitative, measurement	In terms of safety it is more interesting to measure the number of injured and deaths rather than simply the number of accidents (which are also hard to collect and prone to falling into different definitions).
21		**Transport System**	Traffic Levels	Vkm by vehicle type peak	Total trips length per vehicle per day	Vkm per day, quantitative, derived	Congestion levels was complemented with Traffic levels as Impact subcategory. As suggested by some cities, average speed is not a relevant indicator of congestion whenever speed reduction measures are foreseen. However, since the CIVITAS
22				Vkm by vehicle type – off peak	Total trips length per vehicle per day	Vkm per day, quantitative, derived	
23			Congestion Levels	Average vehicle speed peak	Average vehicle speed over total network	Km/hr, quantitative, derived	

NO.	EVALUATION AREA	IMPACT CATEGORY	IMPACT SUBCATEGORY	INDICATOR	DESCRIPTION	DATA /UNITS	COMMENTS
24				Average vehicle speed – off peak	Average vehicle speed over total network	Km/hr, quantitative, derived	measures do not seek speed reduction (with the exception of one case) the indicator has been retained. In order to avoid the overlooking of important differences, peak and off peak hours have been included.
25			Freight Movements	Total no. of goods vehicles moving in demo areas	Assessment of whether the daily no. of goods vehicles accessing city centre changes as a result of the demonstrations	Quantitative, derived or measurement	No comments.
26			Modal split	Average modal splitPAX	Percentage of pkm for each mode	%, quantitative, derived	Wording changes from modal change.
27				Average modal splitvehicles	Percentage of vkm for each mode	%, quantitative, derived	
28			Vehicle Occupancy	Average occupancy	Mean no. persons per vehicle/day	Persons/vehicle, quantitative, derived, measurement	This indicator also affords the possibility to switch from vkm to pkm (in particular with reference to energy and environment indicators)

Notes

- Whenever the **PT** acronym appears, the indicator refers only to public transport (without taxis, unless taxibuses). Else wise, the indicator encompasses all transport modes (private and public).
- **Derived**: calculated from collected measures either by simple arithmetic procedures (passenger miles per seat mile) or through use of analytic models where variables to be measured (e.g. reduction in air pollution or fuel consumption) is function of other collected independent variables.
- **Collected**: obtained by instrument measurements (vehicle travel time), counting (number of passengers), surveying (perceived reliability), or from records (daily revenue).

APPENDIX 6 Indicators for each Measure

WP 5 – Access restrictions

5.1: Widening of the environmental zone

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.1	Energy use (total and renewable)	Joule/year	Increase the yearly observance obedience controls to also concern type of vehicle and estimated fuel consumption. Information gets by the vehicles registration numbers.	Spring and autumn once a year
Environment	5.1	Emissions of NOx	Tons/year	Mean value of data from two permanent measure stations. Methology according to SLB·analys, operator of the local air quality management system in the City of Stockholm on behalf of the Environment and Health Protection Administration.	Once a year during peak/offpea
Environment	5.1	Emissions of fossil CO_2	Tons/year	The emissions will be calculated	Once a year during peak/offpeak
Environment	5.1	Emissions of PM	Tons/year	Mean value of data from two permanent measure stations. Methology according to SLB·analys, operator of the local air quality management system in the City of Stockholm on behalf of the Environment and Health Protection Administration.	Once a year during peak/offpeak
Environment	5.1	Noise levels	dB(A)	Data from two permanent measure stations. Methology according to SLB·analys, operator of the local air quality management system in the City of Stockholm on behalf of the Environment and Health Protection Administration. (from 19961001 the EU directive 92/97/EEG makes it compulsory for heavy vehicles to not make more noise than 80 dB(A).)	Once a year during peak/offpeak
Transport	5.1	Percentage of the heavy vehicles within the zone with permission	%	Control of obedience on two places with a high volume of traffic.	2 times/year
Transport	5.1	Traffic volumes within the zones	%	Increase the yearly observance obedience controls to also concern the volume of heavy vehicles in the zone.	2 times/year
Transport	5.1	Modal split (trucks, cars, buses etc)	%	Count the amount of trucks, cars and buses. There will also be a study about the change of vehicle category from heavy vehicles to lighter vehicles by information from statistics Sweden. Compared years: 1995, 2002 and every year after that.	Once a year during 1995, 2002 and 2003 and then once a year the following years.

WP 5 – Access restrictions

5.2: Widening of environmental zone for vehicles >3.5 tons

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.2	Energy use (total and renewable)	Joule/year	It is possible to drive the fuel consumption in Prague from traffic performance on monitored city road network. The monitored composition of heavy goods vehicles is divided into light, medium and heavy goods vehicles and buses and data about the vehicle performances are specified in annual interval.	Before/after, 4th quarter 02, 1st 2nd quarter 04
Environment	5.2	Emissions of fossil CO_2	Tons/year	It will be possible to verify the possibility of data derivation according to the vehicle fleet characteristics.	Before/after, 4th quarter 02, 1st 2nd quarter 04
Environment	5.2	Emissions of NOx	Tons/year	NOx is measured approx. at 10 locations in the city, it will be possible to specify the average annual values of NOx concentrations for the whole city.	Before/after, 4th quarter 02, 1st 2nd quarter 04
Environment	5.2	Emissions of PM	Tons/year	The possibility of data derivation according to the vehicle fleet characteristics will be verified.	Before/after, 4th quarter 02, 1st 2nd quarter 04
Environment	5.2	Noise levels	dB(A)	In a sense of criteria M12, it is not monitored in Prague. Percentage parts of population are derived, afflicted by higher than normal limit levels of noise according to valid limits for day/night.	Before/after, 4th quarter 02, 1st 2nd quarter 04
Transport	5.2	Percentage of the heavy vehicles within the zone with permission	%	Counts	Before/after, 4th quarter 02, 1st 2nd quarter 04
Transport	5.2	Traffic volumes within the zones	Vehicle/hour or vehicles/day	Survey based on registration numbers determining of the transit direction.	Before/after, 4th quarter 02, 1st 2nd quarter 04

WP 5 – Access restrictions

5.3: Implementation of strolling zones

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.3	Energy use (total and renewable)	Joule/year	Fictional	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	Emissions of fossil CO_2	Tons/year	Calculations on the basis of traffic counts; maybe locally restricted measurement	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	Emissions of NOx	Tons/year	Calculations on the basis of traffic counts; maybe locally restricted measurement	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	Emissions of PM	Tons/year	Calculations on the basis of traffic counts; maybe locally restricted measurement	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	Noise levels	dB(A)	Calculations on the basis of traffic counts; maybe locally restricted measurement (dB(A))	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Mobility	5.3	No of trips (per mode) (PT, car, Delivery vehicles and Pedestrians/cyclists)	Number per hour	Counts	1 day each, before and after (for Neutorgasse)
Mobility	5.3	Quality of service (per mode) (PT, car, Delivery vehicles and Pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Mobility	5.3	Acceptance (PT, car, Delivery vehicles and Pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	Emissions of S	Tons/year	Calculations on the basis of traffic counts; maybe locally restricted measurement	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Environment	5.3	CO levels	Tons per year	Calculations on the basis of traffic counts; maybe locally restricted measurement	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective
Transport	5.3	Modal split (walkers, bikers, motorists, delivery services/heavy vehicles)	%.	Modal share	Before (possibly spring 2004) / after (possibly autumn 2004), retrospective

WP 5 – Access restrictions

5.4: Establishment of carfree zone in the inner city

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.4	Energy use (total and renewable)	Joule/year	Counting the number of cars accessing the protected Area. From this information deductions about energy use will be made.	Before: once in the 3rd quarter of 20031028 After: twice, i.e. in the 1stt and 3rd quarter of 2004
Environment	5.4	Emissions of fossil CO_2	Tons/year	Counting the number of cars accessing the protected Area. From this information deductions about emissions of fossil CO_2 will be made. Data from fixed measuring units in the city, outside the car free zone, will also be used. But there is a lot of traffic between these areas.	Before: annual 2003 After: annual 2004
Environment	5.4	Emissions of NOx	Tons/year	Counting the number of cars accessing the protected Area. From this information deductions about emissions of Nox will be made. Data from fixed measuring units in the city, outside the car free zone, will also be used. But there is a lot of traffic between these areas.	Before: same data deducted for 2003 annual energy use After: same for 2004
Environment	5.4	Emissions of PM	Tons/year	Counting the number of cars accessing the protected Area. From this information deductions about emissions of PM will be made. Data from fixed measuring units in the city, outside the car free zone, will also be used. But there is a lot of traffic between these areas.	Before: annual 2003 After: annual 2004
Environment	5.4	Noise levels	dB(A).	Counting the number of cars accessing the protected Area. From this information deductions about noise levels will be made.	Before: average of 3 measures in 2003 After: average of 3 measures in 2004
Mobility	5.4	No of trips(Car and delivery vehicles)	Number of trips	Calculation/estimation	Before: average of 3 measures in 2003 After: average of 3 measures in 2004
Mobility	5.4	Travel time (Car and delivery vehicles)	Qualitative 5-degree scale (-- - 0 + ++)	Estimation	Before: average of 3 measures in 2003 After: average of 3 measures in 2004
Mobility	5.4	Quality of service (pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Before: 1 survey in 3rd quarter of 2003 After : 1 survey in 2nd quarter of 2004
Mobility	5.4	Acceptance (Car, delivery vehicles and pedestrians/cyclists))	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Before: 1 survey in 3rd quarter of 2003 After : 1 survey in 2nd quarter of 2004
Environment	5.4	Emissions of S	Tons/year	Counting the number of cars accessing the protected Area. From this information deductions about emissions of S will be made. Data from fixed measuring units in the city, outside the car free zone, will also be used. But there is a lot of traffic between these areas.	Before: annual 2003 After: annual 2004
Transport	5.4	Traffic volumes within the zones	Vehicles/hour or vehicles/day	Counting the number of cars accessing the protected Area.	Before: average of 6 measures in 2003 After: average of 6 measures in 2004
Transport	5.4	Modal split (walkers, bikers, motorists)	%	Counting the number of cars accessing the protected Area.	Before: average of 3 measures in 2003 After: average of 3 measures in 2004

WP 5 – Access restrictions

5.5: Preparation of a new Traffic and Transportation Strategy in Pecs

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.5	Energy use (total and renewable)	Joule/year	The before studies: Counting the number of cars accessing the inner city of Pecs. From this information estimations of energy use will be made. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Environment	5.5	Emissions of NOx	Tons/year	The before studies: Measurements from fixed measuring units in the city. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Environment	5.5	Emissions of fossil CO_2	Tons/year	The before studies: Measurements from fixed measuring units in the city. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Environment	5.5	Emissions of PM	Tons/year	The before studies: Measurements from fixed measuring units in the city. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Environment	5.5	Emissions of S	Tons/year	The before studies: Measurements from fixed measuring units in the city. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Environment	5.5	Noise levels	dB(A)	The before studies: Counting the number of cars accessing the inner city of Pecs. From this information deductions about noise levels will be made. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Mobility	5.5	No of trips	Index	The before studies: Calculation/estimation. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Mobility	5.5	Travel time	Index	The before studies: Estimation The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Mobility	5.5	Quality of service	Index	The before studies: Survey The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Mobility	5.5	Acceptance	Index	The before studies: Survey The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)
Transport	5.5	Modal split	% /mode	Counting the number of cars, bikers, PT, pedestrians and cyclists accessing the inner city of Pecs. The after studies: Estimations will be done based on the expected new traffic situation	Before (measurements) after (estimations)

WP 5 – Access restrictions

5.6: Congestion charging

Preliminary – methodology, measures and frequencies to be developed within this project!

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	5.6	Energy use (total and renewable)	Joule/year	Calculations based on fuel consumption	Before/after
Environment	5.6	Emissions of NOx	Tons/year	Calculations based on measurements of vehicle kilometres, traffic flow, speed and type of vehicle.	Before/after
Environment	5.6	Emissions of fossil CO_2	Tons/year	Calculations based on fuel consumption and measurements of vehicle kilometres, traffic flow, speed and type of vehicle.	Before/after
Environment	5.6	Emissions of PM	Tons/year	Calculations based on measurements of vehicle kilometres, traffic flow, speed and type of vehicle.	Before/after
Environment	5.6	Noise levels	dB(A)	Measurement. Collection of data from permanent measure stations. Methodology according to SLB·analys, operator of the local air quality management system in the City of Stockholm on behalf of the Environment and Health Protection Administration.	Before/after
Mobility	5.6	No of trips	Number/hour	Travel survey*	Spring 2004, spring 2005
Mobility	5.6	Travel time	Minutes	Measurement; Positioning of individual vehicles, video detection of registration plate number or floating car.	4 times/year (May-June, October, December and March)
Mobility	5.6	Quality of service	%	Attitude survey**	Spring 2004, spring 2005
Mobility	5.6	Acceptance	%	Attitude survey**	Spring 2004, spring 2005
Transport	5.6	Modal split	% /mode	Travel survey*	Spring 2004, spring 2005 spring 2006
Transport	5.6	Traffic volumes within the charging area	Number of vehicles/hour	Measurement (for example loop detectors)	4 times/year (May-June, October, December and March)

Indicators marked with * or ** are assumed to be considered in the same interview.

WP6 – Integrated Pricing Strategies

6.1: Smart card systems and integrated ticketing

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	6.1	Energy use (total and renewable)	Joule/year	Estimation	Before/after
Environment	6.1	Emissions of fossil CO_2	Tons/year	Estimation	Before/after
Environment	6.1	Emissions of NOx	Tons/year	Estimation	Before/after
Environment	6.1	Emissions of PM	Tons/year	Estimation	Before/after
Mobility	6.1	No of trips	No	Counts	Once a year
Mobility	6.1	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Survey (face to face interviews)	Once (2005)
Mobility	6.1	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Survey (face to face interviews)	Once (2005)
Transport	6.1	Number of public transport users	Public transport users	Count	Twice a year
Transport	6.1	Modal split (Modal shift from cars to public transport)	%	Customer survey	Once a year
Transport	6.1	Consumption and distribution of magnetic card blanks	No card blanks	Data collection	Once a year

WP6 – Integrated Pricing Strategies

6.2: Smart card systems and integrated ticketing

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	6.2	Energy use (total and renewable)	Joule/year	Estimation	Twice
Environment	6.2	Emissions of fossil CO_2	Tons/year	Estimation	Twice
Environment	6.2	Emissions of NOx	Tons/year	Estimation	Twice
Environment	6.2	Emissions of PM	Tons/year	Estimation	Twice
Mobility	6.2	No of trips	Number	Estimation	Twice
Transport	6.2	Modal split	%	Estimation	Twice

WP6 – Integrated Pricing Strategies

6.3: Reduced parking fees to promote clean vehicles

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	6.3	Energy use (total and renewable)	Joule/year	Estimation	Before/after
Environment	6.3	Emissions of fossil CO_2	Tons/year	Estimation	Before/after
Environment	6.3	Emissions of NOx	Tons/year	Estimation	Before/after
Environment	6.3	Emissions of PM	Tons/year	Estimation	Before/after
Mobility	6.3	No of trips	No	Estimation	Before/after
Mobility	6.3	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Survey, interviews	Once
Transport	6.3	Number of clean vehicles within the city	Clean vehicles	Estimation on the basis of statistics from sold and registered vehicles	Yearly
Transport	6.3	Number of clean vehicle parking permits given during the project time	Parking permit	Data available (Gfk)	Yearly (2003, 2004, 2005)
Transport	6.3	Number of parking permits for all vehicles during the project time	No permits	Data available (Gfk)	Yearly (2003, 2004, 2005)

WP6 – Integrated Pricing Strategies

6.4: Integrated pricing strategy for parking zones – differentiation between polluting and non-polluting vehicles

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	6.4	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	6.4	Emissions of fossil CO_2	Tons/year	Calculation	Before/after
Environment	6.4	Emissions of NOx	Tons/year	Calculation	Before/after
Environment	6.4	Emissions of PM	Tons/year	Calculation	Before/after
Mobility	6.4	Acceptance by parkers	suggested scale	Survey	after
Society	6.4	Acceptance (acceptance of the preference of lower parking costs for less polluting vehicles)	Degree	Survey	after
Transport	6.4	Number of registered cars, which are less polluting	No. private cars	Counts	Before/after
Transport	6.4	Number of bought applications and tickets	No. applications No.tickets	Statistics available at parking meters and abt. jetons requested	Yearly

WP6 – Integrated Pricing Strategies

6.5: Establishment of zonemodel parking in the central city area

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	6.5	Energy use (total and renewable)	Joule/year	Calculation	1-5 month before implementation, after implementation at the end of the demonstration period
Environment	6.5	Emissions of fossil CO_2	Tons/year	Calculation	1-5 month before implementation, after implementation at the end of the demonstration period
Environment	6.5	Emissions of NOx	Tons/year	Calculation	1-5 month before implementation, after implementation at the end of the demonstration period
Environment	6.5	Emissions of PM	Tons/year	Calculation	1-5 month before implementation, after implementation at the end of the demonstration period
Environment	6.5	Noise levels	dB(A)	Measurement	1-5 month before implementation, after implementation at the end of the demonstration period
Mobility	6.5	No of trips	No	Estimations, counts	Before/after implementation
Mobility	6.5	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Paper Surveys (shop keepers, taxi drivers, residents)	2004
Mobility	6.5	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Paper Survey (shop keepers, taxi drivers, residents)	2004
Society	6.5	Changes in living and working conditions		Meetings (Civil forum for citizens) Paper Surveys (shop keepers, taxi drivers, residents) Hotline (free phone)	Once a month At least 2004 Continuously
Transport	6.5	Modal split (private cars, others)	% / mode	counts	Before/after
Transport	6.5	Number of cars using parking facilities in the centre	No. cars	Data available from parking machines	Before/after
Transport	6.5	Average time of parking in the centre	hours	Data available from parking machines	Before/after
Transport	6.5	Number of purchased parking machines	No machines	Data available	Yearly

WP7 – Public Passenger Transport

7.1: Increasing public transport passengers

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.1	Energy use (total and renewable)	Joule/year	Calculation from modal split	Annual
Environment	7.1	Emissions of fossil CO2	Tons/year	Calculation	Annual
Environment	7.1	Emissions of NOx	Tons/year	Calculation	Annual
Environment	7.1	Emissions of PM	Tons/year	Calculation	Annual
Society	7.1	Image of PT	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Annual
Society	7.1	Level of satisfaction of customers on PT	Percentage	Survey	Annual
Society	7.1	Level of satisfaction on information about new PT	%	Survey	Before/after
Society	7.1	Level of satisfaction on new services	Percentage	Survey	After
Society	7.1	Number of "satisfied citizens of county of Stockholm"	Citizens	Survey	6monthly
Society	7.1	Quality of PT service	%	Survey	Before/after
Transport	7.1	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)
Transport	7.1	Evolution of the number of "regular passengers"	Regular passengers	Survey	Month 5, 17, 29
Transport	7.1	Evolution of the number of customers	Customers	Survey	Month 5, 17, 29
Transport	7.1	Number of travels/year in new service area	Travels/year	Calculation	Before/after (similar period excluding work period)

WP7 – Public Passenger Transport

7.2: Public transport security

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.2	Energy use (total and renewable)	Joule/year	Estimation from modal split	Twice (before/after)
Environment	7.2	Emissions of fossil CO_2	Tons/year	Estimation from modal split	Twice (before/after)
Environment	7.2	Emissions of NOx	Tons/year	Estimation from modal split	Twice (before/after)
Environment	7.2	Emissions of PM	Tons/year	Estimation from modal split	Twice (before/after)
Mobility	7.2	NO of trip per mode	Qualitative 5-degree scale (-- - 0 + ++)	Count	Twice
Economy	7.2	Cost of vandalism	Euro	Count	6month
Energy	7.2	Energy use (per person & vehicle)	Joule/vehicle or Joule/passenger	Estimation	Twice (before/after)
Society	7.2	Material damages	Damages	Count	6 month
Society	7.2	Number of physical harms to agents	Harms	Count	6 month
Society	7.2	Number of physical harms to passengers	Harms	Count	6 month
Society	7.2	Perception of PT security (passengers and non passengers)	%	Survey	Annual
Society	7.2	Time required for action when incident	Minutes	Calculation	Before/after
Transport	7.2	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)

WP7 – Public Passenger Transport

7.3: Intermodal local/regional transport interchanges

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.3	Energy use (total and renewable)	Joule/year	Estimation from modal split	Twice (before/after)
Environment	7.3	Emissions of fossil CO_2	Tons/year	Estimation from modal split	Twice (before/after)
Environment	7.3	Emissions of NOx	Tons/year	Estimation from modal split	Twice (before/after)
Environment	7.3	Emissions of PM	Tons/year	Estimation from modal split	Twice (before/after)
Mobility	7.3	No of trip per mode	Qualitative 5-degree scale (-- - 0 + ++)	Counts	Twice
Energy	7.3	Energy use (per person & vehicle)	Joule/vehicle or Joule/passenger	Estimation	Twice (before/after)
Society	7.3	Level of estimated comfort of interchange areas	%	Survey	Before/after
Society	7.3	Satisfaction level concerning the intermodality	%	Survey	Before/after
Transport	7.3	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)
Transport	7.3	Level of use of exchange points	Passengers	Survey	Before/after
Transport	7.3	Rate of connections between train and bus	%	Calculation	Before/after

WP7 – Public Passenger Transport

7.4: Seamless linkage of modes

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.4	Energy use (total and renewable)	Joule/year	Calculation from data received of survey among parkers	Once after implementation
Environment	7.4	Emissions of fossil CO_2	Tons/year	Calculation from data received of survey among parkers	Once after implementation
Environment	7.4	Emissions of NOx	Tons/year	Calculation from data received of survey among parkers	Once after implementation
Environment	7.4	Emissions of PM	Tons/year	Calculation from data received of survey among parkers	Once after implementation
Mobility	7.4	Travel time	Qualitative 5-degree scale (-- - 0 + ++)	Survey/estimation	Before / after
Mobility	7.4	Acceptance (see below: levels of satisfaction)	%	Survey	Annual (Nov 03/04)
Mobility	7.4	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Survey/estimation	Before / after
Society	7.4	Image of PT	-	Survey	Before/after
Society	7.4	Level of knowledge and acceptance of new services	%	Survey	Annual (November 03 and 04)
Society	7.4	Level of satisfaction of customers on PT	Percentage	Survey	Annual (Nov 03/04)
Society	7.4	Level of satisfaction on information about new PT	%	Survey	Before/after
Society	7.4	Level of satisfaction on new services	Percentage	Survey	After
Society	7.4	Quality of PT service	%	Survey	Before/after
Transport	7.4	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation based on counts of customers	Monthly (with 12monthly comparisons)
Transport	7.4	Level of use of new services	Passengers	Count	Once after implementation
Transport	7.4	Number of high level stops	Stops	Count	Continuous
Transport	7.4	Number of passengers in the concerned areas	Passengers	Count	Before/after
Transport	7.4	Occupancy rate of P&R stations	%	Counts	After
Transport	7.4	Number of travels/year in new service area	Travels/year	Calculation	Before/after (similar period excluding work period)

WP7 – Public Passenger Transport

7.5: Customer friendly stops for bus and tram

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.5	Energy use (total and renewable)	Joule/year	Calculation from modal split	Annual
Environment	7.5	Emissions of fossil CO_2	Tons/year	Calculation	Annual
Environment	7.5	Emissions of NOx	Tons/year	Calculation	Annual
Environment	7.5	Emissions of PM	Tons/year	Calculation	Annual
Mobility	7.5	No. of trips per vehicle (customers)	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Twice (beginning 2004, end 2004)
Mobility	7.5	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Twice (beginning 2004, end 2004)
Mobility	7.5	Acceptance (s. below under "satisfaction")	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Twice (beginning 2004, end 2004)
Society	7.5	Image of PT		Survey	Twice (beginning 2004, end 2004)
Society	7.5	Level of satisfaction of customers on PT	Percentage	Survey	Twice (end 2003, end 2004)
Society	7.5	Level of satisfaction on information about new PT	%	Survey	End 2004
Society	7.5	Level of satisfaction on new services	Percentage	Survey	End 2004
Society	7.5	Quality of PT service	%	Survey	Twice (end 2003, end 2004)
Transport	7.5	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)

WP7 – Public Passenger Transport

7.6: Park and ride facilities

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.6	Energy use (total and renewable)	Joule/year	Calculation from modal split	Annual
Environment	7.6	Emissions of fossil CO_2	Tons/year	Estimation from modal split	Annual
Environment	7.6	Emissions of NOx	Tons/year	Estimation from modal split	Annual
Environment	7.6	Emissions of PM	Tons/year	Estimation from modal split	Annual
Mobility	7.6	N° of trip per mode	Trips /year	Counts	Twice
Mobility	7.6	Travel time per mode	Minutes, hours	Estimation or measurement	Twicw
Mobility	7.6	Quality of service per mode	Qualitative 5-degree scale (-- - 0 + ++)	Survey or estimation	Twice
Mobility	7.6	Acceptance per mode	Qualitative 5-degree scale (-- - 0 + ++)	Survey or estimation	Twice
Energy	7.6	Energy use (per person & vehicle)	Joule/vehicle or Joule/passenger	Estimation	Annual
Society	7.6	Creation of additional services (car wash, etc)	Services	Study	Annual
Transport	7.6	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)
Transport	7.6	Number of places made (cars, 2wheelers)	Places	Count	Annual
Transport	7.6	Occupancy rate of the parking places	Number of entries	Survey or count	Annual

WP7 – Public Passenger Transport

7.7: Linking different ways of public transport

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	7.7	Energy use (total and renewable)	Joule/year	Calculation from modal split	Annual
Environment	7.7	Emissions of fossil CO_2	Tons/year	Calculation	Annual
Environment	7.7	Emissions of NOx	Tons/year	Calculation	Annual
Environment	7.7	Emissions of PM	Tons/year	Calculation	Annual
Society	7.7	Image of PT	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Annual
Society	7.7	Level of satisfaction of customers on PT	Percentage	Survey	Annual
Society	7.7	Level of satisfaction on information about new PT	%	Survey	Before/after
Society	7.7	Level of satisfaction on new services	Percentage	Survey	After
Society	7.7	Quality of PT service	%	Survey	Before/after
Transport	7.7	Evolution of PT traffic (trips/year and journeys/year)	Number of trips per year	Calculation	Monthly (with 12monthly comparisons)
Transport	7.7	Number of customers in new city bus line	Customers	Count	Continuous
Transport	7.7	Number of travels in new city bus line	Travels	Count	Continuous
Transport	7.7	Number of travels/year in new service area	Travels/year	Calculation	Before/after (similar period excluding work period)

WP8 – New forms of Vehicle Use

8.1: New services and services for special customer groups

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	8.1	Energy use (total and renewable)	Joule/year	Calculation from modal split	Retrospective / after
Energy	8.1	Emissions of fossil CO_2	Tons/year	Estimation on basis of interviews	Retrospective / after
Environment	8.1	Emissions of NOx	Tons/year	Estimation on basis of interviews	Retrospective / after
Environment	8.1	Emissions of PM	Tons/year	Estimation on basis of interviews	Retrospective / after
Mobility	8.1	No. of trips	%	Guided interviews among PT passengers	Twice (end 2003 and end 2004)
Mobility	8.1	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Guided interviews among PT passengers	Twice (end 2003 and end 2004)
Mobility	8.1	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Guided interviews among PT passengers	Twice (end 2003 and end 2004)
Society	8.1	Awareness level	%	Guided interviews among PT passengers	Twice (end 2003 and end 2004)

WP8 – New forms of Vehicle Use

8.2: Company mobility plan in the administration fleet

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	8.2	Energy use (total and renewable)	Joule/year	Estimation	Twice (beginning, end)
Environment	8.2	Emissions of fossil CO_2	Tons/year	Estimation	Twice (beginning, end)
Environment	8.2	Emissions of NOx	Tons/year	Estimation	Twice (beginning, end)
Environment	8.2	Emissions of PM	Tons/year	Estimation	Twice (beginning, end)
Mobility	8.2	No of trips per mode	Number	Survey/count (modal spilt)	Twice (beginning, end)
Mobility	8.2	Travel time per mode	Minutes	Estimation (modal spilt)	Twice (beginning, end)
Transport	8.2	Modal split employees (incl. PT, car pooling, two wheelers etc)	% per mode	Survey/counts	Twice (beginning, end)
Transport	8.2	Vehicle average occupancy (home –work)	Persons/vehicle	Survey	Annual
Environment	8.2	Fossil energy savings	MJoule	Estimation upon the survey results	Annual

WP8 – New forms of Vehicle Use

8.3: Increasing car occupancy

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Environment	8.3	Emissions of fossil CO_2	Tons/year	Estimation based on interviews	After
Environment	8.3	Emissions of NOx	Tons/year	Estimation based on interviews	After
Environment	8.3	Emissions of PM	Tons/year	Estimation based on interviews	After
Mobility	8.3	No. of trips by mode	%	Estimation based on interviews	After
Mobility	8.3	Acceptance	Suggested scale	Interview	After
Energy	8.3	CO level	Ppm or g/m3	Estimation based on interviews at end of lane or Park and Pool lots	After (end 2004)
Transport	8.3	Degree of correct HOVlane use	Cars, passengers, violations	Counts	Development over time
Transport	8.3	Vehicle occupancy	Persons/vehicle	Counts	Development over time
Transport	8.3	Page imprint on web site	Imprints	Counts	Continuous
Transport	8.3	Modal Split	% of modes	Interview	After
Transport	8.3	Occupancy of park&pool lots	No of cars	Counts	Before/after

WP8 – New forms of Vehicle Use

8.4: Site level mobility management

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Environment	8.4	Emissions of fossil CO_2	Tons/year	Estimation on basis of questionnaires	Retrospective / after
Environment	8.4	Emissions of NOx	Tons/year	Estimation on basis of questionnaires	Retrospective / after
Environment	8.4	Emissions of PM	Tons/year	Estimation on basis of questionnaires	Retrospective / after
Environment	8.4	Noise levels	dB(A)	Measurement/on basis of traffic counts	Before/ after
Mobility	8.4	No trips per mode	Qualitative 5-degree scale (-- - 0 + ++)	Estimation counts	Retrospective / after
Mobility	8.4	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaires	Retrospective / after
Energy	8.4	CO level	Tons/year	Estimation on basis of questionnaires	Retrospective / after
Energy	8.4	Energy use	l/yearm3/ Joule/year	Calculation, counts, questionnaire	Retrospective / after
Transport	8.4	Vkm (saved by modal split at school and companies)	Vkm	Calculation, questionnaire	Retrospective/after
Transport	8.4	Modal split at schools and companies	% / mode	Questionnaires	Retrospective/after
Society	8.4	Awareness	%	Questionnaire	Retrospective/after

WP8 – New forms of Vehicle Use

8.5: Urban mobility plan

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	8.5	Energy use (total and renewable)	Joule/year	Estimation	Before/after
Environment	8.5	Emissions of fossil CO_2	Tons/year	Estimation	Before/after
Environment	8.5	Emissions of NOx	Tons/year	Estimation	Before/after
Environment	8.5	Emissions of PM	Tons/year	Estimation	Before/after
Mobility	8.5	N° of trip per mode	Number	Survey/count (modal spilt)	Before /after
Mobility	8.5	Travel time per mode	Minutes	Estimation (modal spilt)	Before /after
Transport	8.5	Modal split of persons in selected “micro” project	% / mode	Estimation	Before/after
Environment	8.2	Fossil energy savings	MJoule	Estimation	Before/after

WP9 – New Concepts for the Distribution of Goods

9.1: Material logistics centre – to optimise freight deliveries at construction site

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	9.1	Energy use (total and renewable)	Joule/year	Calculation	Theoretical before/ real after
Environment	9.1	Emissions of fossil CO_2	Tons/year	Calculation	Theoretical before/ real after
Environment	9.1	Emissions of NOx	Tons/year	Calculation	Theoretical before/ real after
Environment	9.1	Emissions of PM	Tons/year	Calculation	Theoretical before/ real after
Environment	9.1	Noise levels	dB(A)	Calculation	Theoretical before/ real after
Mobility	9.1	No of trips per mode (total number of goods vehicles moving)	Number of goods vehicles	Calculation/estimation	Theoretical before/ real after
Society	9.1	Living conditions	Noise hours	Calculation	Theoretical before/ real after
Society	9.1	Working environment	Noise hours	Calculation	Theoretical before/ real after
Transport	9.1	Queuing time/stop time	Minutes/ trip	Measurement or simulation	Theoretical before/ real after
Transport	9.1	Vkm by vehicle type peak	Vkm per day	Calculation	Theoretical before/ real after
Transport	9.1	Vkm by vehicle type off peak	Vkm per day	Calculation	Theoretical before/ real after
Transport	9.1	Vehicle load factor	%	Calculation	Theoretical before/ real after
Transport	9.1	Small deliveries	Vehicles/day	Calculation	Theoretical before/ real after

WP9 – New Concepts for the Distribution of Goods

9.2: Distribution of goods – Green city logistics

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	9.2	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	9.2	Emissions of fossil CO_2	Tons/year	Calculation	Before/after
Environment	9.2	Emissions of NOx	Tons/year	Calculation	Before/after
Environment	9.2	Emissions of PM	Tons/year	Calculation	Before/after
Environment	9.2	Noise levels	dB(A)	Calculation	Before/after
Mobility	9.2	No of trips (Total number of goods vehicles moving)	Number of goods vehicles	Calculation/estimation	Before/after
Transport	9.2	Vkm by vehicle type	Vkm per day	Calculation	Before/after
Transport	9.2	Vehicle load factor	%	Calculation	Before/after
Transport	9.2	Vehicle fleet	Vehicles	Calculation	Before/after
Transport	9.2	Total distance	Km/trip	Calculation	Before/after

WP9 – New Concepts for the Distribution of Goods

9.3: Logistic centre for Old Town of Stockholm

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	9.3	Energy use (total and renewable)	Joule/year	Calculation	before/ real after
Environment	9.3	Emissions of fossil CO_2	Tons/year	Calculation	before/ after
Environment	9.3	Emissions of NOx	Tons/year	Calculation	before/ after
Environment	9.3	Emissions of PM	Tons/year	Calculation	before/ after
Environment	9.3	Noise levels	dB(A)	Calculation	before/ after
Mobility	9.3	No of trips per mode (total number of goods vehicles moving)	Number of goods vehicles	Calculation/estimation	before/ after
Transport	9.3	Vkm by vehicle type peak	Vkm per day	Calculation	before/ after
Transport	9.3	Vkm by vehicle type off peak	Vkm per day	Calculation	before/ after
Transport	9.3	Vehicle load factor	%	Calculation	before/ after
Transport	9.3	Small deliveries	Vehicles/day	Calculation	before/ after

WP10 – Innovative Soft Measures

10.1: Innovations in bicycle transport

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	10.1	Energy use (total and renewable)	Joule/year	Éstimation on basis of questionnaires	After
Environment	10.1	Emissions of fossil CO_2	Tons/year	Estimation on the basis of questionnaires	After
Environment	10.1	Emissions of NOx	Tons/year	Estimation on the basis of questionnaires	After
Environment	10.1	Emissions of PM	Tons/year	Estimation on the basis of questionnaires	After
Environment	10.1	Noise levels	dB(A)	Estimation on the basis of questionnaires	After
Mobility	10.1	Acceptance	%, Qualitative 5-degree scale (-- - 0 + ++)	Interview groups, measurement	Before/after
Energy	10.1	Fuel consumption (reduced fuel caused by bike related measures)	litres	Calculation	Before/after
Society	10.1	Page imprint on web site (page imprints weekly, downloaded MB and kind of material)	Page imprints	Counts	After
Transport	10.1	Modal split (bike related measures taken, incl. B&R)	Home-school by bike, mode split	Questionnaire	Before/after
Transport	10.1	Usage of infrastructure (Degree of occupancy at B&R facilities)	(%)	Counts	After
Transport	10.1	Usage of infrastructure (B&R facilities)		Interview groups	After
Transport	10.1	Vkm (reduced vkm caused by bike related measures)	km	Estimation	Before/after

WP10 – Innovative Soft Measures

10.2: Make bicycling attractive (B&R information on the Internet)

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	10.2	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	10.2	Emissions of fossil CO_2	Tons/year	Calculation	Before/after
Environment	10.2	Emissions of NOx	Tons/year	Calculation	Before/after
Environment	10.2	Emissions of PM	Tons/year	Calculation	Before/after
Mobility	10.2	No. of trips per mode	Number	Questionnaire	After
Mobility	10.2	Travel time	Minutes	Measurement	Before/after
Mobility	10.2	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	After
Mobility	10.2	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	After
Society	10.2	Page imprint on web site (web site bike section; number of hits which information/downloads are requested?	Page imprints	Counts	Continuous
Transport	10.2	Usage of infrastructure (bike infrastructure)	B&R facility users, number of bikers (bikes/day)	Counts	After

WP10 – Innovative Soft Measures

10.3: Creation of a visitor web for optimal trip planning

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	10.3	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	10.3	Emissions of fossil CO_2	Tons/year	Calculation	Before/after
Environment	10.3	Emissions of NOx	Tons/year	Calculation	Before/after
Environment	10.3	Emissions of PM	Tons/year	Calculation	Before/after
Mobility	10.3	No. of trips per mode	Number	Questionnaire	After
Mobility	10.3	Travel time	Minutes	Measurement	Before/after
Mobility	10.3	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	After
Society	10.3	Acceptance	Questionnaire	Online questionnaire	After
Society	10.3	Page imprint on web site (page imprints weekly), number of trip planners requested from the web site	Page imprint	Counts	After

WP10 – Innovative Soft Measures

10.4: Taxi drivers as information multipliers for clean transport

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Mobility	10.4	Acceptance by taxi drivers and customers	Qualitative 5-degree scale (-- - 0 + ++)	Interviews individuals	After
Society	10.4	Acceptance level (Assessment of campaign on alternative modes: acceptance by taxi and bus drivers/their reaction as well as their experiences with their customers)	Qualitative 5-degree scale (-- - 0 + ++)	Interviews individuals	After
Transport	10.4	Number of participants (no of taxi drivers, no of containers, % of containers by different target groups, litres collected, no of brochures distributed by taxi drivers)s	Number	Counts	Yearly

WP10 – Innovative Soft Measures

10.5: Marketing/information and quality management

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	10.5	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	10.5	Emissions of fossil CO_2	Tons/year	Calculation	Before/after
Environment	10.5	Emissions of NOx	Tons/year	Calculation	Before/after
Environment	10.5	Emissions of PM	Tons/year	Calculation	Before/after
Mobility	10.5	Travel time per route	Qualitative 5-degree scale (-- - 0 + ++)	questionnaire	Twice (end 2003 and end 2004)
Mobility	10.5	Quality of service	Qualitative 5-degree scale (-- - 0 + ++)	questionnaire	Twice (end 2003 and end 2004)
Mobility	10.5	Acceptance	Qualitative 5-degree scale (-- - 0 + ++)	questionnaire	Twice (end 2003 and end 2004)
Society	10.5	Awareness level (marketing strategies)	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire (PT customers)	Twice (end 2003 and end 2004)
Society	10.5	Degree of meeting the self set criteria by PT association	Depends on system	Interview with STVG	After
Society	10.5	Awareness level (public in general)	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire	Yearly
Society	10.5	Page imprint on web sites (Usage of door-to-door information)	No requests	Counts	Continuous after implementation
Transport	10.5	Usage of PT (Development of number of customers in comparison to previous years)	Number of PT customers	Counts	Yearly

WP10 – Innovative Soft Measures

10.6: Awareness for speed reduction and less car use

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	10.6	Energy use (total and renewable)	Joule/year	Estimations on the basis of vehicle counts	Before/after, 2003, 2004
Environment	10.6	Emissions of fossil CO_2	Tons/year	Estimations on the basis of vehicle counts	Before/after 2003, 2004
Environment	10.6	Emissions of NOx	Tons/year	Estimations on the basis of vehicle counts	Before/after 2003, 2004
Environment	10.6	Emissions of PM	Tons/year	Estimations on the basis of vehicle counts	Before/after 2003, 2004
Environment	10.6	Noise levels	dB(A)	Estimations on the basis of vehicle counts	Before/after 2003, 2004
Mobility	10.6	Acceptance of speed reduction measures	Qualitative 5-degree scale (-- - 0 + ++)	Questionnaire (e.g. at traffic lights after speed control)	With measure 2004
Transport	10.6	Modal Split	%	Questionnaire(e.g. at CFD)	With/without measure 2004
Transport	10.6	Average Vehicle speed	Km/h	Measurement	With/without measure

WP11 – Integration of Transport Management Systems

11.1: Technical basis for an efficient customer focused operation and information

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.1	Energy use (total and renewable)	Joule/year	On basis of questionnaire about changed mode choice	After
Environment	11.1	Emissions of fossil CO_2	Tons/year	On basis of questionnaire about changed mode choice	After
Environment	11.1	Emissions of NOx	Tons/year	On basis of questionnaire about changed mode choice	After
Environment	11.1	Emissions of PM	Tons/year	On basis of questionnaire about changed mode choice	After
Mobility	11.1	Travel time(PT)	minutes	Measurements	Twice (beginning 2004, end 2004)
Mobility	11.1	Acceptance (satisfaction with information about PT without and with new systems)	Index of the value satisfaction of every surveyed person	Survey no index but degree of satisfaction	Twice (before after installation), before survey has already been conducted
Mobility	11.1	Quality of service (PT)	%	Questionnaire	Twice (beginning 2004, end 2004)
Transport	11.1	Guaranteed connections between trams/buses		Count, calculation	Before/after
Transport	11.1	Swift reaction (manual and automatic) in case of malfunctions, defects and deviations form the regular timetable.		Count, calculation	Before/after
Transport	11.1	Integration of all inner-city lines (GVB and others) into the urban traffic operation system		Assessment – of quality and quantity of integration	After
Society	11.1	Knowledge of existence of system	Index of the value awareness of every surveyed person (representative survey).	Survey –no index but degree of knowledge	Once (after the installation)
Transport	11.1	Accuracy of PT time keeping	% and # of the total arrival times per year that are within a given interval around the time shown in the timetable.	(not known yet, needs clarification)	(Depends on methodology)

WP11 – Integration of Transport Management Systems

11.2: Traffic monitoring and supervision

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.2	Energy use (total and renewable)	Index	Estimations will be done based on a better traffic flow. The qualitative judgement is done by emission factors.	After the system has been introduced. (Q3 2004)
Environment	11.2	Emissions of fossil CO_2	Index	Estimations will be done based on a better traffic flow. The qualitative judgement is done by emission factors.	After the system has been introduced. (Q3 2004)
Environment	11.2	Emissions of NOx	Index	Estimations will be done based on a better traffic flow. The qualitative judgement is done by emission factors.	After the system has been introduced. (Q3 2004)
Environment	11.2	Emissions of PM	Index	Estimations will be done based on a better traffic flow. The qualitative judgement is done by emission factors.	After the system has been introduced. (Q3 2004)
Mobility	11.2	No of trips (Available normal traffic flow data for the main road network)	Vehicles/hour on selected links	The system delivers real time traffic flows on selected links	Every 5th minute mid 2003 – mid 2004
Mobility	11.2	Travel time (Available normal travel data for the main road network)	Minutes/route	The system delivers estimated real-time travel times on selected routs 24h a day	Every 5th minute mid 2003 – mid 2004
Mobility	11.2	Quality of service	Index	Questionnaire to target group	After the system has been introduced
Mobility	11.2	Acceptance	Index	Questionnaire to target group	After the system has been introduced
Transport	11.2	Available real-time traffic flow data for the main road network	Percentage. Accuracy between given value and real-time info	The system delivers real time traffic flows on selected links	Every 5th minute mid 2003 – mid 2004
Transport	11.2	Available normal traffic flow data for the main road network	Vehicles/hour on selected links	The system delivers real time traffic flows on selected links	Every 5th minute mid 2003 – mid 2004
Transport	11.2	Available real-time travel data for the main road network	Minutes/route	The system delivers estimated real-time travel times on selected routs 24h a day	Every 5th minute mid 2003 – mid 2004
Transport	11.2	Available normal travel data for the main road network	Minutes/route	The system delivers estimated real-time travel times on selected routs 24h a day	Every 5th minute mid 2003 – mid 2004
Transport	11.2	Predictions of travel times in a short horizon perspective	Minutes/route	The system delivers estimated real-time travel times on selected routs 24h a day	Every 5th minute during 2004

WP11 – Integration of Transport Management Systems

11.3: Dynamic traffic management system

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.3	Energy use (total and renewable)	Joule/year	Calculation/estimation based on traffic counts	Before/after
Environment	11.3	Emissions of fossil CO_2	Tons/year	Calculation/estimation based on traffic counts	Before/after
Environment	11.3	Emissions of NOx	Tons/year	Calculation/estimation based on traffic counts	Before/after
Environment	11.3	Emissions of PM	Tons/year	Calculation/estimation based on traffic counts	Before/after
Environment	11.3	Noise levels	dB(A)	Calculation/estimation based on traffic counts	Before/after
Mobility	11.3	Travel time on respective route (PT, car and delivery vehicles)	Min/km	Measure	Before / after
Mobility	11.3	Quality of service(PT and car)	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Before / after
Mobility	11.3	Acceptance of the information system and experienced support by the new system (PT and car)	Qualitative 5-degree scale (-- - 0 + ++) /%	Calculation/Survey	After
Transport	11.3	Available real-time traffic flow data for the main road network (normal performance indicators)	Percentage	Estimation (the system delivers estimated travel times during peak hours (07.0010.00 and 15.0018.00))	After
Transport	11.3	Available normal traffic flow data for the main road network (normal performance indicators)	Vehicles/hours on selected links	Estimation (the system delivers estimated travel times during peak hours (07.0010.00 and 15.0018.00))	After
Transport	11.3	Available real-time travel data for the main road network (normal performance indicators)	Minutes/route	Estimation (the system delivers estimated travel times during peak hours (07.0010.00 and 15.0018.00))	After
Transport	11.3	Available normal travel data for the main road network (normal performance indicators)	Minutes/route	Estimation (the system delivers estimated travel times during peak hours (07.0010.00 and 15.0018.00))	After
Transport	11.3	Available traffic information at web site, performed evaluation of number of hits per month	Page imprints	Count	After implementation
Transport	11.3	Usage and acceptance of the information system/data base	Percentage	Counts	After
Transport	11.3	Modal shift	%	Survey	Before/After

WP11 – Integration of Transport Management Systems

11.4: Accessible road network (street) data

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.4	Energy use (total and renewable)	Joule/year	No new estimations are going to be made. Prior studies of similar measures will be used for drawing conclusions based on improved datasets. Standardized values will be used.	Spring 2004
Environment	11.4	Emissions of fossil CO_2	Tons/year	No new estimations are going to be made. Prior studies of similar measures will be used for drawing conclusions based on improved datasets. Standardized values will be used.	Spring 2004
Environment	11.4	Emissions of NOx	Tons/year	No new estimations are going to be made. Prior studies of similar measures will be used for drawing conclusions based on improved datasets. Standardized values will be used.	Spring 2004
Environment	11.4	Emissions of PM	Tons/year	No new estimations are going to be made. Prior studies of similar measures will be used for drawing conclusions based on improved datasets. Standardized values will be used.	Spring 2004
Mobility	11.4	Quality of service (car and pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Prior studies	Spring 2004
Mobility	11.4	Acceptance (Usage and acceptance of the new service/system, reliability, accessibility) (car and pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Prior studies	Spring 2004

WP11 – Integration of Transport Management Systems

11.5: More adaptive signal control in a bus priority system

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.5	Energy use (total and renewable)	Joule/year	Based on traffic data from SPOT and/or Floating cars	Unspecified date 2004
Environment	11.5	Emissions of fossil CO_2	Tons/year	Based on traffic data from SPOT and/or Floating cars	Unspecified date 2004
Environment	11.5	Emissions of NOx	Tons/year	Based on traffic data from SPOT and/or Floating cars	Unspecified date 2004
Environment	11.5	Emissions of PM	Tons/year	Based on traffic data from SPOT and/or Floating cars	Unspecified date 2004
Mobility	11.5	No of trips (PT, car, pedestrians/cyclists)	Pers/hour	Direct measurement	Q3 2003
Mobility	11.5	Travel time (PT, car, pedestrians/cyclists)	Pers/hour	Direct measurement	Q3 2003
Mobility	11.5	Quality of service (PT, car, pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Qualitative	Q3 2003
Mobility	11.5	Acceptance (PT, car, pedestrians/cyclists)	Qualitative 5-degree scale (-- - 0 + ++)	Qualitative	Q3 2003
Society	11.5	Safety (Effects on cyclists and pedestrians)	% safe utilization	Analysis of the signal shifting sequence with respect to cyclists and pedestrians utilization of "safe" timeslots. Conflict studies has also been discussed.	Q3 2003
Society	11.5	Safety for pedestrians	% walking on red	Counts	Q3 2003
Transport	11.5	Quality of service (Improvement of the bus traffic flow (enhanced schedules and less delays))	Travel time /vehicle	Measurement	Q3 2003
Transport	11.5	Quality of service (Measured headway between buses)	Minutes	Traffic data from SPOT or data from onboard equip. On buses	Q3 2003 + Q3 2004
Transport	11.5	Congestion levels (Queues in streets within the test site area)	No of vehicles or meters	Counts/Traffic data from SPOT	Q3 2003 + Q3 2004
Transport	11.5	Quality of service (Reliability of bus service)	Time headway distribution (minutes or sec)	Measurements	Q3 2003 + Q3 2004
Transport	11.5	Quality of service (Stop and delay for PT and other vehicle)	Vehicles hours or vehicles minutes	Traffic data from SPOT	Q3 2003 + Q3 2004
Transport	11.5	Traffic flow within the test site area	Vehicles/hour	Counts	Q3 2003 + Q3 2004

WP11 – Integration of Transport Management Systems

11.6: More adaptive signal control in a bus priority system

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.6	Energy use (total and renewable)	Joule/year	Based on timesaving combined with emission factors	Every 6th month
Environment	11.6	Emissions of fossil CO_2	Tons/year	Based on timesaving combined with emission factors	Every 6th month
Environment	11.6	Emissions of NOx	Tons/year	Based on timesaving combined with emission factors	Every 6th month
Environment	11.6	Emissions of PM	Tons/year	Based on timesaving combined with emission factors	Every 6th month
Mobility	11.6	No of trips (PT and car)	Vehicles/hour	Direct measurement	Every 6th month
Mobility	11.6	Travel time (PT and car)	Seconds of savings	Direct measurement	Every 6th month
Mobility	11.6	Quality of service (PT and car)	Qualitative 5-degree scale (-- - 0 + ++)	Qualitative	Every 6th month
Society	11.6	Modal split, Quality of service (More attractive public bus Transport)	%	Measurement	Every 6th month
Transport	11.6	Changes in overall number of buses put in service each day	No.	Measurement	Every 6th month
Transport	11.6	Commercial speed	Km/h	Measurement	Every 6th month
Transport	11.6	Reliability of bus service		Calculation	Every 6th month

WP11 – Integration of Transport Management Systems

11.7: High level service bus routes

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	11.7	Energy use (total and renewable)	Joule/year	Estimation	Before/after
Mobility	11.7	Number of trips (in the new service area) (bus)	trips /year	Counts	Before/after (end 2004)
Mobility	11.7	Travel time (Improvement of Origin Destination time) (bus)	Km/hour	Measurement	Before/after (end 2004)
Mobility	11.7	Quality of service (Regularity =timetables respect) (bus)	Vehicle / minutes	Measurement	Before/after (end 2004)
Mobility	11.7	Acceptance (Evolution of the attractiveness of PT by bus)	Qualitative 5-degree scale (-- - 0 + ++)	Survey	Before/after (end 2004)
Energy	11.7	Energy use per passenger	Joule/passenger	Estimation	Before/after
Energy	11.7	Energy use per bus	Joule/bus	Estimation	Before/after
Transport	11.7	Evolution of commercial speed	Km/hour	Measurement	Before/after
Transport	11.7	Traffic volumes (traffic in the roads concerned)	Number	Count (automatic counter on the street)	Before/after

WP12 – Clean Public and Private fleets

12.1: Clean and efficient heavy vehicles

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.1	Energy use (total and renewable)	Joule/year	Calculations	Before/after
Environment	12.1	Emissions of fossil CO_2	Tons/year	Calculations	Before/after
Environment	12.1	Emissions of NOx	Tons/year and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.1	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.1	Noise levels	dB(A)	Measure, calculation	Before/after
Economy	12.1	Energy costs	Euros/km	Calculation	Annually
Economy	12.1	Investment costs	Euros	Calculation	Annually
Economy	12.1	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.1	Level of fossil energy savings	Joule/year	Calculations	Annually
Transport	12.1	No of vehicles in circulation	Vehicles	Count	Annually
Environment	12.1	Emissions of HC	Tons/year	Calculations	Before/after
Environment	12.1	Emissions of CO	Tons/year	Calculations	Before/after
Environment	12.1	Emissions of S	Tons/year	Calculations	Before/after
Transport	12.1	Number of breakdowns	No	Survey/count	Before/after

WP12 – Clean Public and Private fleets

12.2: Biogas bus fleets

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.2	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.2	Emissions of fossil CO_2	(g/vkm or g/kWh	Measure, on the vehicle	Before/after
Environment	12.2	Emissions of NOx	g/vkm or g/kWh)	Measure, on the vehicle	Before/after
Environment	12.2	Emissions of PM	g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.2	Noise levels	dB(A)	Measure	Before/after
Mobility	12.2	No of trips (per mode)	Trips /year	Counts	Before/after (end 2004)
Emissions	12.2	Quality of air	Ppm or g/m3	Measure at the bus depot exit	Punctual Before/after
Economy	12.2	Energy costs	Euros/km	Calculation	Annually
Economy	12.2	Investment costs	Euros	Calculation	Annually
Economy	12.2	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.2	Consumption of energy by the TP (per km, by passenger)	Joule/veh. or Joule/passenger	Calculation	Annually
Energy	12.2	Consumption of energy per vehicle	Joule/vehicle	Questionnaire, calculation	Before/after
Energy	12.2	Level of fossil energy savings	(Joule/year)	X	Annually
Environment	12.2	Emissions of HC	(Tons/year)	Measure, on the vehicle	Before/after
Environment	12.2	Emissions of CO	(Tons/year)	Measure, calculation	Before/after
Environment	12.2	Emissions of Sulphur (S)	(Tons/year)	Measure, calculation	Before/after
Transport	12.2	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.2	Percentage of vehicle in fleet	%	Count	Annually
Transport	12.2	Reliability of the vehicles	Scale (- -- 0 + ++)	Measure	Annually
Transport	12.2	Reliability (Number of breakdowns)	Qualitative 5-degree scale (-- - 0 + ++)	Count	Annually

WP12 – Clean Public and Private fleets

12.3: Clean and user friendly biodiesel bus fleet

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.3	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.3	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.3	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Measure, calculation	Before/after
Environment	12.3	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.3	Noise levels	dB(A)	Measure, calculation	Before/after
Mobility	12.3	Quality of service per mode	Qualitative 5-degree scale (-- - 0 + ++)	Survey, estimation	Before/after
Mobility	12.3	Acceptance per mode	Qualitative 5-degree scale (-- - 0 + ++)	Survey, estimation	Before/after
Economy	12.3	Energy costs	Euros/km	Calculation	Annually
Economy	12.3	Investment costs	Euros	Calculation	Annually
Economy	12.3	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.3	Consumption of energy per vehicle	Joule/vehicle	Questionnaire, calculation	Annually
Energy	12.3	Level of fossil energy savings	(Joule/year)	Calculation	Annually
Environment	12.3	Emissions of CO	(Tons/year)	Measure, calculation	Before/after
Environment	12.3	Emissions of HC	(Tons/year)	Measure, calculation	Before/after
Environment	12.3	Emissions of Sulphur (S)	(Tons/year)	Measure, calculation	Before/after
Transport	12.3	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.3	Reliability (Number of breakdowns)	Breakdowns	Count	Annually
Transport	12.3	Percentage of vehicle in fleet	%	Count	Annually

WP12 – Clean Public and Private fleets

12.4: Clean municipal fleets

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.4	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.4	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.4	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Measure, calculation	Before/after
Environment	12.4	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Economy	12.4	Energy costs	Euros/km	Calculation	Annually
Economy	12.4	Investment costs	Euros	Calculation	Annually
Economy	12.4	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.4	Consumption of energy per vehicle	Joule/vehicle	Questionnaire, calculation	Annually
Energy	12.4	Level of fossil energy savings	(Joule/year)	Calculation	Annually
Environment	12.4	Emissions of HC	(Tons/year)	Measure, calculation	Before/after
Environment	12.4	Emissions of CO	(Tons/year)	calculation	Before/after
Transport	12.4	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.4	Number of breakdowns	Breakdowns	Count	Annually
Transport	12.4	Percentage of vehicle in fleet	%	Calculation	Before/after

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12.5: Clean municipal fleets

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.5	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.5	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.5	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Measure, calculation	Before/after
Environment	12.5	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.5	Noise levels	dB(A)	Measure, calculation	Before/after
Mobility	12.5	No of trips (per mode)	Trips /year	Calculation/estimation	Before/after
Economy	12.5	Energy costs	Euros/km	Calculation	Annually
Economy	12.5	Investment costs	Euros	Calculation	Annually
Economy	12.5	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.5	Consumption of energy by the TP (per km, by passenger)	Joule/veh. or Joule/passenger	Calculation	Annually
Energy	12.5	Consumption of energy per vehicle	Joule/vehicle	Questionnaire, calculation	Annually
Environment	12.5	Emissions of HC	(Tons/year)	Measure, calculation	Before/after
Environment	12.5	Emissions of Sulphur (S)	(Tons/year)	Measure, calculation	Before/after
Transport	12.5	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.5	Percentage of vehicle in fleet	%	Count	Annually
Transport	12.5	Reliability of the vehicles	Qualitative 5-degree scale (-- - 0 + ++)	measure	Annually
Transport	12.5	Number of breakdowns	Breakdowns	Count	Annually
Society	12.5	Acceptance (Satisfaction of the personnel concerning the clean vehicles)	%	Questionnaire	Before/after

I propose a general indicator : reliability that will be constructed upon the following sub indicators that I withdrawn from the table above:

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12.6: Waste collection with biogasvehicles

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.6	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.6	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.6	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Measure, calculation	Before/after
Environment	12.6	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.6	Noise levels	dB(A)	Measure, calculation	Before/after
Economy	12.6	Energy costs	Euros/km	Calculation	Annually
Economy	12.6	Investment costs	Euros	Calculation	Annually
Economy	12.6	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.6	Level of fossil energy savings	(Joule/year)		Annually
Environment	12.6	Emissions of HC	(Tons/year)	Measure, calculation	Before/after
Environment	12.6	Emissions of CO	(Tons/year)	Measure, calculation	Before/after
Transport	12.6	Motor oil consumption	Litres	Measure	Regularly
Transport	12.6	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.6	Number of breakdowns	Breakdowns	Count	Annually

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12.7: Biodiesel taxi fleet and bio diesel service station

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.7	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.7	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Environment	12.7	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Measure, calculation	Before/after
Environment	12.7	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Measure, calculation	Before/after
Mobility	12.7	Acceptance on biodiesel use (taxi drivers and customers)	%	Survey	After
Economy	12.7	Energy costs	Euros/km	Calculation	Annually
Economy	12.7	Investment costs	Euros	Calculation	Annually
Economy	12.7	Maintenance costs	Euros/km	Calculation	Annually
Energy	12.7	Level of fossil energy savings	(Joule/year)	Calculation	Annually
Environment	12.7	Emissions of HC	(Tons/year)	Measure, calculation	Before/after
Environment	12.7	Emissions of CO	(Tons/year)	Measure, calculation	Before/after
Transport	12.7	No of vehicles in circulation	Vehicles	Count	Annually
Transport	12.7	Percentage of vehicle in fleet	%	Count	Annually

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12.8: Optimisation of the biodiesel collection system

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Mobility	12.8	Acceptance by households	suggested scale	Survey	After
Energy	12.8	Quantity of collected oil in restaurants	Tons	Count	Annual
Economy	12.8	Cost of water recycling	Euro	Count	Before/after
Energy	12.8	Number of participating restaurants	Restaurant	Count	Annual
Energy	12.8	Quantity of collected oil in households	Tons	Count	Annual
Energy	12.8	Request for special containers	Requests	Study	Annual
Society	12.8	Awareness raising on sustainable transports (User's feedback)	%	Study	Annual

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12.9: Analysis of the biogas experience

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.9	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Energy	12.9	Quality of produced gas	Qualitative	Measure	Continuous after CVO start
Economy	12.9	Advantages of industrial production	Qualitative	Study	Once in 2005 on CVO
Economy	12.9	Estimated cost of produced gas	Euro	Calculation	Once in 2005
Economy	12.9	Regularity of produced gas(= constant quality of the gas in duration)	%	Measure	Continuous
Energy	12.9	Energy evaluation of the production of gas		Study	Once in 2005 on CVO
Energy	12.9	Maximum potential estimated of the quantity of gas to produce locally	Nm3	Study	Once in 2005 on CVO
Energy	12.9	Production of biogas	Nm3	Measure	continuous after CVO start

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12.10: Improved biogas refuelling infrastructure

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Economy	12.10	Investment costs	Euros	Calculation	Before/after
Energy	12.10	Quantity of biogas sold	Nm3	Count	Annually

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12.11: Making clean vehicles less expensive

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.11	Energy use (total and renewable)	Joule/year	Calculation	Before/after
Environment	12.11	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Calculation	Before/after
Environment	12.11	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Calculation	Before/after
Environment	12.11	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Calculation	Before/after
Environment	12.11	Noise levels	dB(A)	Calculation	Before/after
Mobility	12.11	Quality of service per mode	Functionality	Estimation	After
Energy	12.11	Consumption of energy per vehicle	Joule/vehicle	Questionnaire, calculation	Before/after
Energy	12.11	Level of fossil energy savings	(Joule/year)	Calculation	Before/after
Economy	12.11	Maintenance costs	Euros/km	Calculation	Before/after
Transport	12.11	No of vehicles in circulation	Vehicles	Count	Annually
Economy	12.11	Energy costs	Euros/km	Calculation	Before/after
Economy	12.11	Investment costs	Euros	Calculation	Before/after
Environment	12.11	Emissions of HC	Tons/year	Calculations	Before/after
Environment	12.11	Emissions of CO	Tons/year	Calculations	Before/after
Transport	12.11	Number of breakdowns	Breakdowns	Count	Before/after

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12.13: Increasing clean vehicle use in private company fleets

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Energy	12.13	Energy use (total and renewable)	Joule/year	Estimation	Before/after
Environment	12.13	Emissions of fossil CO_2	(Tons/year) and g/vkm or g/kWh	Estimation	Before/after
Environment	12.13	Emissions of NOx	(Tons/year and g/vkm or g/kWh)	Estimation	Before/after
Environment	12.13	Emissions of PM	(Tons/year) and g/vkm or g/kWh	Estimation	Before/after
Environment	12.13	Noise levels	dB(A)	Estimation	Before/after
Mobility	12.13	Quality of service per mode	Functionality	Estimation	After
Transport	12.13	No of vehicles in circulation	Vehicles	Count/estimation of the effect of the campaign	Before/after

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12.14: Web-portal for drivers of clean vehicles

Evaluation area	Measure	Indicator	Unit	Methodology	Frequency
Society	12.14	Web site visitors satisfaction	%	Survey Questionnaire to target groups	At least once during the period 2003 2005