MOVE-TOGETHER

Deliverable 1.1

Synopsis of EU Research on Urban Sustainable Transport

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Preface

The overall aim of the MOVE-TOGETHER project is to raise the awareness of European citizens about EU research on urban transport and the latter's recommendations as to how to increase sustainability.

The underlying logic of the project is that citizens are aware of the local urban and environmental problems through their everyday experiences, yet that this awareness is based on tacit knowledge. Making this knowledge more explicit through dialogue, and enlarging the knowledge base through scientific results can help change both attitudes and behaviour, in addition to encouraging active citizenship with respect to transport policy.

Against this background, the objective of the first component of the MOVE-TOGETHER project is to review the EU research on urban sustainable transport and compile information on those projects with the most policy-relevant information and knowledge. The results of these projects will subsequently be communicated to a select group of European citizens with whom a concept for a raising awareness and communication strategy will be designed and elaborated.[1]

The present document (Deliverable 1.1) is structured as follows. The first section provides a short review of the policy context, that is the EU urban transport policy. The second section provides information on the EU research agenda more generally. Section 3 outlines the methodological approach of the present project in arriving at a selection of projects to be looked at in more depth. The fourth section presents the projects selected and provides a short description of each. A more detailed description of each of these projects is provided in the Annex (chapters 6 to 9). The fifth and final section discusses the project results from the perspective of the policy and research issues raised in the earlier sections.

[1] The present document (D1.1) represents the first of four deliverables of WP1 of the MOVE-TOGETHER project. The citizen deliberations are summarized in D1.2 (Citizen Focus Group and Conference Report); D1.3, the Citizens' Digest reproduces the information included in this deliverable in a more concise format and reports on the citizens' assessments of the various projects. Finally D1.4 is a proposal for a communication strategy addressing a wider audience of citizens.

1 Policy Context

About 75 per cent of all road passenger transport takes place in urban environments. As a result urban transport, that is short-distance transport, accounts for about 40% of all CO2 emissions attributed to transport. In other words, urban transport and, more specifically, urban road transport, is a major cause of environmental pollution. Additional problems – also with respect to energy and economic efficiency – are caused through congestion[2] and traffic accidents.

In a recent Green Paper entitled *Towards a New Culture for Urban Mobility*, the European Commission (2007) reports on the results of a series of consultations with local authorities, citizens and other relevant stakeholders with respect to the future of urban transport and the role of EU policy. The paper confirms the key problems of urban transport in Europe as being those of

- chronic congestion,
- environmental pollution, and
- road traffic accidents,

and points to the necessity to invest more in collective transport and the organization of 'co-modality' between different modes of collective transport. Co-modality is a term coined to refer to the effective linkage of modes of transport (for instance biking and public transport or car sharing and public transport) towards greater efficiency and less environmental pollution.

Recommendations made by the Green Paper and the stakeholders consulted include:

1. Support alternatives to private car use such as walking and cycling but also car-sharing
2. Invest more in awareness campaigns concerning safety and security measures associated with alternative modes of transport (such as the wear of bicycle helmets).
3. Develop an adequate parking policy that supports citizens in using park and ride facilities thus combining the use of the car with the use of public transport and avoiding cars in the town centres
4. Develop intelligent transport information systems providing users of the transport system information in advance about congestion so as to allow an optimised trip planning – this could lead to as much as a 20% increase of capacity based on existing infrastructure.

[2] Congestion is estimated to produce yearly costs of between 1 and 2 per cent of GDP.

5. Use urban-charging systems and adapt these to differentiated forms of use according to frequency and time (i.e. towards smart charging)
6. Promote the development of an efficient and accessible public transport that is characterized by high frequency levels of service and good quality.
7. Allow for a flexible and multiple use of infrastructure, for instance with regard to bus and taxi lanes or flexible loading / parking zones.
8. Promote at national level the development, demonstration and subsequent wide use of new technologies for cars towards less pollution and low emissions – and in parallel tighten standards for new and used cars so as to phase out faster the use of cars which pollute more.
9. Consider the restricting of the access of over-dimensioned cars (SUV) and trucks in densely populated urban areas given the over-proportional emissions of such cars but also their safety record.[3]
10. Support the use of alternative modes of transport for the transfer of good, for instance through new freight services within cities.
11. Coordinate land use and transport planning in and around cities to avoid urban sprawl.

Following the principle of subsidiarity which requires that policy decisions are taken at that level which is closest to relevant information and to citizens, urban transport is one of those policy areas for which responsibility primarily rests with national public authorities and city councils. This in turn means that the role of the EU in the field of urban transport is limited to that of assisting cities to exchange information, and in the transfer of good practices. This is, in part, done through the support of urban transport research bringing together researchers and relevant stakeholders, such as city councils and public transport operators.[4]

Understanding the role of the EU in the field of sustainable road transport towards the latter's improvement implies, therefore, critically assessing the results of this research and how they are being implemented in different cities.

[3] Big cars such as SUV as well as trucks display a positive safety record insofar as the own users are concerned, but not for other users. In other words, the worst accidents are those involving big and small cars. Pedestrians hit by bigger cars have also much lower survival rates.

[4] Funding for the implementation of specific transport solutions comes also in part through regional and structural funds.

2 EU Transport Research

Research is an important component of the EU policy on transport. The Framework Programmes represent the main vehicles for European research. Currently in its seventh programming phase, the engagement of the European Communities in Research dates back to the late 1980s, taking really off in the middle 1990s.

The Sixth Framework Programme which delineates also the focus of the MOVE-TOGETHER project run for the period 2002-2006 (with some projects still ongoing till up to 2010). The overall budget of the Sixth Framework Programme was 17.5 billion Euro. A significant part of this budget was allocated primarily for research under seven thematic areas and four horizontal areas.[5]

The thematic areas were:

- Life sciences, genomics and biotechnology
- Information society technologies
- Nanotechnologies and nanosciences
- Aeronautics and space
- Food quality and safety
- Sustainable development, global change and ecosystems
- Citizens and governance in a knowledge-based society

The four horizontal areas were:

- Research for policy support
- New and emerging science and technologies (NEST)
- Specific activities for SMEs
- Specific coordination activities with neighbouring countries (INCO)

Projects funded under the Sixth Framework Programme were of the following types:

- Small targeted research projects bringing together 3-10 partners to carry out joint research for the period of up to three years and for the order of up to 1.5 million Euro

[5] Also funded by the Sixth Framework Programme are exchange and mobility of researchers as well as research infrastructures.

- Integrated Projects bringing together between 10 and 40 partners to carry out joint innovative research for the period of up to five or six years and the order of up to 12 million Euro.
- Network of Excellences bringing together some 25 to 40 institutions to exchange knowledge and human resources on a specific topic – again for a period of up to five or six years and for up to 12 million Euro.
- Coordination Actions / Specific Support actions bringing few partners to work on networking and/or support activities aiming at delivering policy-relevant information in a short-period of time based on the pooling together of existing knowledge and research. The funding for such projects was usually below 1 million Euro.

Transport research was funded primarily under the programme 'surface transport' (610 million) of the sustainable development thematic priority. Transport research relating to air transport was funded under the aeronautics priority (1075 million). Transport relevant research can also be found in part under the information technologies thematic priority as well as under the horizontal programme 'policy support' (555 million)

Urban transport is one of the strategic priorities of European transport research. True to its aim to support cities in the exchange of information and in learning from each other, the European Commission has been very keen to promote research projects and activities that bring together urban transport specialists and professionals with city officials, transport operators and citizen associations for engaging in experimental research, assessment studies and / or information sharing towards the development and demonstration of better local policies for dealing with the problems raised by urban transport.

3 The MOVE-TOGETHER Approach

The raising awareness activities of the MOVE-TOGETHER project focuses on the most recent framework programme, namely, the sixth framework programme (2002-2006) and the last phase of the fifth framework programme (2000-2002). The seventh was only launched last year and the first of its projects are beginning now, thus will have produced as of yet no results.

The sources for identification of relevant research projects were as follows:

- For the Sixth Framework Programme we have relied on the search engine 'Find a Project' of the Sixth Framework Programme.[6] A preliminary search using this engine led to the identification of a total of 75 projects funded by the programme and dealing with urban transport in some way. The majority of these (53) were supported by the 'surface transport' thematic priority, 11 by the IST programme and 5 under the 'policy support' programme.

- Further to the above, we are including in the list projects from the Fifth Framework Programme dealing with relevant policy areas (as described in the 2007 Green Paper on Urban Mobility) for which there is no extensive research under the Sixth Framework Programme. In other words and insofar as the Fifth Framework is concerned, our selection was not as exhaustive but rather selective for specific areas. In this regard we relied on the DG-TREN Transport Research Knowledge Centre (TRKC) and the latter's publications.[7]

For projects dealing with similar subjects, priority was given to those projects (a) with easily-accessible public information including active Web Sites, (b) the more recent projects, (c) those that are part of thematic clusters, (d) those involving a good representation of stakeholders and (e) those with case study research of real-life city examples.

The project reference base for MOVE-TOGETHER currently includes 90 projects. These are described through a set of 30 project fiches (see Annex). Each project fiche reports on the approach and results of a key project and other sister projects dealing with the same subject or a specific aspect of the latter.

The structure of the project fiches is reported in the box below and might be useful more generally for the future communication of research results by DG-TREN. Its lays emphasis on communicating the problems addressed and the

[6] See http://cordis.europa.eu/fp6

[7] See http://www.transport-research.info/web/index.cfm

tangible outputs produced as well as on the presentation of the policy implications, including the financing implications, of the proposed measures.

In compiling the project fiches researchers read project publications, reports (deliverables) and/or newsletters and reviewed the project web sites and the information included therein. Projects with little public information were contacted through the coordinator and asked to deliver information.

The information made publicly available by the various project differed quite significantly. This had in part to do with how long the project has been running: projects which only recently commenced had less information to report (especially regarding outputs) as compared to projects which are finished since a couple or more years. The duration of the project is however only one explanatory aspect. Projects clearly also differ with regard to their communication strategy. Some are very open with their information, others follow a more restrictive attitude. This seems to be unrelated to whether the project entails technology-development components (which could be argued to be of a competitive nature). Undoubtedly those projects which make an attempt to publicize their results and communicate these to a wider public are to be recommended as displaying a more citizen-friendly approach. The European Commission is in any case advised to insist that all projects in the future follow an open communication and dissemination policy. Besides thus contributing to knowledge and awareness raising, this will also improve the public image of the European Commission.

Box 1. Structure of Project Fiches

Project Full Title: < Project Title >
Project Acronym: < Project Acronym >
Start-End Years: < Duration >
EU-Funding: < Amount of EC Contribution >
Project Web Site: < Web Site Address >
References: < project publications used for project fiche >
Other projects: < other projects dealing with the same subject area >

Problem addressed / objectives:
< The problem or policy area addressed by project: 'what problem is the project addressing?'. Explain jargon-terms and provide quantifiable data if available >

Geographical scope:
< Is the project dealing with problems in specific types of cities (big, middle-range, small)? Are there case studies? If so which cities are covered? >

Consortium composition:
< Does the consortium comprise merely academic institutes? Or a network of research institutes with city councils? Are non-governmental organizations representing civil society interests involved? >

Citizen participation:
< Did the project try to integrate citizens' views – either directly through surveys / consultations or indirectly by working with city councils or NGOs? >

Description of work:
< answer question: 'how did the project seek to achieve its objectives?' >

Outputs:
< What did the project produce? For projects delivering best practices, describe what the components of this best practice are and what their impacts are. For projects delivering policy advice, describe briefly what this advice is. For projects delivering technologies, state what these technologies are and whether they have been deployed. >

Who benefits?
< Who are the main beneficiaries of the project outputs? Think in terms of transport users but also in terms of environment, economy, society etc. If there are quantifiable estimations, mention these >

Who pays?
< Assuming the policy measures recommended by the project are to be implemented, who would be paying the bill? >

The projects identified were classified into four overarching categories:

- Integrated urban transport solutions and management – this category covers projects that are bringing together different cities to address the problem of urban mobility management, learn from each other and develop as well as test specific policies. Many of the projects found under this category are CIVITAS projects.

- Urban pricing – includes all projects dealing with congestion pricing in cities.

- Technology solutions – includes all projects seeking to advance technological solutions to contemporary environmental / urban transport problems.

- Strategic research – this category includes all projects that are addressing more generic policy issues such as accessibility, urban sprawl or land-use planning.

Clearly it is possible to further classify the projects according to whether they deal with rail or road transport, passenger or freight transport, ITS solutions, technologies aiming at clean fuels and other technologies etc. A more detailed classification scheme by output is used in the citizen digest (D1.3).

4 Project Identification

4.1 Integrated urban transport solutions and management

This category gathers projects bringing together city municipalities, transport operators and transport researchers to exchange information and jointly develop, implement and test measures for dealing with the problems of traffic management, congestion and environmental pollution in cities.

- All CIVITAS projects are about the **dissemination and transfer of best practices** from one city to the other. The project fiches SMILE, TELLUS, TRANSPOWER and TRENDSETTER in Annex I (sections 6.1 to 6.4) provide an insight into how such projects are organized and about their types of outputs.

- A few projects such as ECOCITY and PROPOLIS are concerned with the development of **planning guidelines for the development of urban sustainable cities** with regard to transport. (see Annex I, section 6.5). The HiTRANS project (section 6.6) is more specifically concerned with the **planning of public transport facilities** and their integration in the urban context.

- The use of new communication technologies, and, especially, telematic applications, in the field of transport is a major developing field. There are several projects concerned with the **deployment and testing of telematic applications in public transport**. Two of these, INTERCEPT and INTELCITIES are presented in detail in Annex I (sections 6.7 and 6.8).

- Finally a few projects are dealing with the dissemination of best practices **on urban freight transport**. BESTUFS.NET and related projects are described in sections 6.9 and 6.10 of Annex I.

A selection of these projects are described briefly below. The detailed project fiches with references to related projects for each can be read in Annex I.

- **Cleaner and Better Transport in Cities**

CIVITAS (www.civitas-initiative.eu)

CIVITAS is an initiative of the 5th and 6th Framework Programme of the European Communities bringing together various cities to work together in different set of demonstrations of sustainable urban transport solutions. Within CIVITAS I (2002-2006) there are 19 cities clustered in 4 demonstration projects, whilst within CIVITAS II (2005-2009) 17 cities in 4 demonstration projects are taking part.

CIVITAS projects include ***SUCCESS***, a project to implement clean vehicles in La Rochelle, Preston and Ploiesti; ***CARAVEL*** a project to implement urban transport management solutions in Genoa, Burgas, Cracow and Stuttgart; ***MOBILIS*** a project for implementing radical solutions Toulouse, Ljubljana, Venice, among others; ***SMILE, TRENDSETTER, TELLUS*** (see descriptions above) and ***MIRACLES*** in Barcelona, Rome, Winchester and Cork.

- **Sustainable Mobility Initiatives for Local Environment**

SMILE (www.smile-europe.org)

The SMILE project wants to show the way forward towards sustainable mobility. It builds on the experiences of 700 local authorities and a number of demonstration examples in different cities (such as Aalborg, Berlin, Gent, Graz, Nottingham, Palma etc.). Its portal includes a local experience database with information sorted by city, policy type and target groups.

- **CIVITAS – TELLUS**

TELLUS (http://www.fav.de/Pro_TELLUS.html)

TELLUS sought the development of integrated urban transport policies for reducing congestion and environmental pollution in Berlin, Bucarest, Gdynia, Gothenburg and Rotterdam. The project proposed actions to increase the use of the bicycle and decrease inner-city car usage.

- **The TransPower Project**

TRANSPOWER (http://www.transpower-rp6.org/28.0.html)

The objective of this project which runs till 2009 is to specify and dissemination innovative urban transport concepts and to facilitate the transfer of relevant technologies. The project deals with mobility management, public transport, non-motorized transport and traffic management.

- **Setting Trends for Sustainable Urban Mobility**

TRENDSETTER www.trendsetter-europe.org

The TRENDSETTER project which is part of the CIVITAS initiative provides information on 54 innovative actions / projects in five European cities (Graz, Stockholm, Lille, Pecs and Prague) relating to sustainability. The innovative actions looked at concern, among else, clean vehicles, congestion charging and environmental zones

- **Urban Development towards Appropriate Structures for Sustainable Transport**

ECOCITY (www.ecocityprojects.net)

A project on the vision and design of an ecological city. Various concepts of ecological city models are reviews such as Bad Ischl, Barcelona, Tampere and Tübingen.

- **High Quality Public Transport**

HiTRANS (www.hitrans.org)

The project focused on delivering solutions for improving public transport in middle-size cities (i.e. up to half a million inhabitants). HiTRANS produced five best-practice guides covering land-use planning, infrastructure planning, urban design, technical solutions and citizens' requirements.

- **Intermodal Concepts in European Passenger Transport**

INTERCEPT (http://www.btsa.es/intercept/)

The INTERCEPT project had as objective to demonstrate how car usage in cities can be reduced through intermodal solutions. It included studies of the cities of Barcelona, Bristol, Alkmaar and Bremen.

- **Development of an urbanism oriented to rail and intermodality for cities in Germany and France**

www.bahn-ville.net

Based on an assessment of the situation of urban transport in Germany and France, the project evaluated various projects and initiatives in various cities and came up with a handbook about how to promote intermodality in urban transport.

- **Intelligent Cities Alliance**

IntelCities (www.intelligentcitiesall.com)

This is a partnership that follows a project with the same name that was completed in 2006. The objective of the partnership is to promote intelligent city management. This includes, among others, mobility and transport information services.

- **Best Urban Freight Solutions**

BESTUFS.NET (www.bestufs.net)

BESTUFS deals with urban freight and comprises two projects. BESTUFS I was a network that brought together stakeholders from different cities to exchange information on urban freight transport; BESTUFS II building on the results and exchanges of BESTUFS I, aims to promote intelligent city logistics in medium-

size cities. A related project is the FIDEUS project (2005-2008) urban freight logistics.

BESTUFS I organized a survey among European cities concerning the problems they face with respect to urban freight transport; as well as best-practice handbooks with examples from various cities on themes such as ITS, public-private partnerships, e-commerce and parking regulations. BESTUFS II has produced a best-practice guide on the subject in 17 languages and is carrying out a compilation and harmonization of data on urban transport across various cities.

4.2 Urban Transport Pricing

- **Urban Transport Pricing**

www.transport-pricing.net

A cluster of projects on urban transport pricing including CURACAO, CUPID, IMPRINT-NET, IMPRINT EUROPE etc. These are briefly described below:

CUPID. A thematic network for disseminating state-of-the-art information on urban pricing schemes based on the demonstration exercises carried out in the PROGRESS project. PROGRESS (http://www.progress-project.org/) was completed in 2004 and included case studies for Bristol, Copenhagen, Edinburgh, Genoa, Gothenburg, Helsinki, Rome, Trondheim.

Some of the cities covered by PROGRESS (Edinburgh, Bristol, Genoa, Rome) and some others (Amsterdam, Belfast and Leeds) joined forced under the EUROPRICE network (http://www.europrice-network.org/) to continue exchange and debate on pricing at the political level. This project was completed in 2002

IMPRINT Europe followed by IMPRINT-NET (www.imprint-net.org) seeks the implementation of pricing and accounting reforms in transport. In the urban field the thematic priority is interurban transport. Inter-urban road pricing is also the subject of the DESIRE project

The development of better accounting and costing methods in transport is important for determining real transport costs and reflecting on these adequately through policy. The creation of such a framework is the objective of the ongoing project GRACE (www.grace-eu.org) . How the revenues from transport pricing are best used to achieve sustainability is addressed by the REVENUE project (www.revenue-eu.org)

One of the ongoing projects focusing on urban road pricing is the CURACAO project (www.curacaoproject.eu) which builds on the results of CUPID,

EUROPRICE and PROGRESS and which covers Edinburgh, Rome, Stockholm and Bristol. This project is also described in detail in Annex II (chapter 7) and used to illustrate what EU transport research on urban pricing has produced during the last several years.

4.3 Technological Solutions

Technology development is a central component of EU transport research in the 6th Framework Programme. The following topics are being dealt with:

- The **technological upgrading of tramways or light rail systems** has been the subject of a number of projects. Two are presented in Annex III, namely LIBERTIN and URBAN TRACK (sections 8.1 and 8.2)

- The deployment of **telematic applications in road transport towards the further development of automated driving mechanisms** – expected to render road transport both safer and more efficient – is the focus of several projects such as STARDUST and the CYBERCARS-series (see section 8.3).

- **Telematic applications** are also being deployed **in public transport**. Exemplary projects are CITYMOBIL, NETMOBIL (section 8.4) and MORYNE (section 8.5).

- There is also a lot of research ongoing on the **production and safe deployment of alternative fuels in public transport road vehicles such as buses**. Both hydrogen fuel and biogas are an issue. (see sections 8.6 and 8.7 on HYFLEET:CUTE and BIOGASMAX respectively).

- **New vehicle concepts** for cars (HOST) and small intercity aircraft (ENFICA) are also under development and testing (sections 8.8 and 8.9)

- **Containing the noise caused by traffic** and using advanced technologies as well as intelligent management systems are the concern of a few integrated projects such as SILENCE and QCITY (section 8.10).

Projects concerned with technological solutions are briefly described below. The project fiches can be read in Annex III, chapter 8.

- **Light Rail Thematic Network**

LibeRTiN (www.libertin.info)

This project brought together the UITP with five professional organizations to study how to harmonize technical and legal standards on light rail which is of particular relevance for urban transport.

- **Urban Rail Infrastructure in a Harmonized Europe**

URBAN TRACK (www.urbantrack.eu)

The project aims at the development of harmonized products for urban rail infrastructure that can be used across Europe. These should be products of low lifecycle cost, high performance, low noise and vibration. There are ten test sites around Europe and abroad.

- **Towards Sustainable Town Development**

STARDUST (http://www.trg.soton.ac.uk/stardust/)

This project which was completed in 2004 assessed the potential contribution to sustainability of Advanced Driver Assistance Systems (ADAS) and Automated Vehicle Guidance (AVG).

- **Cybercar-related projects**

CYBERCARS (www.cybercars.org)

Cybercars are road vehicles with fully-automated driving capabilities. A number of projects funded by the EC have tried to advance technological developments in this direction towards greater energy efficiency and safety. This Web Site is the portal to all these projects. Other relevant projects are CYBERCARS2, CYBERMOVE and CYBERC3.

- **New Transport Systems Concepts for Enhanced and Sustainable Personal Urban Mobility**

NETMOBIL (www.netmobil.org)

NETMOBIL is a cluster of projects on new technologies and concepts for sustainable mobility. This includes personal rapid transit, cybercars and ADAS. Case studies were carried out in different cities around the world.

- **Towards Advanced Road Transport for the Urban Environment**

CityMobil (http://www.citymobil-project.eu/)

The subject of the project are automated transport systems and how these can work in urban environments. These solutions are being demonstrated in Heathrow, Castellon and Rome.

- **Enhancement of public transport efficiency through the use of mobile sensor networks**

MORYNE (www.fp6-moryne.org)

The vision of the MORYNE project is to develop a road traffic management system for the urban level

- **Hydrogen Powered Buses in Regular Public Transport**

HyFLEET:CUTE (http://www.global-hydrogen-bus-platform.com/)

The objective of this recently launched project is to develop hydrogen powered bus technology thus reducing the environmental pollution in cities. This includes environmentally-friendly technology for producing hydrogen in the first place. The project is also linked to the ECTOS project which tested three Citaro fuel cell buses in Iceland and STEP which did the same for Australia.

- **Role of Biogas**

BIOGASMAX (www.biogasmax.eu)

The objective of this project is to develop alternative sources of energy for transport. Biogas to be produced through waste, and its upgrading so that it can be used in biomethane-fueled vehicles is its objective

- **The Human Oriented Sustainable Transport**

HOST (http://ltces.dem.ist.utl.pt/host/p_drive.asp)

The HOST project is about the development of a drivetrain using a hybrid-electric propulsion system

- **Compact Low Emission Vehicle for Urban Transport**

CLEVER (http://www.clever-project.net./)

This 5FP project sought to develop a prototype for a ‘clever’ small vehicle to be used in urban road transport and displaying low emissions.

- **Hydrogen and Fuel Cell Technologies for Road Transport**

HYTRAN (http://www.hytran.org/)

The project is developing technologies to support the use of alternative fuel sources in cars towards the greening of road transport. The project follows research carried out in the AUTOBRANE, HUICE and STORHY projects.

- **Environmentally-Friendly Inter-City Aircraft powered by Fuel Cells**

ENFICA-FC (http://www.enfica-fc.polito.it/)

The objective of this project is to demonstrate how it is possibile to obtain a more or all electric aircraft through fuel-cell technology for use for inter-city transport thus also helping to overcome environmental pollution in urban areas.

- **Quieter Surface Transport in Urban Areas**

SILENCE (www.silence-ip.org)

SILENCE aims at developing tools for controlling and hence reducing noise in cities as this relates to road and rail. It aims to providing both technologies and soft policy measures. These ought to enable a reduction of noise in cities by up to 10 dbA. A related project is the QCITY (http://www.qcity.org/)

4.4 Strategic research

Strategic research includes projects concentrating on issues of actual and future policy relevance. Unlike the projects outlined in the previous sections, which are either about the deployment and testing of existing solutions or about the development of new technologies, projects in this category are about studying trends in urban transport development towards the better formulation of policies, or they are about the assessment of existing transport systems or solutions in order to identify their strengths and weaknesses.

- Several projects have been studying **the links between transport and land use planning, urban sprawl and socio-economic development** and the impact of public transport on these. The TRANSPLUS, TRANSECON, SCATTER and TISSUE project are described in Annex IV (chapter 9, section 9.1 to 9.4). Building on these projects, PRONET (section 9.8) is studying the **environmental effects of urban transport**.

- The extent to which **public transport facilities and stations are non-discriminatory vis-à-vis persons with disabilities** is a concern of a few projects in the Sixth Framework Programme. The PTACCESS project fiche (section 9.5) outlines the issues involved.

- Urban areas like mountainous areas are considered **specifically transport sensitive areas** and might, in the future, be subject to stricter approaches with regard to congestion pricing (as the cases of London and Stockholm show). The ASSET-EU project (section 9.6) is developing guidelines on this subject.

- As the London 7/7 attacks showed, **urban public transport can easily become the target of terrorism**. The COUNTERACT project (section 9.7) is studying the deficiencies of public transport in terms of security in order to

provide the knowledge base necessary for developing adequate new policies.

- ❖ Finally, this category includes a couple of projects bringing together national research administrations at public level to discuss the **development of joint research programmes on urban transport**. Exemplary of this approach are the EURFORUM and URBAN-NET projects (sections 9.9 and 9.10).

The field of strategic research is a dynamic field, its focus changing according to the policy priorities. The current priorities are outlined below.

- **Transport Planning Land-Use and Sustainability**

TRANSPLUS (www.transplus.net)

TRANSPLUS has sought to better understand the impacts of land-use planning on transport and vice-versa. It has included case studies in 24 cities including Vienna, Merseyside, Lisbon, Munster, Nantes, Bilbao, Brescia etc. It includes a database of policies according to different objectives covering the various cities.

- **Urban Transport and Local Socio-Economic Development**

TRANSECON (http://www.boku.ac.at/verkehr/transecon.html)

The idea behind this project was the study of the socio-economic effects like employment of urban transport policies through case studies (among which Zurich, Valencia, Vienna, Bratislava, Athens, Manchester, Delft, Helsinki). For instance, in Vienna the project focused on charting the employment and economic effects of the opening of a new public transport line.

- **Sprawling Cities and Transport**

SCATTER (http://www.casa.ucl.ac.uk/scatter/)

The SCATTER project examined the mechanisms and impacts of urban sprawl in eight European cities, namely, Bristol, Brussels, Helsinki, Milan, Rennes and Stuttgart and provided recommendations for EU policy as well as for individual cities.

- **Trends and Indicators for Monitoring the EU Thematic Strategy on Sustainable Development of Urban Environment**

TISSUE (http://cic.vtt.fi/projects/tissue/index2.html)

A completed project that collected indicators and structured them into a database to allow the monitoring of the achievements of different cities with regard to sustainability.

- **Public Transport Systems Accessibility for People with Disabilities**

PTACCESS (www.ptaccess.eu)

The project is one of the first to collect information on the extent to which public transport systems around Europe are accessible to people with disabilities. This is judged an important step towards upgrading the public transport infrastructure towards users with different needs.

- **Assessing Sensitiveness to Transport**

ASSET-EU (www.asset-eu.org)

This project attempts to specify what 'environmental sensitive' areas are in relation to transport. In the context of EU transport policy such areas may apply policies for the protection of the environment that go beyond those already operating at EU level (for instance higher road charging systems). The project includes 10 case studies covering (i) mountainous areas, (ii) urban/metropolitan areas, (iii) natural/protected areas, and (iv) coastal areas, as well as different modes, types of traffic and geographical situations.

- **Rail and urban passenger transport security at the European level regarding terrorist threats in railways and urban passenger transport**

COUNTERACT (www.counteractproject.org)

The project reviews existing security policies, methodologies and policy approaches for dealing with the terrorist threat and public transport.

- **Pollution Reduction Options Network**

PRONET (www.proneteurope.eu)

A project set up to facilitate exchange and evaluation of policy interventions for reducing pollution at regional and urban level. Examples considered include clean vehicles in Stockholm, green buses in Germany or the use of special particle filters in Austria

- **The EURFORUM Network**

EURFORUM (www.eurforum.net).

The objective of this project which recently finished was to improve the knowledge base about urban mobility in Europe. Thematic areas included traffic management and land use.

- **Supporting urban sustainability research in Europe**

URBAN NET (www.urban-net.org)

This is a so-called ERA-NET programme bringing together public authorities from various EU countries to coordinate research on urban sustainability, including organizing common proposal calls.

5 Synthesis and Outlook

The last five years have witnessed a remarkable EU engagement in urban transport research. This report has outlined the policy context for these activities and elaborated an approach for reviewing projects in this field. The purpose of this review has been to identify the main themes of European urban transport research and to extract that information that would be useful to communicate to citizens on a wider scale.

To reiterate, the following are the **priority research themes** in urban transport today:

Re (integrated transport solutions and management):

- Dissemination and transfer of best practices towards less congestion and environmental pollution
- Guidelines for urban (transport) planning with special attention on the design of high quality public transport facilities
- Deployment and testing of telematic applications in public transport
- Deployment of new management solutions for freight transport in cities.

Re (urban pricing)

- Building on research carried out since the mid 1990s, ongoing pricing projects focus on the elaboration of congestion pricing systems for different cities, their dissemination, testing and evaluation.

Re (technological solutions)

- Upgrading of tramways and light rail systems
- Telematic applications in road transport (ADAS, AVG, cybercars)
- Telematic applications for public transport
- Alternative fuels
- New vehicle concepts
- Technologies for noise abatement.

Re (strategic research)

- Links between transport, land-use, urban-sprawl, socio-economic development and the environment (and the trade-offs thereof)
- Accessibility of public transport to people withdisabilities
- Urban areas as transport sensitive areas
- Public transport facilities as targets of terrorist attacks
- Concertation among Member States for developing research priorities for the future as well as joint bilateral and multilateral research programmes.

With regard to **consortium composition**, most projects were found to display stakeholder involvement. City councils as well as transport operators are often found as partners to projects next to research organizations and universities as well as technology providers (i.e. industry).

Direct **citizen involvement** is the exception. Citizens are often indirectly involved in research as sources of information (for instance through participation in surveys or focus groups). Similarly, their interests are mostly represented indirectly through the participation in projects of elected local governments or NGOs. Only few projects have made an attempt to engage urban residents as transport users or merely as citizens in the design of transport solutions, their testing or their assessment.

Most projects make an attempt to disseminate information on their research and their outputs – especially through their Web Sites. Communication skills appear to have improved in comparison with previous research programmes, however this is an area where there is still room for improvement.

6 Annex I. Project Fiches: Integrated Urban Solutions and Management

6.1 SMILE Project Fiche

Project Full Title:	Sustainable Mobility Initiatives for Local Environment
Project Acronym:	SMILE
Project Web Site:	www.smile-europe.org
References:	Towards Sustainable Urban Transport Policies – Recommendations for Local Authorities, Public Transport – A Pillar for Sustainable Mobility, project website
Other projects:	NICHE (New and innovative concepts for helping European transport sustainability, www.niches-transport.org); TRANSPOWER (Supervised Implementation of Sustainable Urban Transport Concepts, www.transpower-rp6.org); CIVITAS (Cleaner and better transport in cities, www.civitas-initiative.org); TELLUS (Transport and Environment Alliance for Urban Sustainability); TRENDSETTER (Setting trends for a Sustainable Urban Mobility, www.trendsetter-europe.org.)

Problem addressed & objectives

Most European local authorities are confronted with increasing problems of congestion and pollution due to the steady growth of urban motorized traffic. People are moving out of the cities due to bad environmental conditions, while increasing car ownership and faster travel have given rise to dispersed urban structures, leading to even greater volumes of motorized traffic. SMILE aimed to reconcile citizens' mobility needs with quality of life and environment. The project provides help to local authorities to cope with this challenge by presenting good practices and introducing innovative approaches.

Geographical scope:

The proposed measures address cities and towns of all sizes. The SMILE partners selected 14 champion cities in Europe (Aalborg, Berlin, Camden, Gent, Graz, Groningen, Krakow, La Rochelle, Lund, Modena, Nantes, Nottingham, Parma, Terrassa) that can show good practice examples of sustainable mobility.

Consortium composition:

ADEME, the French Agency for the Environment and Energy Management, was the project coordinator, and the partners included ENERGIE-CITES, an association of European local authorities for the promotion of local sustainable energy policies (with over 150 members in 24 countries representing more than 500 towns and cities), CLIMATE ALLIANCE, an association of European cities

and municipalities that have entered into a partnership with indigenous rainforest peoples. This worldwide alliance is united by a common concern for the world's climate, ACCESS, Eurocities for a New Mobility Culture in Brussels, The European Academy of the Urban Environment, which aims to encourage exchange of experience amongst decision makers in all spheres of sustainable urban development, ENEA, a public agency operating in the fields of energy, the environment and new technologies to support competitiveness and sustainable development, IDAE, the Spanish Institute for Energy Diversification and Management and EVA, the Austrian Energy Agency.

Citizen participation:
Citizens did not directly participate in the project. They were indirectly represented through the local authorities participating in the project.

Description of work:
A questionnaire was prepared by the SMILE partners and sent to local authorities throughout Europe with the objective of making an inventory of successful and replicable practices for sustainable mobility.

Outputs:
SMILE presents 170 successful and replicable practices for sustainable urban mobility in its local experiences database.

SMILE promotes an integrated approach to urban transport planning, meaning that the basic principles include urban density instead of urban sprawl and improving the mixed use of space and urban developments around attractive and efficient public transport stations. Integrated urban planning also plays a crucial role in the reduction of the negative impacts of transport on the urban environment and on city residents' quality of life. It also makes provisions to satisfy citizens' needs for adequate mobility by reducing the demand for travel, increasing the use of environmentally sound modes of transport and by implementing adapted measures to reduce the impact of conventional modes of transport.

The reduction of car trips in the total transport mix leads to less congested, less polluted and less noisy cities. In addition to the development of alternative modes of transport (public transport, walking, cycling), parking management is one of the most effective methods to manage private car trips.

Long-term parking encourages commuter traffic. Therefore, the parking measures recommended by SMILE include (among others) to extend the parking area subject to charging, use parking and access restrictions in the historic core (users should use public transport or walk), increase park and ride facilities, reduce the road space in residential developments to prevent on-street parking and reclaim the space for pedestrians, consider the needs of parking for goods delivery. Such measures require political will, courage, the force of strong

and determined conviction on the part of local authority officials, a sense of dialog on the part of those with technical responsibility and understanding on the part of the public.

With regard to urban goods delivery, some of the following proposals SMILE makes include: setting up urban distribution centers in peripheral areas to ensure final delivery, organize urban delivery services with cleaner vehicles, build parking facilities for goods delivery, favor the use of shared vehicles and the grouping of consignments, develop delivery of purchases at the Park and Ride, dedicate off-peak delivery hours in the center, support smaller, cleaner and quieter vehicles.

To promote responsible car use, car-sharing (several people use the same car at different times) or car-pooling (people share the same car for the same travel distance) are options. Other alternatives include short-term rentals or self-service vehicles. A local tax discount to citizens and private/public organizations could be given for purchasing cleaner vehicles, car pollution levies could be implemented, car-sharing or car-pooling requires a change in behaviour of potential users (such schemes could be set up on the Internet, for example and co-financed by the municipality), dedicate the best locations in the city to shared-vehicle parking spaces, build high occupancy vehicle lanes, promote the use of company cars to promote car-pooling among employees.

Public transport, among other advantages, costs the community less and takes up less space. The planning of land use, public transport and land-use policies should be integrated. Development and transport need to be combined in ways that link jobs and leisure activities with new/existing transit services. City centre congestion charges could additionally be used to finance public transport. Offering seamless door-to-door travel entices more people to use public transport. To compete with cars, public transport must continue to improve its speed, regularity, access and comfort. Buses, trams, cyclists and pedestrians should be treated as the main actors and space devoted to cars should be reassigned to them. Traffic lights should be managed so buses/trams stop only at places where passengers require them to (and run on dedicated lanes where possible). The presence of underground railway should not lead to the neglect of surface transport. To increase quality and attractiveness, managers should focus on customers' needs.

To achieve the aim of a better quality of life, cycling is the most effective mode of transport. Implementing new measures in this area requires political will and courage and conviction on the part of local authorities. Intermodality for cyclists should be improved (allowing them to take their bikes onto public transport), existing infrastructure should be improved with the ultimate aim being to build a comprehensive, interconnected, safe network without breaks, avoid "periphery" and "city centre" cycle networks with bad connections between the two, create well-equipped parking facilities for cyclists to avoid/limit theft, provide attractive

services such as bike renting or free of charge at different points, provision of public pumps, organize training sessions on how to cycle in the city.

To make walking safer and more convenient, SMILE proposes that existing facilities are retained in neighbourhood centres so that they are within walking distance to people's homes, creation of well-connected pedestrian zones in downtown areas, integration of walking with other modes of transport, organize the distribution of the roadway between cars, public transport, cyclists and pedestrians considering cyclists and pedestrians as the main actors, construction of pedestrian overpasses/underpasses allowing uninterrupted flow of pedestrian movement, convenient surface crossing, automatic pedestrian detectors at traffic lights and countdown signals indicating the time remaining in a crossing interval, construction of pedestrian/cycling routes that encircle the city and link surrounding areas, converting unused lots in the city outskirts into public car parks free of charge to allow drivers to then walk to the centre (or use public transport), ban pavement parking and reduce waiting times for pedestrians where possible.

The needs of specific target groups must be taken into account, including children (above all, ensuring safety), young people/students (price sensitivity due to their relatively low income and their above-average mobility), women (who generally have shorter, more frequent journeys), the elderly (restricted mobility), people with disabilities (physical, sensory and mental impairments and restricted mobility), and people with low incomes (affordability of transport options). The promotion of the greater use of sustainable transport modes is directly linked to safety and security – if people do not feel safe, they will not use them.

Who benefits?
Local authorities, urban planners, and citizens

Who pays?
Local authorities

6.2 TELLUS Project Fiche

Project Full Title:	Transport and Environment Alliance for Urban Sustainability
Project Acronym:	TELLUS
Project Web Site:	www.civitas-initiative.org
References:	Project website
Other projects:	CIVITAS projects

Problem addressed & objectives

TELLUS examined measures of how to increase the modal share in favour of public transport, to increase the use of bicycles, lower congestion, reduce traffic related air and noise pollution below national/EC standards, decrease inner city car usage, improve intra-organizational cooperation at city levels, reduce road casualties and to improve public private cooperation.

Geographical scope:

TELLUS involved five cities demonstrating that integrated urban transport policies can significantly contribute to fighting today's traffic problems in Europe. They included Rotterdam, Berlin, Göteborg, Gdynia and Bucharest.

Consortium composition:

The Municipality of Rotterdam was the project coordinator. Partners included the cities/municipalities of the test cases, universities, research organizations and transport operators.

Citizen participation:

User satisfaction surveys (on various measures implemented, such as the mobile parking system in Berlin) were carried out to determine how useful/efficient a particular measure is perceived. Moreover, a framework for direct customer participation to improve the Berlin mobility projects within TELLUS was established. The customers' perspectives of everyday life/use was introduced to improve the relationship between customers and companies involved in these innovative mobility projects.

Description of work:

A number of initiatives and measures were implemented in the five TELLUS cities and their success evaluated. Before the measures were implemented, they were frequently discussed with the municipal authorities, information campaigns were carried out and collaboration with the private sector was also of importance (for support of the measures being implemented).

Outputs:

TELLUS has provided a number of measures that can be implemented in cities of different sizes to reduce air and environmental pollution, as well as noise

pollution and decrease the risk of road accidents. It has also demonstrated how all actors involved can better collaborate.

In Berlin, measures included a mobile parking system, real-time information for trams and buses, 100 CNG-powered trucks in different weight classes for inner-city freight distribution, and the introduction of an innovative financing model to allow fleet operators (transport companies and other enterprises) to convert their fleet to natural gas (NG) propulsion.

In Bucharest, an integrated information system between the public transport network and the parking system was set up. Besides details about available parking places, the parking information system provides information on public transport links and schedules. This real time information was displayed on a large VMS panel placed at a visible location and the whole operational fleet was modernized and new technologies contributing to noise reduction and air pollution were introduced.

In Gdynia a new, more reliable trolley bus traction attached to new pillars instead of walls of buildings was introduced. The enhanced trolley bus transport will contribute to cleaner and safer public transport.

In Göteborg, clean waste collection vehicles were introduced and environmental zones established for heavy duty vehicles.

A number of measures were tested in Rotterdam, such as parking for free when travelling by public transport, truck parking management, the integration of cycling and public transport, dedicated bicycle lanes and a clean public transport fleet (among other measures)

Who benefits?
Municipal authorities, transport operators, urban planners and ultimately, citizens

Who pays?
Municipal authorities and the user.

6.3 TRANSPOWER Project Fiche

Project Full Title:	Supervised Implementation of Sustainable Urban Transport Concepts
Project Acronym:	TRANSPOWER
Project Web Site:	www.transpower-rp6.org
References:	Executive Summary, project website
Other projects:	CIVITAS Projects

Problem addressed & objectives

The main strategies for sustainable urban transport are avoidance of traffic, shifting to other modes of transport and environmentally conscious design. An integral approach that embraces the coordination of traffic demand, an improved public and non-motorized traffic and the best European practices of mobility management is necessary to maintain the quality of life in cities. TRANSPOWER deals with themes on environmental friendly city traffic, such as public transport, integrated planning, traffic management, non-motorized transport, and mobility management. 'Environment' is the main theme, i.e. the supervised implementation of small, manageable and tailor-made projects and concepts which represent realistic steps, together with the exchange of experience and relevant personnel were established with the environment in mind.

Geographical scope:

TRANSPOWER focuses on small to medium-sized cities (up to 500.000 inhabitants).

Consortium composition:

TRANSPOWER is coordinated by the German GTZ, a worldwide operating company for international cooperation owned by the German Government. The project pools 16 partners from six member states (including the Austrian Mobility Research, is an independent non-profit organization, Ernst Basler & Partner is an independent engineering, planning and consulting company in Switzerland, the European Academy of the Urban Environment and PTV AG, an independent business working in traffic, mobility and logistics). In addition, there are several city partners and an advisory board has been established, made up of ministries and POLIS.

Citizen participation:

There is no direct citizen participation in the project.

Description of work:

A number of case studies are implemented in different cities. Cities such as Graz in Austria and Groningen in the Netherlands contribute with their experiences to an inspiring exchange with Niš, in Serbia, Sibiu and Timisoara in

Romania, L'Aquila in Italy, Volos and Halandri in Greece and Skopje in FYROM. Regional know-how and scientific input are given by the Region Styria, Austria and the *Bike Parking House in* Groningen, the Netherlands. The German Federal Ministry of Transport, Building and Urban Affairs, the Austrian Ministry of Transport, Innovation and Technology, the Ministry of Infrastructure and Regional Development of Brandenburg, Germany, the German Federal Environment Agency and POLIS (a city network for environmental friendly city traffic) contribute to the project, by evaluating the results in certain project phases.

Outputs:
The project is still ongoing, but TRANSPOWER expects to establish synergies between small and medium-sized Eastern and Western European cities and link strengths and experiences of relevant partners and suggest solutions and an implementation plan for problems in the relevant fields of urban transport.

Who benefits?
Municipal governments/administrations, urban planners, transport operators and ultimately, citizens.

Who pays?
Municipal governments.

6.4 TRENDSETTER Project Fiche

Project Full Title:	Setting Trends for a Sustainable Urban Mobility
Project Acronym:	TRENDSETTER
Project Web Site:	www.trendsetter-europe.org
References:	Sustainable Urban Transport (Final Report), project website
Other projects:	CIVITAS projects

Problem addressed & objectives:

Trendsetter was split into two parallel and simultaneous project structures, a city-oriented one with different types of measures integrated into a dynamic local mixture, the other level was thematic, integrating eight thematic fields, including access restrictions, integrated pricing strategies, public passenger transport, new forms of vehicle use, distribution of goods, soft measures, transport management systems, and clean public and private fleets. For each theme, related measures in different cities were gathered for the exchange of information and experience, agreement on common methods and acting together on various issues, etc. It involved 50 individual but integrated projects, with the aim to improve mobility and quality of life, as well as reduce noise and traffic congestion and improve air quality. An additional aim is to achieve Kyoto and EU climate protection goals.

Geographical scope:

The case studies included five European cities to ensure real impact, by setting good examples and encouraging others to follow. The cities were Graz, Lille, Pecs, Stockholm and Prague.

Consortium composition:

Trendsetter is a cooperation between five European cities; Graz, Lille, Pecs, Prague and Stockholm. All in all, 20 organisations and 175 subcontractors were involved in the work.

Citizen participation:

No direct citizen participation

Description of work:

Meetings with local politicians at the beginning and the end of the project were organized. Stockholm launched a survey and opinion poll on customers' needs and expectations in the framework of the case study on public passenger transport. Data was collected for a number of different case studies, and databases established (for example, a database service giving buyers and suppliers of transport services the possibility to coordinate transport with regard to goods transport), and the evaluation of all the measures implemented was carried out.

Some activities promoted by the project include: Introduction of over 1,200 public and private clean cars, vans, buses and trucks; Improvements to public transport in order to attract more travellers; Mobility planning for finding alternatives to car travel; IT-based systems for transport information and traffic management; Material logistic centers to optimize freight deliveries.

Outputs:

In total, 53 measures were implemented in Trendsetter. The lessons learned from their implementation are:

- When using public transport, passengers strive for smooth and few interchanges. Easy and integrated ticketing with smart card systems, Park and Ride facilities, secure parking for bikes, real-time information systems at stations and web-based trip planning tools.
- Communication, information and marketing are important to increase the use of public transport (and other modes of sustainable transport).
- Existing infrastructure is used more efficiently if traffic management systems are available. It is cheaper to implement traffic management systems than to invest in new roads;
- To increase cycling in cities, a combination of soft measures (marketing, etc.) and hard measures (bicycle lanes, etc.) are successful. Increasing infrastructure and providing sheltered/theft protected cycle racks is important.
- Access restrictions can lead to less traffic, improved mobility and less noise. It is important to gain approval for car-free zones and strolling zones by both politicians and citizens.
- Environmental zones can be good tools for reducing heavy traffic in cities. By only allowing fairly new vehicles, a renewal of the fleet can be accomplished and emissions reduced.
- Local authorities are key players for promoting clean vehicles. They can launch the market development by making municipal fleets/city bus fleets clean.
- A complete value chain of biogas from its production from organic waste to its use to fuel public transport buses is technically feasible.

Who benefits?

Decision-makers in the areas of transport, communication and environment (at EU level, national and local levels).

Who pays?

If transport measures proposed by TRENDSETTER are implemented, local authorities would have to pay.

6.5 ECOCITY Project Fiche

Project Full Title:	Urban Development Towards Appropriate Structures for Sustainable Transport
Project Acronym:	ECOCITY
Project Web Site:	www.ecocityprojects.net
References:	Publishable Final Report (Deliverable 18), Book 1 "A Better Place to Live", project website
Other projects:	PROPOLIS (Integrated land use and transport policies, planning tools and assessment methodologies, 2000-2004; www.ltcon.fi/propolis); PLUME (Thematic Network on Land Use and Transport Research, 2003-2005; www.lutr.net); SCATTER (Urban Sprawl, 2000-2004; www.casa.ucl.ac.uk/scatter/).

Problem addressed & objectives

The overall objective of ECOCITY is to develop settlement patterns for sustainable cities, emphasizing the implications for an environmentally compatible transport system and to create a framework for the integration of sustainable solutions across all relevant sectors to generate the model of an Ecocity with an urban environment promoting sustainable lifestyles, implying higher quality of life and reduced consumption of resources.

There is broad consensus about the basic principles of sustainable urban (settlement) development (decentralized concentration, i.e. polycentric structure, a balanced mix of different land uses (residential, working, leisure, etc.) in a compact structure implying short distances. A list of more detailed objectives for sustainable urban development was established, focusing on the core themes of urban structure and transport. Strategies for planning the structure of the model settlements give priority to the requirements of sustainable transport modes – i.e. the spatial and traffic structure should be such, that people choose walking most of the time, cycling and public transport frequently, but cars only occasionally. Walking and cycling should determine the structure of small settlements (districts of a city, villages, small towns), and public transport is important for the location of these small settlements within a larger city or a region. Most important for making an urban structure suitable for pedestrians (and for cycling) are short distances (requiring a compact city, a balanced mixed land use and a limited size of the total area) and attractive pathways. Most important for public transport is the selection of sites for new construction, respectively for a new settlement to achieve a linear polycentric development and a decentralised concentration in walking distance around stops (stations) providing for a high passenger potential.

Geographical scope:
The master plans of the model settlements (for Ecocities) were designed for the following communities: Bad Ischl (14.000), Barcelona (for the Trinitat Nova neighbourhood), Gyoer (130.000), Tampere (198.000), Trnava (70.000), Tuebingen (85.000 inhabitants), Umbertide (15.000 inhabitants)

Consortium composition:
The project coordinator was the Institute of Economic Geography, Regional Development and Environmental Management, Department of Environmental Economics and Management, University of Economics and Business Administration Vienna. There were a total of 30 partners (including the coordinator) from 9 countries. Partners included universities, transport planners, the communities for which master plans were developed, consultancies, and research organizations.

Citizen participation:
There was no citizen participation in the project.

Description of work:
Good practices were collected and reviewed, which were used to determine objectives and principles for the development of an Ecocity (model settlement). The concepts for such cities were elaborated in cooperation with the relevant local communities. A scheme of criteria and indicators was compiled and used to evaluate the concepts.

Outputs:
The main outputs were a conceptual framework for sustainable (urban) settlement development, including the vision of an Ecocity and objectives for the relevant sectors of settlement development, as well as concepts for sustainable model settlements in seven municipalities in the stage of drafting master plans. A catalogue of quantitative criteria and indicators as well as qualitative criteria, focussing on urban structure and transport, but also covering the other relevant sectors (energy, water and waste, socio-economic aspects) was prepared.

Who benefits?
The project addresses urban planners, municipal authorities, transport planners.

Who pays?
Municipal/regional authorities.

6.6 HiTRANS Project Fiche

Project Full Title:	Development of Principles and Strategies for Introducing High Quality Public Transport in Medium-Sized Cities and Regions
Start-End:	Completed 2005
Project Acronym:	HiTrans
Project Web Site:	www.hitrans.org
References:	HiTrans – The Key to a Better City, project website
Related projects:	TRANSECON (Urban Transport and Local Socio-Economic Development) (2001-2003) www.boku.ac.at/verkehr/transecon.html

Problem addressed & objectives:

Car ownership and usage in European cities is increasing, particularly in medium-sized cities. Public transport tends to be based on regular (but relatively low quality) bus service in medium-sized cities, which often leads to people choosing their cars to travel rather than public transport. There is therefore a need to develop and implement more attractive modes of public transport in medium-sized cities. There is a strong focus on and a need for cost optimized solutions when it comes to alternative concepts for public transport. Examples of high quality public transport may be light rail, guided busways or frequent, comfortable buses. But the defining criterion is the ability of the transport mode to compete with the private car for everyday travel. HiTrans aims to find suitable and cost effective solutions for medium-sized cities to not only ensure high quality transport, but also high quality cities.

Geographical scope:

The project focuses on cities and urban regions that have populations between 100.000 – 500.000 people.

Consortium composition:

There were a total of 12 partners, predominantly County Councils (the Rogaland County Council in Norway was the coordinator) and transport operators (such as NEXUS, which operates the metro in Tyne and Wear, the Norwegian National Railway operator, etc.).

Citizen participation:

None reported

Description of work:

Case studies were carried out for all five themes included in the Best Practice Guide to demonstrate best practices and mistakes to avoid.

Outputs:

The project published 5 Best Practice Guidelines (on: 1. Public Transport & Land Use Planning, 2. Planning the Networks, 3. Public Transport & Urban Design, 4. Mode Options and Technical Solutions, and 5. Citizens' Requirements).

Who benefits?

The direct beneficiaries of the project are municipalities/city authorities, transport planners, land use planners. The end users are citizens living in cities who stand to benefit from better public transport and land use planning.

Who pays?

The implementation of the solutions proposed by the project would involve investments from municipalities primarily but also national governments.

6.7 INTERCEPT Project Fiche

Project Full Title:	Intermodal Concepts in European Passenger Transport
Project Acronym:	INTERCEPT
Project Web Site:	http://www.btsa.es/intercept/
References:	project website

Problem addressed & objectives:
INTERCEPT's overall aim was to encourage by example the implementation of intermodal door-to-door transport solutions in European cities, and to prevent car usage as close as possible to its source. The project attempted to prove that intermodality is achievable for urban travel management and can be implemented through intelligent systems.

Geographical scope:
Case studies were carried out in four cities that include travel and land-use characteristics that cover the range of typologies found in Europe. They include: Barcelona (access control, intermodal trip planning –public transport, P&R and off-street park guidance- with interchange ticketing); Bristol (road pricing packaged with PT trip planning); Bremen (car-sharing with intelligent ticketing and intermodal trip planning -PT, taxi and car-sharing) and Alkmaar (integration of parking and access control).

Consortium composition:
Different organizations from the four countries/cities involved in the case studies took part, mainly municipal authorities and research institutes, including Barcelona Tecnologia, a technological institute (and the project coordinator) the Municipality of Barcelona, the Department of Environmental Protection of the City of Bremen, Taxi Ruf Bremen Association, Stadt Auto Bremen Car Sharing, the Bristol City Council, the South Gloucestershire Council, Transport Travel Research and the Thole Group – Enschede in the Netherlands.

Citizen participation:
It is not clear whether citizens participated.

Description of work:
INTERCEPT involved the following activities: (1) Technologically advanced the state-of-the-art of key applications (Internet park&ride, trip planner, car-sharing and urban tolling within integrated payment systems) adapted to critical modality interfaces both to limit car and promote alternative mode usage, (2) Integrating these developments at state-of-the-art demonstration sites, (3) Delivering travel impacts that demonstrate what optimized multimodal travel management can achieve. The project's hypothesis was that by applying integrated transport telematic applications at key interchange points, the level of multi-stage trip-making involving public transport can be doubled.

Case studies were carried out in four cities (as mentioned above), i.e. the tool box developed by INTERCEPT was demonstrated in the four cities. The project built on experience gained in previous use of telematics applications and novel transport solutions in previous R&D demonstrations.

Outputs:
One of the project's main outputs was a tool box, which includes 9 basic applications that were developed.

Who benefits?
Transport operators, municipalities, public transport users.

Who pays?
Municipalities

6.8 INTELCITIES Project Fiche

Project Full Title: Intelligent Cities
Project Acronym: INTELCITIES
Project Web Site: www.intelligentcitiesall.com
References: "Test and Evaluation Report", project website

Problem addressed & objectives:
IntelCities's objective was to support the EU's policy goal of establishing a Knowledge Society by 2010 through new forms of electronic governance of cities and greater social inclusion through enhanced access to services by citizens and businesses. The project aimed to create a new and innovative set of interoperable, e-government services that provide information to all citizens and businesses about all aspects of city life via interactive city-wide Internet based applications. For our purposes, the "e-mobility pilot for the Integrated Open System City Platform (IOSCP)" is interesting. The main aim of this system is to provide various transport and mobility information to citizens, tourists, professionals, etc. The services provide an interactive routing service, information about the current traffic situation, upcoming events, points of interest for citizens/tourists and an overview of parking facilities. Special attention was paid to the different requirements of various user groups.

Geographical scope:
This project generally applies to cities of all sizes.

Consortium composition:
IntelCities was a research and technological development project that brought together advanced knowledge and experience of electronic government, planning systems and citizen participation from across Europe. The project was led by Manchester City Council (UK) and the City of Sienna (Italy) and involved eighteen European cities, twenty ICT companies and thirty-six research groups.

Citizen participation:
For the testing of the IOSCP, citizens were asked to test the system for its usefulness and ease of use.

Description of work:
The IOSCP was developed and tested among 'regular' citizens. The p functionalities were first tested (look and feel, completeness and accessibility of information, clarity of the available services, etc.), and the quality of the available data was tested in a second step. The users got acquainted with the look and feel of the IOSCP quite easily, with the similar layout of all the pages making it easy to orientate and navigate. A follow me service was offered, i.e. all the stages of a routing query ("how do I get from point A to point B?") can be forwarded by e-mail or as a text message. The routing service allows the user

to get the most efficient route from any starting point to a designated destination. The user can select between several options concerning the means of transport (public/private) and the staging route (quickest, fewest transfers, fewest short walks, etc.). There are also fields for the date and time of the journey. Every stage of the route is explained in detail and a map is supplied indicating the route. Points of interest as well as parking facilities (including information on prices and number of available parking spots) are also clearly indicated. IOSCP is a useful tool that is easy to handle and can make the planning of travel (private or public) more efficient.

Outputs:
The main output of the IntelCities project was the development of an e-City platform. The system provides a city wide information system that makes all aspects of what is 'going – on' in the city available to all, and aids decision makers in planning future development and services.

Who benefits?
With regard to the IOSCP, all citizens and tourists.

Who pays?
Local/municipal governments (if they want to make an online tool like the IOSCP available).

6.9 BESTUFS Project Fiche

Project Full Title:	Best Urban Freight Solutions
Project Acronym:	BESTUFS I
Project Web Site:	www.bestufs.net
References:	Recommendations for Further Activities (Deliverable 1.4), project website,

Problem addressed and objectives:
One of the reasons why cities face problems in terms of transport has to do with the transfer of goods. Currently in most cities, goods are transferred primarily on the road, thus contributing to environmental pollution. BESTUFS sought to develop a comprehensive urban freight strategy combining various measures.

Geographical scope:
Cities of different sizes across Europe

Consortium composition:
The consortium is made up of transport research organizations, university and consultants in the Netherlands, France, UK, Hungary, Czech Republic.

Citizen participation:
No citizen participation took place.

Description of work:
A questionnaire was sent to important European cities to identify their major problems, requirements and initiatives concerning urban freight transport. The results helped to focus on major aspects of urban freight transport and to choose the thematic focuses to be dealt with. Furthermore, national, European and international projects in relation to the transportation of urban goods were examined, but also the expertise and knowledge of the different stakeholders in the field. Workshops were organized in which the requirements of the different stakeholders were determined.

Outputs:
A Best Practice Handbook was published with a collection of good practice examples from all over Europe.

The favoured approaches include: a) implementation of an urban transhipment point for the inner city distribution, b) favouring environmentally friendly vehicles to carry out inner city distribution (CNG or electric), c) levying city access charges, and d) strengthening distribution processes, charging schemes and enforcement by ITS (intelligent transport systems). Medium-term measures should include the development of logistical nodes.

Specific recommendations include:

- Access regulations: exchange of information and knowledge on European city access regulation measures should take place with the objective of harmonizing EC regulations on urban freight city access. The enforcement and monitoring of activities in cities to support urban freight transport should be enhanced – specialized enforcement agents on loading bay control (as in Barcelona) seems to be very effective.

- Optimized vehicles for city distribution: further integration of information systems into the urban supply chain. City authorities should continue promoting cleaner engines operating in the cities and to actively pursue the policy target to increase the share of alternative fuels to 20% and actively support the development of environmentally friendly vehicles for urban transport. Relieved access restrictions to the inner city for low emission vehicles could be one solution. Also, new vehicle technologies in authority owned and operated fleets could be demonstrated.

- Rail based urban freight transport: a quality partnership between all stakeholders should be established (to resolve the lack of knowledge on urban rail related processes and possibilities to use this mode of transport). Public Private Partnerships should develop to harmonize the different views the actors involved in urban goods transport to find a common strategy including rail freight.

- Urban distribution centers: urban distribution centers based on enforced cooperation from above have rarely worked, therefore the cities ought to act as “enablers”, providing and protecting shared use land and allowing the free market to provide the most efficient urban distribution. More research should be carried out on intermodal interfaces between urban goods transport and long haul transport chains.

- Night delivery: field trial demonstrations with night delivery should be implemented. A cooperative approach among retail, shop keepers, other industry sectors and the municipality is needed. Best practice guides on how to reduce sound from a vehicle fleet should be disseminated.

Who benefits?

Urban freight planners, transport planners, municipal authorities and freight operators.

Who pays?

Municipalities, freight operators.

6.10 BESTUFS II Project Fiche

Project Full Title:	Best Urban Freight Solutions
Project Acronym:	BESTUFS II
Project Web Site:	www.bestufs.net
References:	project website, BESTUFS Policy and Research Recommendations II – Urban Freight in Small and Medium Sized Cities, Urban Waste Logistics, Port Cities and Innovative Urban Freight Solutions, Managing Urban Freight Transport by Companies and Local Authorities.

Problem addressed:
BESTUFS II is a follow up project to BESTUFS I. Building on the structure and experience gained from the project, BESTUFS II will: (1) Achieve a broader geographic coverage of the existing BESTUFS network on urban freight, including the identification and dissemination of project results and best practices of City Logistics Solutions (CLS). (2) Deal with the language barrier, especially in small and medium sized cities by providing and disseminating urban freight transport guides translated in many EU languages and organizing seminars in national languages. The effects of urban freight transport in terms of economic, environmental and social/safety issues will be covered by the project. It is compared with other transport sectors and modes and an embedded overview description will be worked out.

Geographical scope:
This project focuses in particular on medium-sized cities (but includes data on large cities as well).

Consortium composition:
The project is being implemented by a group of transport consultancy companies and research organizations / universities in the Netherlands, Hungary, UK, Czech Republic and France.

Citizen participation:
No citizen participation is foreseen in the project.

Description of work:
Information related to strategies, concepts, projects and initiatives (on European level) will be collected and the collected material analyzed, described, consolidated and assessed before best practices, success criteria and experiences are derived.

Outputs:
A supportive document transferring the results of BESTUFS (and BESTUFS II) to practitioners in medium sized cities was missing in the first project. Printed

urban freight guides in various national languages are available (in 17 languages – “Good Practice Guide on Urban Freight Transport”).

Some preliminary recommendations on several policies are available, of which some are selected and described here. For urban freight solutions in small and medium-sized cities, BESTUFS recommends the construction of bypasses and special freight transport corridors within cities. Recommendations for innovative urban freight solutions for port cities include the development of new infrastructure, cooperation of ports and freight villages (to offer good service quality to customers), traffic analysis in the area surrounding the port, environmental zones, development of rail centers, environmental friendly vehicles. BESTUFS also provides examples of urban freight initiatives, including out-of-hours deliveries/night delivery, collection points, urban distribution centers or zones, improvement of highway, railway and inland waterway connections, dedicated lanes and facilities for freight traffic, road pricing systems, technology for reduced noise in operations, to name a few.

Who benefits?
Urban transport planners, municipal authorities, freight transport operators, (freight transport) stakeholders

Who pays?
This depends on the measure adopted. Infrastructure development rests with the public administration (national, municipal). The development of soft solutions such as out-of-hour deliveries will have to be done in collaboration with private retailers (who however might have to gain in terms of reduced fuel costs). Freight operators will have to contribute with regard to the development of special freight connections or in terms of logistic centre development.

7 Annex II. Project Fiches: Urban Transport Pricing

7.1 CURACAO Project Fiche (and other pricing projects)

Project Full Title:	Coordination of Urban Road User Charging Organisational Issues
Project Acronym:	CURACAO
Topic:	Urban transport pricing
Start–End years:	2006-2009
EU fund:	1.537.965 €
Project Web Site:	http://www.curacaoproject.eu/
References:	Inception Report
Other projects:	CUPID (Thematic network on urban transport pricing and best practice; 2000-2004; www.transport-pricing.net/cupid.html); PROGRESS (Demonstration and research project into road pricing in cities, 2000-2004, www.progress-project.org); EUROPRICE (City / regional issues in road pricing; 2000-2004; www.europrice-network.org); MC-ICAM (Policy reform in the pricing of transport, 2001-2003; www.its.leeds.ac.uk/projects/mcicam); IMPRINT-EUROPE (Thematic network on the implementation of fair and efficient transport pricing 2001-2004; www.imprint-eu.org); IMPRINT-NET (Discussion platform on new pricing regimes; 2005-2008; www.imprint-net.org); REVENUE (Revenue use from transport pricing, 2004-2006; www.revenue-eu.org); GRACE (Generalisation of transport accounts and cost estimation methods; 2005-2005; www.grace.eu.org);

Problem addressed:

Traffic congestion wastes time and energy, causes pollution and stress, decreases productivity and imposes costs on society. The costs of road traffic congestion alone amount to 0.5 % of European Union Gross Domestic Product (GDP), and are projected to increase in 2010 to approximately 1% of EU GDP. The traditional response to traffic congestion has been to widen existing roads and build new ones: roads take up 20 to 25 per cent of total area in most European cities and more than 35 per cent of all space in US cities. However, expanding or building new roads often provides only ephemeral relief since added capacity attracts new growth and additional traffic. Congestion can vary since demand (day of week, time of day, season, recreational, special events) and road capacity (incidents, work zones, weather) are changing. It is impossible to entirely eliminate congestion from our cities, but it is possible and

wise to define a level of “acceptable” congestion and develop plans and programmes to achieve that target.

Considerable resources have been expended in search of solutions to reduce road traffic by encouraging transfer of trips to more environment-friendly modes, traffic control measures and traffic restraint by physical means, but such approaches have proved only partially successful. In part this can be ascribed to the low amenity of collective transport compared with the private car.

However a key determinant for people to choose how to travel, e.g. by car or public transport, is the price of the trip, i.e. how much it costs to drive through or park the car in the city. Congestion is generally a sign that prices are too low. When traffic volumes approach about 95 percent of capacity, it takes only a few more cars entering the stream for the system to break down, forcing all traffic to a stop-and-go crawl. These few additional motorists absorb only the time delays they themselves incur, not the collective costs of additional time delays inflicted on other upstream. This is the so called “marginal social cost”, i.e. the cost that an additional driver adds to all the other drivers when he/she uses a road near to capacity, creating congestion. Traffic congestion is a classic case of the “tragedy of the commons” – the shared, under-priced public resource, road space, is over-consumed since no one pays marginal social costs, to the detriment of the community as whole.

“**Urban road pricing schemes**” consider therefore adjusting the price of car trips as a tool to reduce the usage of the private car in the congested urban areas. In such schemes car drivers have to pay a toll to access to these areas when there is a lot of traffic, usually at peak hours in the morning or in the evening, or even all the day long. A variant of urban road pricing schemes are the so named “**limited access zones**”, where the traffic in the most congested period of the day is allowed only for certain categories of vehicles (e.g. clean engine cars, public transport means, taxis, etc.) and/or car users (e.g. residents in the zone) without applying any price to them, but simply banning the traffic for all the others vehicles and users.

Urban road user charging can help to address the worst effects of traffic which often occur at the peak hour in the urban core, including waste of time which reduce the people quality of life and the environmental impacts, especially air pollution, which threaten the people health. Furthermore, urban road user charging may help to raise revenues which can help to increase the supply and quality of competing transport services, notably public transport, if they are used to finance new transport infrastructure (e.g. metro) and services (e.g. new bus lines).

Objectives:
CURACAO is the last of a sequence of EU research and demonstration projects addressing the topic of urban road pricing. Notwithstanding the benefits shown

by demonstrations and implementations realised with the support of these projects (see section outputs below), it remains the case that very few decision makers in European cities have come out and publicly declared that they will implement road pricing measures. The main barriers cited by decision makers include the lack of a political champion, a hostile media attitude and low public acceptability. In the meantime congestion remains a significant factor affecting the quality of life in today's cities. To address this shortfall between the potential of road pricing and the progress of its actual implementation is the goal the CURACAO project. The projects aims therefore to answer the following questions: What barriers are stopping cities from moving forward with road pricing ? What support do cities need in order to overcome these barriers?

Geographical scope:
Previous urban road pricing demonstration projects, such as CUPID and PROGRESS, were geographically focused on the UK, Italy and Scandinavia, where interest in road user charging is highest. CURACAO has widened the geographic area of interest by introducing new partners from the Netherlands and France, as well as a dissemination partner covering the New Member States. Case studies of implemented or planned urban road pricing schemes include Bristol, Edinburgh and London in the UK, Rome in Italy, Stockholm in Sweden, Oslo in Norway, Den Haag in Netherlands. A number of cities and regions participate in the project user group: Barcelona (Spain), Bologna (Italy), Cambridgeshire (England), Cardiff (Wales), Deutsche Staedtetag (Germany), Dublin (Ireland), Durham (England), Emilia Romagna (Italy), Genoa (Italy), London (England), Notts-Derbs-Leics (England), Plymouth (England), Tyne & Wear (England), Vilnius (Lithuania), Utrecht (Netherlands), West Midlands (England), Warsaw (Poland).

Consortium composition:
The nucleus of the consortium is the CUPID/PROGRESS/EUROPRICE partnership, which included the cities of Bristol, Rome, Stockholm, Oslo and Trondheim. Technical partners and universities will provide coordination and technical support.

Citizen participation:
The CURACAO project is mostly concentrated on the needs of decision-makers, including city transport planners and policy makers in charge of transport policies at local level. There is not direct involvement of citizens or civil society organisations. However, several urban road pricing schemes have been subject to local referenda, sometime with negative results delaying or hindering the implementation of the planned road pricing scheme, as for instance in Edinburgh.

Description of work:
Overall, the experience of the previous CUPID and PRoGRESS demonstration projects was that urban road user charging is perhaps the most challenging

policy problem faced by transport planners. In response to the issues identified in the test sites, CUPID and PRoGRESS focused considerable resources on the problems of presenting road user charging as a concept to the public. CURACAO is considering now how to present road user charging as a concept to decision makers. In order to do this effectively, CURACAO started with an user needs assessment, which enables it to identify target audiences and thereby deliver products and events which address the needs of these audiences. By taking a user-driven approach, CURACAO will consolidate the achievements of earlier projects, as well as making its own distinctive contribution to the future of transport in Europe's cities.

Outputs:

The European Commission has funded a number of projects in the area of transport pricing, in order explore the technical, financial, operational, political and social issues associated with implementing road pricing projects. EU research and demonstration projects and urban trials, most recently in Stockholm, have shown that the technology works and that pricing schemes can deliver real benefits. In the still few cities where permanent road pricing measures have been implemented, as in London and Durham in the UK, levels of congestion have fallen significantly.

For instance, a road user charge scheme has been implemented in Durham City in UK in order to significantly reduce its vehicular and pedestrian conflict by removing a substantial proportion of existing traffic. Following consultation with the public a £2 charge for vehicles using Saddler Street the Market Place during a defined period of 10.00 to 16.00 hours Monday to Saturday was introduced. This period was chosen as it coincided with peak pedestrian flows. The key results of the Durham road user charging scheme have been the following: 85% reduction in vehicular traffic; 10% increase in pedestrian activity; 10% increase (to 78%) in number of people who consider Durham City Centre to be a safe place to visit; 21% increase (to 70%) in number of people who believe the Road User Charge is a good idea; 83% of business have not altered their servicing arrangements following introduction of Road User Charge. Environmental improvement has encouraged a 10% increase in pedestrian activity since introduction of the Road User Charge. Public perception of the scheme has improved significantly following its introduction.

However, the bigger and most famous urban road charging scheme is that introduced in Central London, with the aim of reducing congestion, improving bus services, improving journey time reliability, and to increase the reliability and efficiency of freight distribution. The scheme also raises funding for investment in transport in London. The boundary is formed by the area within the Inner Ring Road of Central London, covering 21 square kilometres or 1.3 per cent of the total area of London. There are 174 entry and exit points, with a daily charge of £5 for each registered vehicle – penalties for non compliance are £80, reduced to £40 if paid within two weeks and raised to £120 if not paid

after 4 weeks. The total budget was about £200 million, including £100 million for complementary traffic management measurements. The operating costs are about £80 million per annum and a £12 million budget for communication and marketing. The impacts of this urban road pricing scheme, evaluated two years after its introduction in 2003, were manifold:

- Congestion in the charging area has reduced by 30 per cent. It is lower than at any time since the mid 1980s. But taxi journeys have increased by 20 percent, and van and lorry movements have decreased by 10 per cent. Cycling has increased by 30 per cent;
- The number of motor vehicles entering the area during the charging hours (07.00 to 18.30 on Mondays to Fridays) has dropped by 16 per cent – note that buses, taxis, residents (10 per cent charge), and 13 other categories of vehicles are exempt or have discounts;
- Car journeys to and from the charging zone are quicker and more reliable, with travel times reducing by 14 per cent and reliability increasing by 30 per cent;
- Public transport is coping with the increase in passengers;
- Bus services are more reliable as a result of less congestion;
- No significant traffic displacement around the zone has been observed;
- Provisional data shows a 20 per cent reduction in accidents in the zone;
- The various payment schemes seem to be working, with a reduction in call centre enquiries from 167,000 to 70,000 per week;
- Penalty notice charges have averaged at 106,200 per month, and payments for 60% of these are made within a month – a current proposal (February 2004) is proposing to substantially raise the penalty and enforcement charges;
- The public remain supportive of the scheme – 50% of London residents support it and 30% oppose it;
- Average net revenues will be £68m in 2003/04 and about £90m in 2004/05.

As it concerns the fears of business activities and retail shops located in the Central London to have their annual turnover reduced as a consequence of the increased cost to access the area by car, the effect of congestion charging has been relatively minor, with difficulties in attributing changes to particular causes (at least on the base of two years data, the effects should be evaluated again today, after 5 years from the introduction of the scheme). Generally, the business and financial sectors were still enthusiastic, particularly the larger employers, as they have benefited from reduced travel times and increased public transport reliability. It is in the retail and leisure sectors that some impacts have been felt, mainly in the first half of 2003, but this has been more than countered by a resurgence in 2004.

Finally, as it concerns the strategies to facilitate the actual implementation of urban road pricing schemes, CURACAO on going research is showing that for the success of urban road pricing schemes is of the most importance:

- present pricing as part of a strategy, to explain the benefits and announce close monitoring to mitigate opposition;
- follow development of GPS-based (satellite) real time information systems which can allow in the future to implement more flexible forms of pricing, e.g. introducing variable prices depending on the distance travelled and/or the more or less congested traffic conditions, instead of a fixed price for a fixed time interval as it is mostly in the applications of today;
- analyse the effects on social equity of road pricing and other pricing tools such as costs for parking, park and ride and public transport fares.

Who benefits?

Evidence produced from different case studies shows that urban pricing schemes may produce overall benefits in terms of congestion reduction and environmental impacts in the priced urban area while maintaining acceptable congestion levels as a side effect in the boundary city areas. Maximum benefits are achieved mostly for daily travellers if pricing is combined with complementary measures, as for instance more frequent public transport services funded with the revenues raised from road pricing. In this case those the can afford to pay the road or parking charges, will benefit from more fluid traffic or they will find more easily parking places, whereas those that will find more convenient to shift to public transport will benefit, together with the older public transport users, of more frequent and faster public transport services.

Who pays?

Small business, retailers and restaurant owners, especially near the boundary of the charging zone, seem to be those most negatively affected by a reduction of people turnover. Acceptability is therefore a main concerns with these business categories, although opposition seems to reduce after implementation.

8 Annex III. Project Fiches: Technological Solutions

8.1 LIBERTIN Project Fiche

Project Full Title:	Light Rail Thematic Network
Project Acronym:	LIBERTIN
Start-End Years:	2002-2005
EU-Funding:	Not known
Project Web Site:	www.libertin.info
References:	Obstacles to Internal Market (OIM) Study; Final Report; LIBERTIN Masterplan for Research
Other projects:	MARIE (Mass Rapid Transit Initiative); part of the European rail research technology platform ERRAC (European Rail Research Advisory Council, www.errac.org); SAFETRAM (on crashworthiness); TRAINSAFE (see www.eurailsafe.net) TRANSITS (on ITS issues and training: http://www.terena.org/activities/csirt-training/), EURNEX (European rail research network of excellence www.eurnex.net), SPURT (focusing especially on maintenance issues and track degradation: www.spurt-ec.com).

Problem addressed:
There are today across Europe alone some 170 tramway systems. (Tramways in the rail infrastructure jargon are also known as light rail transit or LRT systems). This diversity has several mainly negative effects: first, the technical standards (regarding safety and quality) differ quite significantly and are mostly low; secondly, there is little competition among manufacturers towards better technological solutions.

Objectives:
Against this background, the objective of the LIBERTIN thematic network was to bring together European LRT manufacturers and operators to reach consensus regarding technical standards for tramways thus contributing to the standardization work of the European Standardization Committee CEN and, in the long-term, the emergence of a truly European internal market for LRT.

Geographical scope:
Cities European-wide with LRT systems in need of modernization or considering the introduction of LRT systems.

Consortium composition:
Consortium brings together rail technology specialists (TTK, Atkins Denmark, AEA Technology plc., Semaly SA) with railway operators and manufacturers associations (UITP, UNIFE) and a professional association (Association of Lifecycle Engineers).

Citizen Participation:
None involved.

Description of work:
The project comprised three phases: The first phase was entitled 'thematic focusing' and consisted in the identification of the key areas to concentrate upon. The second and third phases (intermediate and final consensus building respectively) comprised a series of get-togethers of experts representing the manufacturers and operators of LRT systems to discuss the thematic focal areas.

Outputs:
Recommendations for common standards were reached with regard to the technical issues of accessibility (to enable disabled and older persons to easier embark and disembark from tramways: both step and gap between 0 and 50 mm); the vehicle-track interface (towards the reduction of the risk of derailment); vehicle structural design (towards a better estimation of maximum loading capacity); fire safety standards; structure gauging, and maintenance management. Preliminary agreement was reached on the subject of heating, ventilation and air-conditioning as well as the tendering procedures to follow in procurement policy. Less progress could be made with regard to noise standards.
For some areas it was concluded that it will not suffice to recommend technical standards and hope that the manufacturers will adopt them. In those areas with a direct impact for safety or energy efficiency (like crashworthiness and power supply), legislation will be necessary. Therefore, UNIFE and UITP agreed to draft a proposal for a directive on urban rail.
Finally, the project made specific recommendations for future research in the areas of safety issues, research related to system attractiveness and economics, technical harmonization and the environment.

Who benefits?
Higher safety and quality tramways are more attractive for users, hence the further development of LRT can be expected to contribute to a shift of transport use from road to rail. Furthermore, the standardization of LRT contributes to the growth of the LRT manufacturing market.

Who pays?

LRT system development and/or modernization is still considered a costly investment, which at this stage is not possible without public investment. The growth of the internal market through greater standardization is however expected to lower public investment needs.

8.2 URBAN-TRACK Project Fiche

Project Full Title:	Urban Track
Project Acronym:	URBAN TRACK
Start-End Years:	2006-2010
EU-Funding:	18 million
Project Web Site:	www.urbantrack.eu
References:	Web Site Documentation; First Newsletter (09/2007); Second Newsletter (04/2008).
Other projects:	ERRAC (European Rail Research Advisory Council, www.errac.org); EURNEX (European rail research network of excellence www.eurnex.net), SPURT (maintenance issues and track degradation: www.spurt-ec.com).

Problem addressed:
What often goes unnoticed in public debates on transport that are dominated by the much needed modal shift from road to rail, is that rail transport also faces challenges regarding both energy efficiency and environmental protection. In the urban sector, one of the main problems faced is the age of rail infrastructure in conjunction with low technical standards. Indeed, urban rail infrastructure are in many cities in need of upgrading towards more energy-efficient, environmentally-friendlier and safer solutions. New lines ought to be constructed with less ballast and be modular, thus allowing both fast instalment and easier maintenance.

Objectives:
The URBAN-TRACK project seeks to produce and disseminate products that reduce life cycle cost (LCC) in urban rail infrastructure systems. Such products are also low in noise and vibration as well as safer. The project's strategic objective is to achieve a reduction in LCC of 25 per cent by 2020 and to demonstrate the use of low cost modular track systems in ten cities around Europe.

Geographical scope:
Europe-wide, focusing on the cities of Madrid, Brussels, London, Seville, Bremen, Paris, Barcelona and Karlsruhe, but also Manila and Singapore.

Consortium composition:
The consortium is made up by several rail track producers (such as APT, ALSTOM, BSAG, D2S International), the transport operators of the demonstration cities as well as UITP and UNIFE.

Citizen participation:
None involved.

Description of work:

The project comprises three sub-projects: (1) a first sub-project is concerned with the production of new tracks of modular nature that are easy and fast to install as well as maintain; this includes consideration of electrical issues, safety lightning, artificial grass tracks, and the interface between rail and street pavement. (2) the second sub-project is developing solutions for the renewal and maintenance of existing lines (to be demonstrated in the RATP in Paris as well as in Manila). (3) the development of a model for measuring and assessing (in advance) life cycle cost and, on this basis, to define the function requirements of railway tracks. In addition to developing and testing the products / solutions in the project participant cities, URBAN-TRACK is also setting up with the help of UITP a network of operators from other cities for disseminating the knowledge of the project on a wider basis.

Outputs:

New railway infrastructure systems as well as new solutions for renewal and upgrading.

Who benefits?

The direct beneficiaries of the project are the transport operators in the participating cities to whose needs the project answers. The end users are the citizens of these cities (and public transport users more generally) who in the future will be able to rely on safer, low-noise, energy-efficient and environmentally-friendly public transport services.

Who pays?

The project is generously funded with 18 million Euro and this funding is expected to go some way towards covering the development costs for the new products / solutions. The costs of wider deployment will of course have to be borne by the urban public transport operators and, indirectly, users and non-users (as taxpayers).

8.3 STARDUST Project Fiche

Project Full Title:	Research on Deployment of Urban Sustainable Transport Systems focusing on ADAS and AVG
Project Acronym:	STARDUST
Project Web Site:	www.trg.soton.ac.uk/stardust/
References:	Project Web Site
Other projects:	AIDE (Adaptive Integrated Driver-vehicle Interface), www.aide-eu.org; AWAKE (System for Effective Assessment of Driver Vigilance and Warning According to Traffic Risk Estimation), www.awake-eu.org; CarTALK 2000 (Safe and Comfortable Driving Based on Inter-vehicle Communication), www.cartalk2000.net; COM2REACT (Cooperative Communication System To Realise Enhanced Safety and Efficiency in European Road Transport), www.com2react-project.org; COMUNICAR (Communication Multimedia Unit Inside Car), www.crfproject-eu.org; CVIS (Cooperative Vehicle-Infrastructure Systems), http://www.cvisproject.org/en/home.htm; eIMPACT (Socio-economic Impact Assessment of stand-alone and co-operative intelligent vehicle systems in Europe), www.eimpact.info; E-MERGE (European In-Vehicle Emergency Call), http://www.ertico.com/en/activities/e-merge.htm; GST (Global Systems for Telematics enabling On-line Safety Services), www.gstproject.org; HIGHWAY (Breakthrough Intelligent Maps & Geographic Tools for the Context Aware Delivery of eSafety & Value Added Services), www.ist-highway.org; PReVENT (Preventive Safety), www.prevent-ip.org; SAFESPOT (Co-operative Systems for Road Safety "Smart Vehicles on Smart Roads"), www.safespot-eu.org; SEISS (Exploratory Study on the Potential Socio-Economic Impact of the Introduction of Intelligent Safety Systems in Road Vehicles), www.vdivde-it.de/seiss; SEVECOM (Secure Vehicle Communication), www.sevecom.org; TRACE (Traffic Accident Causation in Europe), www.trace-project.org; WATCH-OVER (Vehicle-to-vulnerable Road User Cooperative Communication and Sensing Technologies to Improve Transport Safety), www.watchover-eu.org.

Problem addressed & objectives

The objective of the STARDUST project was to assess the extent to which ADAS (Advanced Driver Assistance Systems) and AVG (Automated Vehicle Guidance) systems can contribute to a sustainable urban development not only in terms of direct impacts on traffic conditions and environment, but also in terms of impacts on social life, economic viability, safety, etc. Several new technologies were evaluated, including Intelligent Speed Adaptation (ISA), which was found to be more effective in non-congested traffic conditions, when it is easy for drivers to exceed a speed limit. It has positive impacts on fuel consumption on high speed roas, but negative impacts on low speed roads. It has positive impacts on safety in terms of limiting speed to the official limits. The Stop&Go on Urban Roads systems has the potential to increase saturation flows of signal controlled junctions, because of shorter and more consistent reaction times. When 80% of vehicles use this system, the queuing times reduced by up to 25%. Stop&Go can have positive impacts on the environment and has positive impacts on safety. Other systems tested included the High Capacity Bus (lane keeping based), which leads to reduced car use in urban areas, which contributes to improving the environment.

Geographical scope:

Three north-western European cities participated in case studies (Brussels, Southampton, Oslo).

Consortium composition:

STARDUST comprised six partners, including Transportation Research Group, Dept. of Civil & Environmental Engineering (University of Southampton) as the coordinator, STRATEC, a group of specialized consultants in Belgium, The Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology, the French National Institute for Transport and Safety Research, the French National Institute for Research in Computer Science and Control and the Institute of Transport Studies at the University of California-Berkeley.

Citizen participation:

Citizens participated through surveys (drivers)

Description of work:

STARDUST combined analysis at behavioural, microscopic and macroscopic level, so that the final recommendations are based on actual driver behaviour, rather than on theoretical views. The integration of end user potential acceptance analysis (by means of stated preference surveys), investigation of the human factors issues (using data from instrumented vehicles, driving simulators, and microscopic modelling) and larger scale assessment of the impacts, at city-level (using semi-dynamic traffic assignment models) was integrated into the research as well. The results of the impact assessment were compared between three Northwest-European cities (Brussels, Southampton, Oslo).

Outputs:

The STARDUST project has revealed that driver support systems have a substantial potential in the urban environment regarding traffic flow and traffic safety. The studies showed that drivers want new technologies in their cars when they understand the system and see a personal benefit. The deployment of driver support systems is market driven, but generally there is a positive attitude towards these systems. To take a substantial step forward in the rate of deployment of such systems, governments would have to make them mandatory. Much of the projects following STARDUST have sought to refine the various ADAS and AVG systems, advance them further and make them both more user-friendly and secure.

Who benefits?

Car drivers, car and systems manufacturers but urban citizens also more generally given the benefits involved in the deployment of intelligent cars in terms of less congestion.

Who pays?

The user as these systems form part of the new cars sold and bought.

8.4 CITYMOBIL Project Fiche

Project Full Title:	Towards Advanced Road Transport for the Urban Environment
Project Acronym:	CITYMOBIL
Topic:	Transport systems of the future
Start–End years:	2006-2011
EU fund:	11.000.000 €
Project Web Site:	http://www.citymobil-project.eu/
References:	EC Project Synopses, Deliverable D2.2.2 "Scenarios for Automated Road Transport"
Other projects:	STARDUST (A research on deployment of urban sustainable transport systems focusing on advanced driver assistance systems (ADAS) and automated vehicle guidance (AVG), 2002-2004; http://www.trg.soton.ac.uk/stardust/index.htm); NETMOBIL (Cluster of projects on new automated technologies, 2000-2004: www.netmobil.org); CYBERCARS (Cybernetic technologies for the car in the city, 2000-2004, www.cybercars.org); CYBERMOVE (Cybernetic transportation systems for the cities of tomorrow, 2002-2005, www.cybermove.org); CYBERCARS-2 (New technologies to coordinated automated vehicles, 2006-2009) www.c.inria.fr/cybercars2); CYBERC3 (Cybernetic technologies for cars in the Chinese cities, 2005-2007; http://cyberc3.sjtu.edu.cn/en).

Problem addressed:

With the exception of some automatically operated metro systems (Paris, London, Lille, Turin) and some recently introduced automated buses and people-movers (Clemont-Ferrand, Eindhoven and Capelle aan de Ijssel), transport systems in the present-day European city are mostly of a traditional type, i.e. manually driven by a human driver. Automated transport is expected to help reduce congestion in the dense traffic urban and interurban roads, because one of the major triggers of jams in dense traffic is fluctuation of individually human driven cars. Drivers lose concentration, get too close to the vehicle in front and then slow abruptly. If random perturbations like this could be smoothed out through automatic driving systems, the threat of jams would much reduced. Traffic simulation of automated car platoons have shown that some jams in heavy traffic can be smoothed away completely if just 20 per cent of the cars are equipped with automated systems which enable them to respond smoothly to changes in traffic flow. Reduction of congestion and regular speeds, without stop-and-go driving, will help to reduce CO_2 emissions, air pollution and accidents risks. Automated driving can be also particularly useful for the

shipping of goods on long distances, because it will make possible for the drivers to rest while the lorries are running in automated mode on the equipped highways of the future. Other important applications include small cybercars in traditional car-restricted urban environments (e.g. historic centre) as well as personal rapid transit (PRT) systems in public transport.

Objectives:
The objective of CITYMOBIL is to study the barriers (technological, legal) to the large-scale introduction of automated systems and prepare the ground for the introduction of such systems through the validation and demonstration of fit-to-purpose concepts.

Geographical scope:
The project deals with three demonstrations of automated transport, respectively for the shipping of luggage in a major airport (Heathrow), and for passenger transport applications in the cities of Rome (Italy) and Castellon (Spain). Case studies will be developed for a number of other large, medium and small cities scattered across Europe, to show the feasibility of road automated transport scenarios in the different city contexts.

Consortium composition:
The CITYMOBIL consortium includes 28 partners, mainly academic institutes and technological research centres. There are also three local and regional authorities to represent the demonstration cities and a non-governmental association of transport stakeholders.

Citizen participation:
None reported.

Description of work
The demonstration projects in the UK, Spain and Italy are accompanied by a series of technological, operational and policy/legal assessments that are expected to provide insight into how to develop and deploy these systems in an effective, fast and efficient way.

Outputs
At the end of the CITYMOBIL project (year 2011), there will be at least three sites where an actual automated transport system will have been installed and where the first results will have been evaluated. These will not just be demonstrations of technological possibilities, but fully fledged integrated solutions that will be operated and maintained in the long term. For a number of other cities, plans will have been made and concepts will have been developed that will help the relevant authorities to make decisions concerning the introduction of automated transport systems.

Who benefits?

The large scale introduction of road automated transport systems is expected to benefit transport users, by expanding the options of public transport options to serve different urban contexts. Further benefits are expected for the environment and the citizens as a whole, thanks to the reduction of CO emissions, air and noise pollution, and increased safety.

Who pays?

As far as the new advanced transport systems will develop into market applications, their price should become affordable for a larger part of potential transport users. Advanced car-sharing schemes can make accessible the use of these technologies also for those that cannot afford to buy and own a dual-mode vehicle (whose price may be even at regime higher than the price of traditional cars). However, these car sharing schemes might be in the need of local public subsidies to be economically viable.

8.5 MORYNE Project Fiche

Project Full Title:	Enhancement of public transport efficiency through the use of mobile sensor networks
Project Acronym:	MORYNE
Start-End Years:	2006-2008
EU-Funding:	Unknown
Project Web Site:	http://www.fp6-moryne.org/
References:	Project Web Site; Technical Report (D0.5), State-of-the-Art Report (D1.1), Traffic Management System Design (D4.1), Communication System (D4.3), Reports on industrial and economic impacts (D6.2) as well as on social and environmental impacts (D6.3); Recommendations (D6.6)
Other projects:	ARMAS (Active Road Management Assisted by Satellite) (funded by the European Space Agency ESA); CAPITALS (Capitals' Project for Integrated Telematics Applications on a Large Scale); INCOME (Integration of Traffic Control with other Measures); MUSIC (Management of traffic using traffic flow control and other measures); TASTE (Analysis and development of tools for assessing traffic demand management strategies); PRIME (Prediction of congestion and incidents in real time, for intelligent incident management and emergency traffic management).

Problem addressed:

The use of advanced communication technologies in the transport sector has given rise to the so-called traffic management systems. These are used quite extensively in the road sector and increasingly in the public transport sector to provide information about congestion (in the case of the road) or about schedules and levels of service (in the case of public transport), thus contributing to the increase of the efficiency of the transport system. The efficiency of the transport system is closely linked to the latter's output both in socio-economic terms (less costly, safer and of higher quality) but also in environmental and energy terms.

Objectives:

The MORYNE project developed a traffic management system for buses operating in the urban and sub-urban context using sensor technology installed in the vehicles. Special attention was given to developing a system that provides information not only on congestion but which is able to provide decision-support (to bus drivers) for dealing with adverse situations (like road blocks, bad weather, or other emergencies). In addition the sensors record performance information which is relevant from an environmental perspective.

Geographical scope:
Europe wide with demonstration / testing sites in Germany, France, Belgium, Hungary and Spain.

Consortium composition:
A mixture of technology developers (such as EADS), telecommunication operators (such as Euskaltel), transport institutes (such as KTI), local and federal public administrations (such as Ministry of the Brussels Region), and bus operators (such as the Berlin Buses Authority).

Citizen participation:
None

Description of work:
The project elaborated an architecture for the traffic management systems, validated technologies for the sensors to be installed in buses, developed an in-laboratory demonstrator and carried out field testing.

Outputs:
A prototype for a traffic management system for the urban and sub-urban context to be used in public transport (buses).

Who benefits?
Public transport users. The services are expected to improve in terms of quality and safety.

Who pays?
The system's development was supported by the research programme. Its further development and subsequent deployment will be done on a commercial basis.

8.6 HyFLEET:CUTE Project Fiche

Project Full Title:	Working Together to Speed Commercialization of Hydrogen Powered Buses
Project Acronym:	HyFLEET:CUTE
Start-End Years:	2006-2009
EU-Funding:	Unknown
Project Web Site:	http://www.global-hydrogen-bus-platform.com/
References:	Web Site Documentation; Newsletters
Other projects:	Clean Urban Transport for Europe: CUTE (www.fuel-cell-bus-club.com); Ecological City Transport System ECTOS (www.ectos.is/en); Sustainable Transport Energy Project STEP (http://www.dpi.wa.gov.au/ecobus/1206.asp).

Problem addressed:
The over-reliance on petrol for operating not only cars but also buses is the key factor associated with the negative environmental balance of road transport. Shifting to more environmentally-friendly energy sources is a key strategic objective of the European Union. One of these sources is hydrogen fuel. The effectiveness and efficiency of this technology as well as its safety has however still to be demonstrated and there are still technical problems to be overcome in this respect.

Objectives:
To launch and operate a fleet of hydrogen fuel-cell buses or hydrogen internal combustion engine (ICE) buses around Europe. There are currently 33 hydrogen fuel-cell buses and 2 hydrogen ICE buses operating across Europe. The research accompanies the operation of the fleet in order to assist with the overcoming of technical problems (common in the first phase of the introduction of a new technology) but also in order to ensure and demonstrate its safety, thus contributing to the acceptability of the new technology among the urban population.

Geographical scope:
Project is at demonstration stage, with four sites in Europe, namely London, Berlin, Amsterdam and Iceland and two abroad: Beijing, China and Perth, Australia.

Consortium composition:
The consortium is made up of governmental partners (in China and Australia), car companies (Daimler Chrysler and EvoBus), transport companies (in Germany, UK, Holland etc.) as well as energy companies and infrastructure suppliers (Shell, BP, Total etc.). These industrial partners are completed by research partners from the various demonstration sites (such as Technical University of Berlin, University of Stuttgart, MVV Consulting, PLANET etc.)

Citizen participation:
The installation of fuelling stations had to be approved by the local councils and involved public inquiries. The BP station installed in Essex (UK) was first rejected by citizens because of concerns associated with the visual impact of the station on the green belt as well as safety concerns. This led to a more detailed safety audit.

Description of work:
The first UK hydrogen fuelling station was opened by BP in 2005 in collaboration with First Group, Daimler Chrysler, London Buses and Energy Saving Trust. This is a prototype unit of an underground storage facility. In Berlin two stationary fuel cells were installed (by EPS and AXANE respectively) and also a hydrogen filling station by TOTAL. Research on the latter's operation is being carried out by the Technical University of Berlin. A refuelling station was also set up in Beijing.

Outputs:
Hydrogen fuel-cell and ICE buses as well as re-filling stations in various locations. Based on the experiences made with these fleets, the next generation of both buses and re-fuelling stations is expected to improve in terms of efficiency.

Who benefits?
The urban environment through a reduction of CO2 emissions

Who pays?
This technology is at present at the development and demonstration stage and, therefore, requires intensive public expenditures. Once mature, it is expected to partly substitute gasoline stations, its costs borne by the transport user.

8.7 BIOGASMAX Project Fiche

Project Full Title:	Biogas for Transport
Project Acronym:	BIOGASMAX
Start-End Years:	2006-2010
EU-Funding:	Unknown
Project Web Site:	www.biogasmax.eu
References:	2030 Vision of Biofuels Research Advisory Council; Masters Thesis (Eriksson and Olsson, Chalmers University & Volvo) on the potential of biogas as vehicle fuel in Europe; Web Site Documentation; Newsletters; Strategic Studies; EU Biofuels Directive
Other projects:	Biofuels Research Advisory Council

Problem addressed:
Transport is the number one environmental polluter in cities and, therefore, it is important to reduce our over-reliance on fossil-fuel for cars. Alternative renewable energy sources include biomass converted into biofuels. The vision set by the EU is that by 2030, one fourth of road transport fuel needs will be based on clean biofuels. The current share of biofuels is less than one per cent. Biofuels is based on biomass and it is estimated that up to 18% of agricultural land (in EU) would have to be used for this purpose. This is a contested matter. Beyond this, however, there are other problems faced by biofuels: first, their environmental efficiency has still to be proved (especially for the first- and second-generation biomass products); second, the fuel produced must be such as to be compatible for combined used with diesel in car engines.

Objectives:
The objective of the project is to create a network of biogas-related demonstrations around Europe and to evaluate their economic and environmental impact. These evaluations will contribute to upgrading biogas to a high-quality fuel.

Geographical scope:
Demonstration projects were organized in Göteborg (Sweden), Lille (France), Rome (Italy), Stockholm (Sweden), Bern (Switzerland) and Torun (Poland).

Consortium composition:
In each of the demonstration sites, biogas production and deployment rests with a team comprising municipal and private actors. The evaluation rests with the University of Stuttgart.

Citizen participation:
None reported.

Description of work:
In most cities biogas production is based on municipal waste using anaerobic digestion (degradation of organic matter in an oxygen-free environment) followed by an upgrading process that transforms the biogas into fuel (biomethane).

Outputs:
Demonstrate the successful production and deployment of biofuel and advanced techniques.

Who benefits?
Society and cities as a whole as they rely on less environmentally polluting sources of fuel.

Who pays?
Much research is needed in order to achieve the biofuel target for 2030, the estimated costs of a regulated-market approach estimated at 31 billion per year between now and 2030. This is expected to partly be paid through increase in gasoline prices.

8.8 HOST Project Fiche

Project Full Title:	Human Oriented Sustainable Transport mean
Project Acronym:	HOST
Topic:	"New multi-purpose vehicle technologies"
Start–End years:	2004-2007
EU funding:	2 million Euro
References:	DG Research project synopses
Other projects:	Former or parallel projects whose main results are integrated in the project deliverables or are somewhat similar

Problem addressed:

Mobility in cities gives problems of congestion, energy consumption, pollutant emissions, health and safety. Although passenger transport is always perceived to be the main cause of mobility-related problems, recent studies proved that freight transport impact is also an issue: between 30% and 40% of energy consumed for transport in cities is due to freight transport. Any of the attempts made so far, for either research or demonstration purposes, to have a cleaner mobility based on low polluting vehicles have been successful in demonstrating that cleaner vehicles are technically feasible, but have failed to launch a real market for non-polluting vehicles. For instance, low impact buses have been tested in many research projects, but have not been adopted by city public transport companies because they are more expensive. To lower the impact of mobility on the cities, cleaner vehicles are not enough: an integrated freight and passenger strategy must be adopted. Cleaner vehicles must be designed for the purpose of reducing pollution and prove to be better than conventional ones under any aspect, including costs.

Objectives:

The HOST project aims at developing an innovative modular transport mean suitable for the urban transport of persons and goods. In order to fulfil simultaneously the objectives of extremely low CO2, gaseous and particulate pollutants reduction, within a medium term, the HOST consortium will produce multipurpose modular vehicle platforms capable to integrate, in an optimised and cost effective way, the most promising alternative fuel set, and the newest combustion modes technologies. This multipurpose vehicle (named Human Oriented Sustainable Transport – HOST) can be used for several tasks over a period of 24 hours, thus reducing the investment costs for an environmentally friendly vehicle. The objective of the project is to manufacture the HOST prototype and test it, so to prove the concept.

Geographical scope:
The project is developing the HOST prototype based on an user needs assessment undertaken in three European cities: Oerias (PT), Rome (IT) and Stockholm (SE).

Consortium composition:
The consortium is led by CIRPS – University of Rome "La Sapienza", and it includes mainly universities and private technology providers.

Citizen participation:
End users are involved in the definition of the technical specifications of the new vehicle. However, the end-users are mainly decision-makers from mobility authorities or agencies in charge of introducing new technologies and services, whereas the final users (the citizens) are not involved in this technology assessment exercise.

Description of work:
HOST proposes to use one modular vehicle platform with four different cabins to accomplish four different transport tasks, namely, night-time collective taxi, daytime car sharing services, daytime freight collection and distribution and night-time garbage collection. To verify that such a concept was feasible and to dimension the low environmental impact of such a vehicle, a user needs assessment was organised in Oerias (PT), Rome (IT) and Stockholm (SE). The first act of the user needs analysis aimed to introduce a new method to design vehicles: instead of starting from the technology and looking for a proper application of it, HOST investigated a number of services and defined the needs for each of them. This user needs approach allowed to define the vehicle technical specifications, capable of satisfying simultaneously all the needs and potential markets identified for such a vehicle. The three cities were asked to choose at least two from among the four services listed above. The technical specifications that have arisen constitute the basis for the design and the following construction phase.

Outputs:
The progress made was mainly related to the definition of the vehicle's technical specifications, which are now completed. The main achievements of the initial study were the definition of the HOST prototype as a whole, in terms of dimension and bulk of platform (chassis and suspension) as well as the various boxes constituting the power train and the human-machine interface. The results obtained confirm that a common power train can accomplish the four tasks selected by adding modules of extra energy storage or an auxiliary power unit. These technical specifications led to the design and construction of a vehicle which could economically supply freight and passenger services in cities and allow, if adopted with some accompanying measures, city mobility to become more sustainable.

Who benefits?

The adoption of multi-purpose freight and passengers vehicles will benefit most the city mobility and/or waste collection or urban freight distribution agencies, that could find convenient to share fleets of HOST vehicles to be used for different purposes at different times of the day and night. Benefits should be seen mainly in terms of investment cost reductions.

Who pays?

To the extent that the HOST vehicles will become a marketable city technology, they will be mainly purchases by city logistics centres and mobility or waste collection agencies. However, by sharing multi-purpose vehicles they can reduce their investment costs, so they will not pay an additional bill as, on the contrary, they can save on the cost of fleet renovation.

8.9 ENFICA-FC Project Fiche

Project Full Title:	Environmentally Friendly Inter-City Aircraft powered by Fuel Cells
Project Acronym:	ENFICA-FC
Start-End Years:	2006-2009
EU-Funding:	2.9 million Euro
Project Web Site:	http://www.enfica-fc.polito.it/en
References:	Project Web Site; Press Release; Project Overview Document.
Other projects:	No other project identified.

Problem addressed:
Air transport is a major environmental polluter and the fact that air transport is increasingly also used for small-distance trips around main cities (to avoid congestion) is a source of concern. Some experts believe it is possible to render small-distance air transport more environmentally friendly through the deployment of hydrogen and fuel-cell technologies in the propulsion systems of light aircraft. This is also expected to reduce the noise emissions of these aircrafts.

Objectives:
To develop and demonstrate for the first time an electric-motor light aircraft powered by fuel cells.

Geographical scope:
EU-wide.

Consortium composition:
The consortium brings together technical universities (like the polytechnic Milan which coordinates the project) with national aircraft industries (like EVEKTO in Czech Republic and Israel Aircraft Industries IAI) and related product designers (like Air Products UK).

Citizen participation:
None reported

Description of work:
The project comprises a feasibility study to provide an overview of the aircraft systems that can potentially make use of hydrogen or fuel-cell technology in their propulsion systems. Based on this feasibility study, the consortium plans the development and demonstration of a two-seat electric motor airplane powered by fuel cells.

Outputs:
A two-seat electric motor airplane powered by fuel cells.

Who benefits?

Light aircraft is primarily used for the purpose of sport or by business people for short trips.

Who pays?

Obviously the aircraft industry is of the opinion that the demand and acceptability of light aircraft as a means of travel (and their commercial deployment) could increase if these were to be more environmentally friendly.

8.10 SILENCE Project Fiche

Project Full Title:	Quieter Surface Transport in Urban Areas
Project Acronym:	SILENCE
Start-End Years:	2005-2008
EU-Funding:	Unknown
Project Web Site:	www.silence-ip-org
References:	Project Presentation, Project Newsletters (1-4), Deliverables D1, D5, and D7.
Other projects:	QCITY (Quiet City Transport, www.qcity.org); INMAR (Noise reduction by intelligent materials); SILVIA (Sustainable road surfaces for traffic noise control, www.trl.co.uk.silvia)

Problem addressed:
Noise limits in cities have become more stringent over the years. Despite this, noise levels in urban centres continue to be high. Controlling surface transport noise is the first step towards the reduction of citizens' exposure to noise.

Objectives:
The SILENCE project aims to reduce noise emission in cities by 10 dBA through technological improvements (in road and rail vehicles, tyres, road surface, rail infrastructure), in addition to coming up with softer measures and proposals for noise abatement in cities (through better traffic management or city planning).

Geographical scope:
Europe-wide.

Consortium composition:
The consortium is led by AVL and is made up by 42 partners comprising city authorities, urban public transport operators, research organizations, vehicle manufacturers (road and rail) and equipment suppliers. POLIS is also part of the consortium.

Citizen participation:
Citizen input through (a) psychoacoustic listening tests carried out in various contexts for different technologies, (b) a survey regarding noise perception and annoyance as well as through (c) focus groups (five in total) set up to discuss noise perception and acceptance.

Description of work:
The project focuses on the development of technologies and systemic solutions for decreasing surface transport noise from both rail and road. It has furthermore involved surveys of citizens regarding their perception of noise and their levels of annoyance. This survey was carried out in Germany, UK, France,

Holland, Italy, Poland and Sweden. Habitation and sleep turned out to be the most significant predictors of annoyance, whereby noise sensitivity and noise load did not correlate (meaning those persons that are especially noise sensitive will be annoyed by noise regardless of the noise load). (This questionnaire can be filled in by any interested citizen at www.ifado.de/silence/)

Outputs:

Technological solutions as well as recommendations about how to reduce noise through traffic management and city planning. The former include traffic calming measures such as dummy humps rumble devices or cycle lanes; junctions such as roundabouts and green waves; dedicated lanes for specific vehicles; and automatic traffic control measures. In terms of city planning, many cities were found to lack the institutional capacity but also the knowledge for correctly combining noise abatement measures towards a significant reduction of noise levels in cities.

Who benefits?

Urban citizens.

Who pays?

Public transport operators (in the case of rail), state and city municipalities (in terms of investments in road / rail infrastructure) and road / rail users.

9 Annex IV. Project Fiches: Strategic Research

9.1 TRANSPLUS Project Fiche

Project Full Title:	TRANSport, Land Use and Sustainability
Project Acronym:	TRANSPLUS
Topic:	Land use and transport policies
Start–End years:	2000 - 2004
EU fund:	1.965.000 €
Project Web Site:	www.transplus.net
References:	TRANSPLUS Guidelines, Land Use Planning measures State-of-the-Art Report (from PLUME)
Other projects:	ECOCITY (Design of ecological settlements, 2000-2004; www.ecocityprojects.net); PROPOLIS (Integrated land use and transport policies, planning tools and assessment methodologies, 2000-2004; www.ltcon.fi/propolis); PLUME (Thematic Network on Land Use and Transport Research, 2003-2005; www.lutr.net); SCATTER (Urban Sprawl, 2000-2004; www.casa.ucl.ac.uk/scatter/).

Problem addressed:

European urbanised areas have expanded their land areas significantly between 1960 and 1990. In many cases, European cities are not longer clearly demarcated areas: the borders between urban centres and their peripheries fade out and they become so-called “urban fields”. Also, current urban development in Western Europe has been characterized by the flight of industries to suburbs or even to foreign countries. In addition, growing wealth and increasing demand for an improved quality of life are reflected in the increasing consumption of land and space, demand for privacy and better living conditions and access to green space. In most urban areas, urban sprawl (a relative shift in the location of activities such as housing, industries, retail and other services towards the peripheries of the urban agglomeration) is ongoing and the highest population growth rates are in satellite towns and low density sub-urban neighbourhoods. Increasing land values and property prices in cities make housing in location that are accessible to livelihood opportunities and services increasingly unaffordable for many segments of the population. This process of sub-urbanisation is turning monocentric urban areas into complex polycentric urban conurbations.

This sub-urbanisation of residents and the clustering of economic and service activities (e.g. shopping-malls) are leading to increasing average trips length and suburbs-to-suburbs trips. Due to the fact that low density suburbs cannot be served by regular public transport services, people living in the suburbs is

often obliged to use the car for everyday mobility (this phenomenon is named "car dependency"). Indeed, the choice of the car as the main mobility mean has skyrocketed over recent years, and in spite of efforts to promote public transport alternatives to car use and other non-motorised transport modes, the share of people using public transport is decreased, especially in the new EU member states. As a whole, urban sprawl results in more traffic: passenger transport demand is expected to grow 40% above 1990 levels in 2010 and a 25% increase in car ownership is expected over the same period.

Objectives:
Scientific theory tells us that there is a cycle of feedback between land use and transport, where the distribution of land uses (origins and destinations) gives rise to a demand for travel between those origins and destinations. To meet this demand, transport infrastructure and services are provided, which in turn attracts land uses and urban development to locate at accessible locations. The mission of TRANSPLUS was therefore to identify best practices in the organisation of this interaction between land use planning and transport infrastructure planning and policies, in order to reduce car dependency in European cities and regions.

Geographical scope:
The project has investigated 23 case studies of cities where different forms of land use and transport policies have been implemented or are planned. The cities surveyed in TRANSPLUS include: Vienna, Brussels, Gent, Aalborg, Helsinki, Nantes, Orleans, Cologne, Dresden, Munster, Tubingen, Brescia, Rome, Valletta, Gdansk, Warsaw, Evora, Lisbon, Bucharest, Ploiesti, Barcelona, Bilbao, Bratislava, Amsterdam, Groningen, Bristol, Croydon (London), Merseyside (Liverpool). Other related projects have examined the situation in Bad Ischl in Austria, Trinitat Nova in Barcelona, Gyoer in Hungary, Vuores in Tampere, Trnava in Slovakia, Tubingen in Germany, Umbertide in Italy, Helsinki, Brussels, Naples, Vicenza, Bilbao, Inverness and Dortmund, as well as Brussels, Stuttgart, Bristol, Helsinki, Rennes and Milan.

Consortium composition:
The consortium included 19 entities, mainly academic institutes and some public land use and transport planning bodies at regional level (CERTU, Lyon) and city level (STA, Rome). Also the consortia of the other LUTR projects were mainly composed by academic or private research institutes.

Citizen participation:
TRANSPLUS and the other LUTR projects have not directly integrated the citizens into the picture. There has been a wide exchange of information within the research community and between scientist and transport and land use policy makers, but the dissemination towards the citizens was almost absent. One exception was the ECOCITY project, focusing on the development of concrete cases of sustainable settlements which in some cases involved

residents associations at the neighbourhood level. In addition, TRANSPLUS has carried out case studies of stakeholder and citizen participation and how these impact on urban and mobility planning.

Description of work:
TRANSPLUS has followed a case study approach, involving consultants and European cities interested in exploring and adopting innovative policy measures into a process of: 1) analysis of megatrends in urban development and strategic approach to achieve sustainable urban transport; 2) analysis of good practices of integrated land use and transport policy formulation, planning, implementation and evaluation in a number of European cities; 3) analysis of the barriers to policy integration and transferability of good practices between different cities; 4) analysis of methods and good practices to promote citizens and stakeholders participation in land use and transport policy making.

Outputs:
The TRANSPLUS and its sister projects provide useful guidelines for avoiding urban sprawl or ensuring that city growth is sustainably managed. Linking urban design to public transport design and more generally mobility research is in this respect key.

An example of integrated land use and transport policy is provided by the Dutch new town of Houten, next to Utrecht. Houten has a central railway station with direct cycle and bus connections radiating from it, while the road network is deliberately more indirect, requiring the more circuitous negotiation of a ring road for motor traffic. Here, peak period car trip generation was found to be 10 per cent less than the national average, despite car ownership being amongst the highest in the Netherlands. Use of the car for shopping trips was also found to be between 8 and 13 per cent less than in comparable urban areas. However, trip distances for those shopping trips that are made by car are longer than in the comparator cases.

Who benefits?
The decentralized polycentric suburban development – which is the main result aimed to by integrated land use and transport policies - offers advantages to the individuals in the form of reduced travel times and lower housing costs, as well as higher consumer satisfaction due to a better liveability of the urban environment. The community as a whole will benefit from a reduced urban sprawl, avoiding the associated increase of infrastructure costs, travel distances and loss of land. However, it not possible to quantify the net benefit of LUT policies in one-size-fits-all figure, because the quality and quantity of these benefits strongly depend on the local urban design, transport patterns and urban sprawl circumstances.

Who pays?

Whereas the benefits of a better integrated land use and transport planning can be widespread, affecting people quality of life in terms of reduced travel needs, lower housing costs and increased liveability of the urban environment, there are no specific categories of users that would be paying a bill from the adoption of land use and transport policies.

9.2 TRANSECON Project Fiche

Project Full Title:	Urban Transport and Local Socio-Economic Development
Project Acronym:	TRANSECON
Project Web Site:	www.boku.ac.at/verkehr/transecon.html
References:	Final Report (Deliverable 7), project website

Problem addressed & objectives

Urban transport policies and infrastructure investments have a wide socio-economic impact. TRANSECON provides qualitative and quantitative evidence of direct and indirect effects of and impacts of transport infrastructure investments in 13 European cities. The long-term effects of implemented large scale infrastructure investments of all types of mode were analyzed using existing data bases and stakeholder interviews. The selected case studies cover a good range of city and intervention types (in terms of geographical distribution, city size, transport policies and investments).

Urban transport policies and investments may have wide socio-economic impacts not only along the corridor or within the areas they are designed to serve, but throughout the city region and throughout time. The effects that are not covered by traditional cost-benefit analysis are examined in TRANSECON, in particular the indirect effects and indirect network effects. Indirect effects (third party effects or socio-economic effects) are long-term effects that occur in markets other than the transport system. They are caused by the changes in accessibility and other effects linked to the transport network and lead to changes in the labour market, product market, health and environmental situation, etc. The indirect network effects in turn are caused by the changes in indirect (third party) effects. Changes in the labour market, product market, etc. influence the transport demand again. This transport demand produces changes in the traffic flows, which are generated through these other markets.

Geographical scope:

The case studies involved cities of different sizes

Consortium composition:

The project involved 18 organizations (6 universities, 2 research centers and 9 consultancies) from 9 EU Member States, an EFTA country and a (then) Accession country.

Citizen participation:

There was no citizen participation.

Description of work:

The case studies include one bicycle network system, two S-Bahn systems (suburban rail), six metro systems (and one that is not a proper metro system) and two tram/trolleybus systems (and one that is not a proper tram/trolleybus system). A number of the case studies refer to investments in the centre while others relate to investments in the public transport system between the suburbs and the city centre. Furthermore, the cases are distinct because the types of investments differ (the case studies include, for example, investment for a new through-station, or new/additional metro lines, extension of an existing tram line, etc.). The project examined which socio-economic effects occurred where (spatial), when (temporal), how intensive and under which framework conditions. These effects were measured as the difference between two situations – the actual situation with the implemented transport infrastructure investment and the hypothetical situation, if the infrastructure investment had not been implemented.

Outputs:

Recommendations included the following: Greater priority should be given to the efficiency of investments, when traffic policy decisions are taken. Investments in surface public transport with priority routes are more efficient than investments in underground public transport. Investment in light rail systems are more cost efficient than those in conventional railways. Improvements of existing rail routes or re-use of existing routes are more efficient than building new routes. Investments in bicycle traffic with inter-modal interfaces (e.g. bike and ride) are highly efficient.

Additional results indicated that large transport infrastructure investments can stimulate re-urbanization developments. A consistent program of measures such as the promotion of environmental friendly modes supporting intermodality (e.g. bike and ride, park and ride), car restrictions, etc. should be in place.

Who benefits?

Predominantly authorities involved in transport planning/urban planning, as well as transport operators.

Who pays?

Municipalities, federal/local governments.

9.3 SCATTER Project Fiche

Project Full Title:	Sprawling Cities and Transport: From Evaluation to Recommendations
Project Acronym:	SCATTER
Project Web Site:	www.casa.ucl.ac.uk/scatter
References:	"Recommendations to Local and Regional Authorities" (Deliverable 7), "Sprawling Cities and Transport – From Evaluation to Recommendations" (Final Report), project website

Problem addressed & objectives

Urban sprawl (the uncoordinated growth of cities, particularly around their edges or peripheries. It is usually defined by three key concepts: low density, uncoordinated urban growth, and spatially separated land uses) is widespread across Europe. It induces a high level of car use and, usually, congestion on roads giving access to city centres. To limit the damages caused by urban sprawl in terms of congestion, air pollution and energy consumption, several European cities are implementing suburban public transport services, such as heavy or light rail. However, by improving accessibility, incentives for a new wave of urban sprawl are created. Therefore, in parallel with these new public transport services, accompanying measures have to be elaborated and implemented to prevent, mitigate or control urban sprawl. Spatial patterns which result from sprawl, characterized by low population density and spatially segregated land uses is unfavourable to the development of public transport, i.e., urban sprawl induces high level of private car use. Positive effects are usually limited to the individual level – access to cheaper private residential developments.

The SCATTER project tackles this issue which closely interlinks land use and transport. The key aim of the project is to promote sustainable development. In addressing transport, land-use and environment in the urban context, SCATTER covers the most important threats to the well-being of the majority of European citizens.

Geographical scope:
The case studies covered the cities of Bristol, Brussels, Helsinki, Milan, Rennes and Stuttgart. However, the recommendations are intended for any small, medium-sized or large city implementing new public transport which will improve the accessibility to suburban areas, for cities facing sprawl, for suburban municipalities involved in sprawl process or any cities concerned with sustainable urban development.

Consortium composition:
STRATEC, an independent consultancy agency made up of a multidisciplinary team, was the project leader. The other partners included The Centre for Advanced Spatial Analysis (CASA), an initiative within University College London, Steinbeis Applied System Analysis GmbH, specialized in spatial planning, transport planning, market analysis and the optimization of technical systems, WSP Finland, an international company offering design, research and consultancy services mainly in the sectors of transport, infrastructure, environment, etc., the Centre for Studies on Urban Planning, Transport Utilities and Public Constructions in France, TRT Trasporti e Territorio Srl, an Italian consultancy specialized in research, quantitative analysis, strategic planning, economic and financial evaluation of transport and land use policies, Strategic Transport and Infrastructure Research and Planning in Helsinki and the Centre d'Études techniques de l'Equipement de l'Ouest in France.

Citizen participation:
There was no citizen participation in the project.

Description of work:
To identify and measure sprawl, SCATTER took a "poly-centric approach", i.e. when evaluating the effects of policies, two types of indicators were calculated – the first ones were related to the urban centre (as opposed to the peripheral areas) and the second ones were related to all the urban zones (all zones urbanized). Three simulations were carried out to evaluate the effects of policies on sprawl, namely for Brussels, Helsinki and Stuttgart (for Brussels, the urban centre was defined as the Brussels-Capital-Region, for Helsinki it was the city centre and for Stuttgart the city of Stuttgart. The urban zones were defined in Brussels as the total communes defined as urban in the regional land use plans (60 communes in total), in Helsinki as the entire metropolitan area and its suburbs and the outer urban ring (37 communes) for Stuttgart.

Outputs:
SCATTER produced eight policy recommendations:

Tax on suburban residential development ("impact fee") – applying a tax on suburban residential developments to internalize a part of the external costs generated by these new housings in terms of equipment and infrastructure.

Tax on offices located in zones not served or poorly served by public transport – This measure is intended to induce companies to establish their offices in A type zones.

Congestion pricing – this means increasing the cost of car use during peak hours in congested areas.

Reduction of the fare of public transport only in the urban centre

Land use and land rent regulation by the authorities (through negotiations, exchanges and public-private partnerships) – if measures aiming to increase the concentration of population in urban areas are achieved, the result could be an increase in the land rent in the urban centre.

Intermediate housing/urban design, or how to combine household social aspiration and density – this is a co-called “push” measure, aimed to make the urban centres more attractive to households and includes the development of alternative housing forms, intermediate between collective housing and individual single-family housing.

To control urban sprawl, there is a need for a (more or less) formal supra-municipal structure of cooperation between the concerned institutions to achieve urban management at the scale of the metropolitan area.

Symbolic or cognitive actions – cognitive refers here to the issue of how to build consensus on the objectives and the means to achieve them. Such measures are therefore crucial to increase the awareness among the various actors, including local and regional public authorities, the private sector and citizens.

Who benefits?

The main beneficiaries are governments, authorities involved in urban planning, transport and environment, but also indirectly citizens.

Who pays?

For three of the eight measures, the “polluter” would pay (i.e. house/property owners in sprawl areas or businesses and car users), local government if fares are reduced

9.4 TISSUE Project Fiche

Project Full Title:	Trends and Indicators for Monitoring the EU Thematic Strategy on Sustainable Development of Urban Environment
Project Acronym:	TISSUE
Project Web Site:	http://cic.vtt.fi/projects/tissue/index2.html
References:	Final Report – Summary and Recommendations, project website

Problem addressed & objectives

The overall objective of the project was to analyze trends of sustainable development of urban environment, to collect and assess existing sets of urban sustainable development indicators and to define a harmonized set of indicators for monitoring the sustainable development of urban environment. TISSUE analyzed and developed indicators from the following viewpoints: sustainable urban management, urban traffic, urban construction, urban design and urban environment. The focus was on the ability of indicators to support monitoring of sustainable urban development. The five 'themes' had sub-categories (e.g., the indicators for 'sustainable urban transport' were 'passenger transport demand', 'modal split (share of trips)', 'pedestrian infrastructure and bicycle infrastructure', and 'traffic safety'). How these sub-categories of indicators can be determined is described as well ('definition and measurement', 'policy relevance' and 'consensus and feasibility').

Geographical scope:

The geographic scope is quite general (applying to cities of all sizes)

Consortium composition:

Seven research organizations were involved, as well as five organizations representing cities and local municipalities (the Technical Research Centre of Finland coordinated the project).

Citizen participation:

There was no citizen participation in the project

Description of work:

Indicators were collected and structured into a database, comparative research on existing sets of indicators to determine whether they are able to provide the information needed to monitor the developments at local level, whether they can be used to assess trends at EU level, and whether their implementation is viable.

Outputs:

The main results are a context description of sustainability indicators of urban environments, analyses and selection of sustainable urban trends and

concerns, assessment of existing sets of indicators and sustainable urban indicators to monitor sustainable development of urban environments.

Who benefits?

All stakeholders involved in trying to achieve sustainable development in urban environments (municipalities, regional/national governments, the EU, urban planners, etc.)

9.5 PTACCESS Project Fiche

Project Full Title:	Public Transport Systems Accessibility for People with Disabilities in Europe
Project Acronym:	PTACCESS
Start-End Years:	2007-2009
EU-Funding:	Around 1.5 million
Project Web Site:	www.ptaccess.eu
References:	Project Web Site; State-of-the-Art Report on Accessible Public Transport (D1.1)
Other projects:	EURO-ACCESS (www.euro-access.org) is concerned with the needs of older citizens who are users of public transport; LIVINGALL (www.livingall.eu) is charting the technical measures that can be used for making public transport more accessible to disabled users; UNIACESS (http://w3.euve.org/uniaccess) on the design of universally accessible public transport systems; ASK-IT (www.ask-it.org) on the potentials of ambient intelligence for addressing the needs of persons with disabilities in the public transport sector.

Problem addressed:
In many European countries public transport facilities continue to display shortcomings with regard to their accessibility to people with disabilities. National organizations representing persons with disabilities have long been complaining, calling for faster and effective action to overcome these problems. Upgrading public transport facilities to meet the needs of disabled persons is one objective of such organizations. Ensuring that new facilities are designed from the outset taking into account the needs of various user groups is another key concern.

Objectives:
Despite its commitment to overcoming discrimination vis-à-vis persons with disabilities in all areas of life, the European Commission had to admit that it lacked data and information regarding the shortcomings of public transport regarding persons with disability. The PTACCESS project as well as EURO-ACCESS and LIVINGALL (and the rest) were therefore launched to support the Commission to gather this information and, on this basis, elaborate a policy strategy for rendering public transport friendlier vis-à-vis persons with disabilities (or older persons who face disabilities due to old age).

Geographical scope:
The study covers the EU-25.

Consortium composition:
A small consortium of three partners working in the field of mobility research and transport policy analysis from Austria, Germany and the UK. A fourth organization, 'Independent Living' is a non-governmental organization seeking to promote the interests of persons with disabilities.

Citizen participation:
The interests of persons with disabilities are surveyed through interviews with relevant stakeholders as well as through the participation of the NGO 'Independent Living' in the project.

Description of work:
The study has four components. First it audits public transport systems across the EU from the perspective of the needs of disabled persons. This allows, among others, the identification and description of good practices in the field. Additionally the project explores the impacts of these shortcomings on the lives of disabled persons. The study covers the situation of buses, trams and trains as well as stations. It builds on document analysis but also site visits and interviews with relevant stakeholders in the various countries.

Outputs:
A solid knowledge base on which to build policy recommendations for the upgrading of existing infrastructure / fleet and guidelines for the construction of new lines / stations. This, in turn, is likely to input into future standardization work.

Who benefits?
Persons with disabilities.

Who pays?
Designing public transport facilities in ways that are compatible with the needs of persons with disabilities is likely to be standardized and legally obligatory in the future.

9.6 ASSET-EU Project Fiche

Project Full Title:	Assessing Sensitiveness to Transport
Project Acronym:	ASSET EU
Start-End:	2008-2010
Project Web Site:	www.asset-eu.org
References:	Project website; Deliverable 1 on the definition of environmentally sensitive areas
Other projects:	ALPNET (www.iccr-international.org/alpnet 2000-2002), dealing with the Alpine sensitive area and transport policies

Problem addressed:
ASSET-EU aims to develop the scientific and methodological capabilities to implement European policies aiming at balancing the protection of environmentally Sensitive Areas (SA) with the provision of an efficient transport system. Although the concept of sensitive areas appears frequently in the context of EU transport policies, there is no scientific or political agreement on its definition, nor is there an agreed approach to address the specific concerns associated to transport related SA (TSA). Therefore, the first part of the project provides a set of sensitiveness criteria to identify TSA and apply these in a mapping of TSAs across the EU, allowing for the identification and prioritization of critical sustainability issues geared to the development of the Trans-European Transport Networks (TEN-T). The second part of the project concentrates on analyzing policy instruments with regard to their applicability to different categories of TSA and the identification of adequate policy packages with a focus on market-based instruments.

Geographical scope:
Eight case studies will be carried out, including Trans-Pennine Corridor (Liverpool to Hull in northern England), Copenhagen, Budapest, Pirenees, Manzanares River National Park (in very close proximity to Madrid), Mediterranean Sea, Frankfurt Airport and Omberg (bordering the large lake Vättern in Sweden).

Consortium composition:
The project involves 11 partners in 9 countries, covering all relevant disciplines (natural scientists, economists, transport policy, social policy experts) and a wide geographical scope in Europe. The partners include research organizations, consultancies, SMEs and academic institutions.

Citizen participation:
No citizen participation as of yet.

Description of work:

The proposed methodology and the policy instruments will be assessed in detail in 10 case studies covering (i) mountainous areas, (ii) urban/metropolitan areas, (iii) natural/protected areas, and (iv) coastal areas, as well as different modes, types of traffic and geographical situations. Finally, policy and operational guidelines for TSA will be developed, notably building on the cross site evaluation of the case studies.

Outputs:

As the project is still in an early phase, the stated outputs are the development of a common framework of definitions, criteria and valuation parameters for Transport Sensitive Areas (TSA) to be followed by a methodology for assessment of sensitiveness in TSA. Using this methodology, TSAs across EU will be mapped. The final product will be policy guidelines for protecting transport sensitive areas, for instance through higher pricing regimes and/or restrictions on traffic volume.

Who benefits?

The direct beneficiaries are policy makers at EU, national and urban level who are keen to develop policies for addressing the problems of transport sensitive areas. The end users are of course the citizens living in these areas.

Who pays?

The measures currently under discussion for dealing with transport sensitive areas would imply higher contributions from road (car) users through road pricing; and restrictions on the mobility of car users. They would therefore be the main losers of the reforms under consideration.

9.7 COUNTERACT Project Fiche

Project Full Title:	Cluster of User Networks in Transport and Energy Relating to Anti-Terrorist Activities
Project Acronym:	COUNTERACT
Project Web Site:	www.counteractproject.eu
References:	project website, Global Background Assessment (Deliverable 1)

Problem addressed & objectives:

Transport in Europe, and in particular mass passenger transport, is facing a considerable threat from terrorism, which seeks to inflict mass civilian casualties. Increased security through improved anti-terrorist measures are seen as essential by all key stakeholders associated with transport security, including operators, passengers, associated service and industrial providers, governments and the EC. A combination of sound organizational practices, surveillance and detection systems and greater attention to response and resilience capabilities can do much to possibly reduce the frequency and intensity of attacks. The main objective is to improve security against terrorist attacks aimed at public passenger transport, intermodal freight transport and energy production and transmission infrastructure. The project is divided into three clusters – energy, freight and public transport. The key objective in the Energy Cluster is a set of 'best practice' recommendations to enhance the protection of energy critical infrastructures against the threat of terrorist acts and to improve preparedness and response to incidents and crises. This objective will be achieved principally through the acquisition and sharing of knowledge and experiences. The main objective of the Intermodal Freight Cluster focuses on enhancing the knowledge base in threats, risks and vulnerabilities, including understanding the security threats specific to freight transport activities. In the Public Passenger Transport Cluster the objective is to tackle the current security challenges and help the public transport sector to better prepare to prevent and handle incidents by increasing awareness of the public transport sector regarding terrorism threats and potential preventive measures, improving organizational measures that facilitate immediate and coordinated action to respond to threats and incidents, with special attention to interagency collaboration, and promoting specific training schemes for public transport staff as a strategy for the prevention of dangerous situations, as well as for incident response.

Geographical scope:

The project generally addresses the entire EU

Consortium composition:

COUNTERACT consists of 16 partners. They include transport and energy experts, as well as security specialists (including ASSTRA, the national

association of local public transport in Italy, COLPOFER (Cooperation between railway police forces), a part of the Paris-based International Union of Railways, DHL, the express delivery service, SAFEXPERT, a French Information Technology consulting firm, and Isdefe, an independent Spanish Systems Engineering government-owned firm (Spanish Ministry of Defence), to name a few).

Citizen participation:
No citizen participation is foreseen.

Description of work:
The project will review existing security policies, procedures, methodologies and technologies to identify the best practices which in turn will be promoted throughout the relevant security community in the EU.

Outputs:
As the project is still in an early phase, there are no outputs yet available, but the output the project aims to achieve is to improve security against terrorist attacks aimed at public passenger transport, intermodal freight transport and energy production and transmission infrastructure.

Who benefits?
EU, national/regional and local governments, transport operators, stakeholders involved in transport security and, of course, the urban citizens.

Who pays?
National/local governments

9.8 PRONET Project Fiche

Project Full Title: Pollution Reduction Options Network
Project Acronym: PRONET
Project Web Site: www.proneteurope.eu
References: project website

Problem addressed & objectives
The main objective of PRONET is to collect good practices related to either indoor air quality or traffic. These good practices will be analyzed within the network for their effectiveness. A network between institutes is established which can be used to promote implementation of successful initiatives in other regions in Europe. Exchange and evaluation of interventions on environment and health exposure reduction measures on a regional level will be facilitated. The project will develop an information base on useful practices to reduce environmental related health hazards and organize a platform for relevant stakeholders by setting up a network of policy makers, authorities, researchers and stakeholders at European, national and regional and local level to identify and assess pollution reduction options.

Geographical scope:
The project takes a general approach and does not focus on any particular city size.

Consortium composition:
There are eight core partners and nine associate partners. The coordination is shared between the Public Health Services Gelderland-Midden (Netherlands) and the Ministry of the Environment and Conservation, Agriculture and Consumer Protection of the State of North Rhine-Westphalia. Other partners include Stockholm County Council, the Dutch Ministry of Housing, Spatial Planning and the Environment, Medical University of Vienna, Public Health Agency of Barcelona, among others.

Citizen participation:
There us no citizen participation foreseen

Description of work:
The structure of the project is based on the collaboration of national and regional partners and the exchange of information between them. The collection, analysis and coordination of information related to exposure reduction options will be carried out, and good practices shared between the regional and national authorities. PRONET focuses predominantly on the policy measures and strategies used for traffic related environmental and health problems and indoor air problems. It will organize international workshops

aimed at bringing together a range of professionals to analyze, debate, compare and disseminate experiences and to provide recommendations.

Outputs:
The project is still ongoing, but aims to facilitate exchange and evaluation of interventions on environment and health exposure reduction measures on a regional level and promote implementation of successful initiatives in other regions of Europe.

Who benefits?
Local governments, researchers, network organizations, non-governmental organizations

Who pays?
Local governments, national governments.

9.9 EURFORUM Project Fiche

Project Full Title:	European Research Forum for Urban Mobility
Project Acronym:	EURFORUM
Project Web Site:	www.eurforum.net
References:	Strategic Research Agenda for Urban Mobility, project website

Problem addressed and objectives:
The overall objective of EURFORUM was to identify and develop innovative concepts and tools for organizing effective coordination at EU level between all relevant stakeholders regarding research on the urban mobility of passengers and goods. The main issues the project identified as the focus for future research included "user needs and behaviour" (better understanding of the mobility behaviour of individuals and businesses, improving accessibility and sustainability of cities, knowing the user – market research, impact of societal changed on mobility behaviour); "urban structure" (analysis and assessment of interactions between urban land use and transport, making land development more sustainable through more efficient taxation, more efficient use of existing transport infrastructure); "mobility services" (towards seamless multimodal transport, compatible urban mobility services, customization of services); "integrated systems" (reducing negative impacts of urban transport (safety, security environmental impacts), integration of urban transport networks (infrastructure sharing, intermodality), strengthening of the alternatives to the private car); "urban transport demand analysis and modelling for policy support" (improvement of data collection on passenger transport and freight transport, standardization of survey design and indicators for urban passenger and freight transport, etc.).

Geographical scope:
Cities/regions of all sizes across the EU

Consortium composition:
The project included the International Association of Public Transport as the coordinator, the Technical University Dresden, European Conference of Transport Research Institutes, European Metropolitan Transport Authorities, ASSTRA, Italy's Transport Association, POLIS, a network of European cities and regions from accross Europe, which promotes and advocates innovation in local transport and CERTU, France's Research Center on Transport, Urbanism and Public Buildings.

Citizen participation:
There was no citizen participation.

Description of work:

Two plenary sessions were organized to validate key findings of the project, namely, the State of the Art and Vision and the Strategic Research Agenda for Urban Mobility and the organisation and composition of the proposed permanent urban mobility research EU advisory structure..

Outputs:

EURFORUM published a Strategic Research Agenda, which addresses research issues in the particular field of urban transport considering all urban transport modes and focusing on intermodality for both passenger and freight transport. It proposed a permanent advisory structure at the European level, which can effectively represent stakeholders of European research on urban mobility.

Who benefits?

The key stakeholders in the field of urban mobility and identified by the project are users and user-related organizations, administration, political institutions and other non-profit organizations, businesses (under public or private ownership) and research providers.

9.10 URBAN-NET Project Fiche

Project Full Title:	Supporting Urban Sustainability Research in Europe
Project Acronym:	URBAN-NET
Project Web Site:	www.urban-net.org
References:	Future Research Areas in the Field of Urban Sustainability, Initial Review and Comparison of National Urban Research Programmes, project website

Problem addressed & objectives

URBAN-NET addresses issues of urban sustainability in Europe. Its overall aim is to increase the cooperation and coordination between EU Member and Associated States through networking and collaboration on joint research activities. The project's core focus will be integrated approaches to issues relating to urban sustainability.

Geographical scope:

URBAN-NET examines national urban research programs, i.e. all areas/cities included in such programs are considered in this project.

Consortium composition:

URBAN-NET comprises 16 partners from 13 countries, led by the Scotland and Northern Ireland Forum for Environmental Research, and includes as partners ministries (e.g. Austrian Ministry for Science and Research, Spain's Ministry of Housing, France's Ministry of Transport), research councils (including Formas, the Swedish Research Council for Environment, Agricultural Sciences and Spacial Planning and the Scientific and Technological Research Council of Turkey), research agencies and consultancies.

Citizen participation:

There will be no citizen participation in URBAN-NET.

Description of work:

URBAN-NET will employ both top-down, strategic approaches to identify research topics and bottom-up, problem-driven methods to determine the common strategic issues and future agenda for urban research. Furthermore, the cooperation and coordination activities between Member States will be tested and implemented, and mechanisms established to achieve durable and lasting trans-national collaboration.

Outputs:

As the project is still ongoing (until 2010), outputs are not yet available, but the plan is to create a searchable database of national & regional urban research programmes and research needs and a long-term program for the trans-national funding of urban research in Europe.

The first results of the project identify research areas for which substantial need for further research at European level is needed. These areas include: integrated urban management through multi-sector/ actor governance; demographic change – opportunities and consequences for cities; competitive urban futures and adaptation to globalisation; shrinking cities; social stability and deprived neighbourhoods; migration and diversity as a challenge and an opportunity; health, quality of life and public spaces; proximity, access, transport and mobility; urban sprawl or compact city – integrated re-use of land; environmental management and social behaviour; housing and urban design in highly differentiated cities; climate change and risk management; energy efficiency and infrastructure management; commercial locations and centralized supply areas, and heritage, identity, culture, tourism and branding.

Who benefits?

European, national, regional and local policymakers involved in urban sustainability.

Who pays?

The project is about defining national and joint research programmes to be paid by national governments.