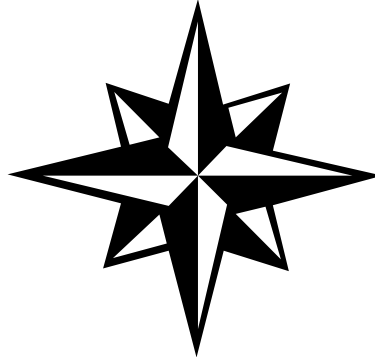


Achieving Sustainability in Transport and Land Use



Deliverable 5: Final Report

Acronym:	ASTRAL	
Version:	1.0	
Date of Preparation:	12 th March 2004	
Programme:	EESD-1999	Energy, Environment and Sustainable Development
Sub-Programme A:	Environment & Sustainable Development	
Key Action:	City of Tomorrow	
Task Number	EESD-1999-4.4.1	
Type of Proposal:	Accompanying Measure	

Contents

1	MANAGEMENT REPORT FOR THE FINAL SEVEN MONTHS	3
1.1	Objectives of the reporting period	3
1.2	Scientific and technical progress made.....	3
1.3	Milestones and deliverables achieved.....	5
1.4	Deviations from the work plan	5
1.5	Coordination and communication activities	5
1.6	Difficulties encountered in management and coordination	5
2	EXECUTIVE PUBLISHABLE SUMMARY	6
3	DETAILED REPORT	7
4	TECHNOLOGICAL IMPLEMENTATION PLAN.....	8
5	EXECUTIVE PUBLISHABLE SUMMARY	9
6	DETAILED FINAL REPORT.....	11
6.1	Background.....	11
6.2	Scientific, technological and socio-economic objectives	11
6.2.1	Project objectives	11
6.2.2	Contribution to programme objectives	12
6.2.3	Contribution to EU policies	14
6.2.4	Contribution to Community social objectives	15
6.2.5	Economic, scientific and technological objectives	16
6.3	Summary of related projects	17
6.3.1	PROSPECTS.....	17
6.3.2	PROPOLIS.....	19
6.3.3	PROMPT.....	21
6.3.4	SUTRA	23
6.3.5	TRANSPLUS.....	25
6.3.6	ISHTAR	27
6.4	Methodology, scientific achievements and main deliverables	29
6.4.1	Project work plan	29
6.4.2	Work package 10: Technical Workshop.....	30
6.4.3	Work package 20	31
6.4.4	Work package 30: LUT Stakeholders Conference	32
6.4.5	Work package 40	36
6.4.6	Work package 50	38
6.5	Conclusions.....	39
6.6	Dissemination and exploitation.....	39
6.7	Publications.....	41

1 Management report for the final seven months

1.1 Objectives of the reporting period

Work in the first two years had seen the completion of Work Packages 10 to 40. The sole focus of the final seven months have been Work Package 50, and related aspects of Work package 60, which provides the management for the project.

The objectives of Work Package 50 were originally specified as being to

- ensure and boost the dissemination of the common findings of the Cluster to the end-users
- provide recommendations on best practice of how to implement the results in practice
- document problem areas, which will require further research
- establish a permanent international contact group for considerations and discussions about relevant topics in this field.

To some extent these objectives were overtaken by the initiation of the PLUME project, which involves all the projects in the LUTR cluster, has established an extensive end user network, and is developing strategies for effective exploitation of results in all member states. However, it was agreed that it was still appropriate to hold a final workshop for ASTRAL, and to reschedule it to be midway between two annual PLUME End User Workshops. The workshop was held in Budapest on 17th October 2003, and is reported later in this document.

1.2 Scientific and technical progress made

The GANTT chart from the revised description of Work is attached. No delays were experienced in the final seven months of the project.

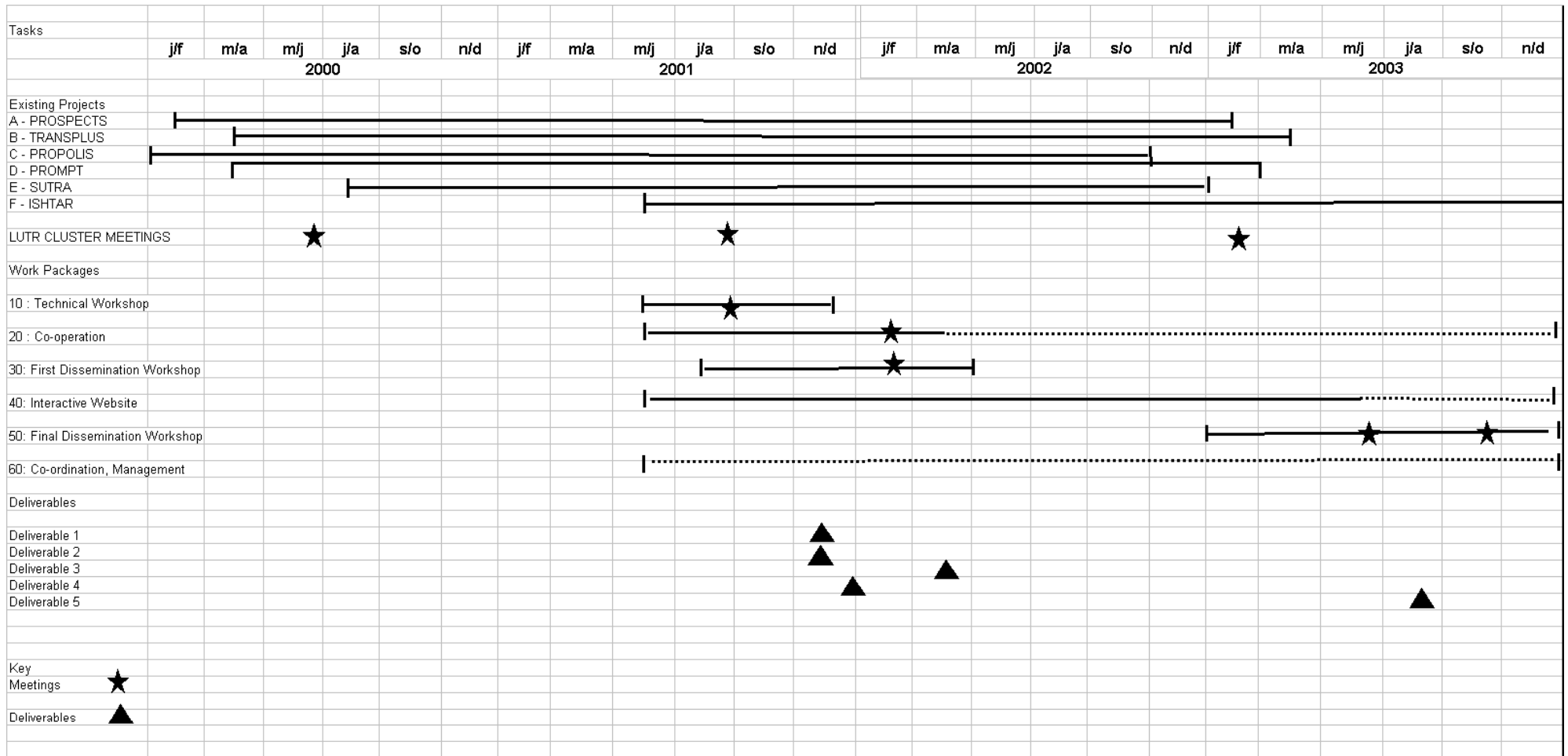
Scientific work has focused on the preparation for, conduct and reporting of the final workshop, as described later in this report.

The following table indicates, for each partner, the planned and actual staff time for each Work Package.

It confirms the experience throughout the project that the budget limit imposed by the commission was too tight given the aims of the project. In particular the work involved in WPs 10 and 30 significantly exceeded the planned budgets. The partners have agreed that they will meet these cost overruns themselves.

SUMMARY BY PARTNER

	Project Plan	Year 1	Year 2	Year 3	Cumulative	Reminder	% remaining
1 ITS	547.40	344.50	152.50	44.50	541.50	5.90	1%
2 ESS	1054.17	892.25	141.50	39.00	1072.75	-18.58	-2%
3 LT	462.00	584.25	88.00	47.00	719.25	-257.25	-56%
4 VTT	323.30	69.00	118.00	278.00	465.00	-141.70	-44%
5 ISIS	322.00	414.50	46.00	16.00	476.50	-154.50	-48%
6 ENEA	0.00	0.00	0.00	100.00	100.00	-100.00	#DIV/0!
TOTAL	2708.87	2304.50	546.00	524.50	3375.00	-666.13	



1.3 Milestones and deliverables achieved

The project has been completed, and this report is submitted as Deliverable 5.

1.4 Deviations from the work plan

Following the extension agreed for the project, no further deviations from the work plan have occurred.

1.5 Coordination and communication activities

The principal activity has been the final workshop. A project meeting was held at the same venue. All the other LUTR projects have been associated with ASTRAL throughout the period, and close collaboration has occurred with PLUME. In particular, ASTRAL findings have been reported at PLUME End User Workshops, all ASTRAL projects are represented on the PLUME Projects Group, and the ASTRAL website has been transferred for use in PLUME as www.lutr.net.

1.6 Difficulties encountered in management and coordination

No further problems have arisen in this final seven month period, and those reported in the Second Year Management Report have now been resolved by the transfer of activities to PLUME.

2 Executive publishable summary

Contract No.	EVK4-CT-2001-80001	Reporting period	1/6/2003 – 31/12/2003
<i>Title</i>	ASTRAL		
<p>Objectives: Work in the final seven months was limited to WP50. The objectives of the Work package WP50 were to:</p> <ul style="list-style-type: none"> • ensure and boost the dissemination of the common findings of the Cluster to the end-users • provide recommendations on best practice of how to implement the results in practice • document problem areas, which will require further research • establish a permanent international contact group for considerations and discussions about relevant topics in this field. <p>The main objective was the organisation of the Final Dissemination Workshop, later called the <i>LUTR Conference</i>, and the compiling of the minutes of this workshop.</p>			
<p>Scientific achievements: The LUTR Conference was held in Budapest on 17th October 2003 at the New City Hall. The workshop was hosted by the City of Budapest. It was organised together with the final workshops of two cluster projects of ASTRAL: TRANSPLUS and PROPOLIS. In this way it was planned to gather a bigger audience to the Conference. Finally, altogether 96 people registered to the Conference, although not all of them were actually attending it. The Conference was divided into four Sessions:</p> <ul style="list-style-type: none"> • "The Challenge" • "Objectives and Solutions" • "Design and Implementation" and • "The Way Ahead". <p>Altogether 11 speakers gave their presentation at the Conference. Each Session was ended by a general discussion. All the presentations and discussions were recorded and gathered to a Conference Proceedings.</p>			
<p>Conclusions: The conference gave a rather good total picture of the present situation in land-use and transport policies; both in Accession countries and in present EU countries. There are certain clear differences between these countries due to their different histories. Car ownership in Accession countries is still lower than in the EU countries in general, but the lead has been quickly reduced. The whole LUTR research field became also quite well clarified in the conference, although only glimpses of it were presented. The results of the projects finished so far seem to be essentially congruent and also complementary. Nevertheless, it became also evident that still a lot of work should be done in this field.</p> <p>However, for the main purpose of the conference, to effectively disseminate the results, it was not very successful. Most of the audience was already "insiders", involved in the cluster projects, and not very many local people participated. The dissemination will be continued in PLUME.</p> <p>What was learned?</p> <ul style="list-style-type: none"> • The conference budget should be big enough allowing to invite several key speakers and stakeholders, at least by reimbursing their travel costs. With modest budgets it is a good idea to combine such events with some other relevant events. • The event should be advertised early enough to a wide audience.. 			

3 Detailed report

This is provided as a separate annex, given its length.

4 Technological implementation plan

No TIP is required for this Accompanying Measure. In practice all implementation and exploitation is being conducted through the partner projects or through PLUME.

5 Executive publishable summary

Contract No.	EVK4-CT-2001-80001	Reporting period	1/6/2001 – 31/12/2003
<i>Title</i>	ASTRAL		
<p>Objectives: ASTRAL is an Accompanying Measure, managed by the first six projects in the Key Action: City of Tomorrow and Cultural Heritage which focus on the development of “planning tools, assessment methodologies and best practices aimed at managing future transport demand through integrated transport and land use planning”. There are now a total of twelve projects working in this area, who have formed the LUTR (Land Use and Transport Research) Cluster, and the ASTRAL project provides a coordinating role for them. The principal objective of ASTRAL is to assist cities, national governments, international organisations, non-governmental organisations, interest groups and individuals in obtaining maximum benefit from the research undertaken by the Cluster.</p> <p>Scientific achievements: Opportunities for collaboration were identified, in some of which all projects participated, and in others of which those most directly involved compared proposals and results. The first group included a common definition of sustainability, a set of conceptual frameworks, a common list of performance indicators, a glossary of terms, a city database to be included in the website, and a common list of policy instruments. The second group covered research into the policy process, the implementation process, modelling methods, appraisal techniques, the use of thresholds and targets, barriers to implementation, citizen participation, and transferability of results. Collaborative work in all of these areas was subsequently transferred to in the sister project, PLUME.</p> <p>The first dissemination workshop, hosted by the European Commission and the European Parliament in January 2002, was attended by over 150 delegates from member states and accession countries, including national, regional and city representatives, international and national researchers, other stakeholders, MEPs and members of the Commission. It provided an opportunity for delegates both to learn about the research programme and to contribute to recommendations for the dissemination and extension of the research programme. Key messages included the need to disconnect transport growth from economic growth; the importance of intra-generational equity issues; the implications of time lags in the policy process, particularly in terms of land use interventions; the need to help cities tackle today’s problems as well as researching future solutions; the importance of synergy between the research projects (a key focus of ASTRAL); the need to identify and disseminate good practice; the potential of citizen education and awareness campaigns in enhancing sustainability; the links between transport, land use and Europe’s unique cultural heritage; and the case for policy intervention at a European level.</p> <p>A summary was produced of almost 60 related regional, national and international research projects in the subject area, and an interactive website for project partners and end users. This has been used as a basis for further comparative research in PLUME.</p> <p>The dedicated website, www.lutr.net, was established, and contains descriptions of all projects, details of the case study cities, an annotated bibliography, contact details and a news section, as well as a full text search facility. It was subsequently transferred to the PLUME project.</p>			

The final dissemination workshop, held in Budapest, was attended by almost 100 delegates from member states and accession countries, and again included national, regional and city representatives, international and national researchers and other stakeholders. It provided an insight into the work of all the LUTR cluster projects, and stimulated debate on all aspects of the development and implementation of sustainable strategies. It also provided a bridge to the continuing work in PLUME, and guidance as to PLUME's priorities.

Conclusions: The project has identified a number of priority areas for collaborative research between projects in the current programme, and a set of research needs for FP6.

Conclusions: The project has identified a number of areas for collaboration between the LUTR Cluster projects, and provided links to some 60 related projects worldwide. It has also developed a website through which further collaboration can be stimulated. It has provided the starting point for the more extensive project. PLUME, which will involve researchers and end users in the assimilation and testing of research results, and their wider dissemination and exploitation.

Keywords: urban; sustainable; transport; land use

6 Detailed final report

6.1 Background

ASTRAL: Achieving Sustainability in Transport and Land use, is an Accompanying Measure. It was prepared by the representatives of six projects funded under Task 4.4.1 of Key Action 4: City of Tomorrow and Cultural Heritage, in the Environment and Sustainable Development programme. The target of the Task is to develop planning tools, assessment methodologies and best practices aimed at managing future transport demand through integrated land use and transport planning, reducing individual motorised vehicle movements and encouraging greater use of collective and other sustainable transport modes. As noted in the brief for the Task, implementation of optimised urban planning in a sustainable way requires indicators, scenarios and models to describe and optimise urban land use and transport patterns; it also needs an analysis of the institutional, legal and financial barriers to optimised planning.

The six projects covered, between them, the main requirements of the brief, focusing specifically on:

- The development of guidance in decision-making
- Enhancements in land-use transport interaction models
- Improved evaluation procedures
- Design to enhance non-motorised modes; and
- Identification and dissemination of best practice.

A Cluster, LUTR, was formed involving all six projects, with a limited budget to enable each to maintain an awareness of the findings of the other projects. It was subsequently expanded to include other projects funded under Task 4.4.1, and ASTRAL retained the flexibility to involve these other projects to the extent that timetable constraints permitted. Their involvement was limited to participation in workshops, and was financed from within their own budgets. The acronym ASTRAL was used to specify the work under the Accompanying Measure (as described in the DoW). LUTR is retained to identify the wider range of land use and transport research under Task 4.4.1.

Subsequently, a more extensive project, PLUME, was funded facilitating an end user group of cities and other agencies, a projects group to review the results of all research in the LUTR cluster, and an exploitation group to ensure that research results were exploited in ways which met the needs of each member state. To some extent activities planned for ASTRAL became subsumed into PLUME and further enhanced.

6.2 Scientific, technological and socio-economic objectives

6.2.1 Project objectives

The principal objective of ASTRAL was to assist national governments, cities, non-governmental organisations, interest groups and individuals in obtaining maximum benefit from the research undertaken by the Cluster. It did so in two principal ways: by maximising the potential synergy which existed between the six projects and related research (sub-objectives 1 and 2) and by intensive dissemination of the findings throughout Europe (sub-objectives 3-5).

This objective was achieved through a series of five sub-objectives:

1. critical comparison of the preliminary results of the six projects, and modification, where appropriate, of future research plans;
2. liaison with international, national and regional projects working in related areas;
3. dissemination to a wider audience of these preliminary results, and advice on future research plans;
4. development and maintenance of a website to allow users to interact with the projects; and
5. dissemination to cities in the EU and Accession Countries of the project results.

These five sub-objectives were met through a series of five technical work packages; a sixth covered management and coordination of the project.

Sub-objective 1 was achieved through Work Package 10, and involved a technical workshop in which all the key areas of interaction between the projects were reviewed, to identify common results, areas of conflict to be resolved, and aspects of future research plans which could, within the available resources, be modified to ensure greater synergy and more efficient use of resources. This drew on an initial review of the projects which was conducted in the first Cluster meeting in May 2000.

For sub-objective 2, Work Package 20 identified international, national and regional projects which were directly related to the Task, and hence to the projects. It thus contributed to strategies 2.1 and 2.2 of the European Research Area.

To meet sub-objective 3, the results of the technical workshop were presented, in Work Package 30, at a first dissemination workshop held in Brussels in January 2002. A wide range of city representatives were invited to discuss preliminary results, comment on future research plans, and advise on the most appropriate means of ensuring that the research was transferred effectively into practice. The outcome of the technical workshop and the initial findings of the projects were also discussed with representatives of DGENV and DGTREN.

Sub-objective 4 involved the development and maintenance of an interactive website in Work Package 40. This was linked to the six projects' websites, to provide a facility in which users can both interrogate and comment on research findings.

Sub-objective 5, which was achieved through Work Package 50, involved a final dissemination workshop intended to take place after the close of all the projects, in which all cities who have expressed interest in the projects, and the directors of national and regional projects, will be invited to debate the conclusions of the research, identify ways in which those results can be transferred into practice, and hence ensure that Europe's cities are able to plan effectively for sustainable land use and transport systems.

6.2.2 Contribution to programme objectives

The project, through the individual Cluster Projects, was designed to produce *concrete and understandable evidence* on which local authorities in Europe can base their measures in the domain of integrated transport and land use planning. Such evidence is needed in counteracting the inertia often impairing the ability of policy-making bodies at all levels to bring about genuine changes whose need is becoming more and more pronounced.

The *demand for innovative and even radical measures* in the fields of transport and spatial planning is urgent, but no initiative can be put into practice without comprehensively assessing its impacts. The project built on the work carried out by the partners covering the above issues since the late 1960s in the fields of transport, environment and urban planning.

The present scientific programme is to focus on key activities crucial for *social well being and economic competitiveness* in Europe. In addressing transport, land use and environment in the urban context, the LUTR cluster and ASTRAL covered a large number of the most important threats to the well-being of the majority of European citizens.

Key Action 4 'City of Tomorrow and Cultural Heritage' addressed the European wide challenge to *improve the quality of life in urban communities and the association urban regions, and to ensure the competitiveness of European cities while promoting sustainable development assessed in economic, architecture, environmental, social and cultural terms*. It recognised that *cities in all European regions face common challenges such as those relating to air quality, noise, traffic congestion, waste, economic competitiveness, employment, security, and maintaining their deteriorating infrastructure and built environment while reducing social exclusion and promoting sustainable development and enhancement of cultural identity*. To tackle these challenges the objective of the key action was to improve forecasting, monitoring and assessment and establishing best practices through a mix of different approaches. These tasks were also covered by ASTRAL and the common work of the cluster projects. ASTRAL covered issues addressed in most of the tasks under 4.1, 4.2, 4.3 and 4.4 and especially 4.1.1, 4.1.2, 4.1.4, 4.4.1 and 4.4.2. It was associated specifically with Task 4.4.1.

The Cluster model adopted in this project reflected the *problem-solving approach* which was one of the main principles of the 5th FP. The Cluster was formed to optimise scientific networking, management, co-ordination, monitoring, the exchange of information and the exploitation and dissemination activities. It was also multidisciplinary, multisectoral and involved stakeholders and end-users from policy-making and other sectors.

The project supported the goals of the Thematic Programme "Competitive and Sustainable Growth" and in particular the aims of Key Action "Sustainable Mobility and Intermodality" as regards, for instance, policy analysis and evaluation in transport.

The project also addressed the following actions defined for Accompanying Measures in general:

- exchanges of information, conferences, seminars, workshops, round tables, study panels or other scientific or technical meetings, including workshops to support the development of knowledge in the "frontiers of science";
- information, communication and dissemination activities, including scientific publications and activities for the promotion and exploitation of results and the transfer of technology;
- support for scientific and technical meetings and conferences, as well as innovative support events, publications and websites;

- wider collaboration in research and in dissemination of research results, in novel trans-disciplinary approaches, and in fields where there is a need for cooperation throughout Europe.

The project was designed to fulfil the content and objectives of Accompanying Measures by "adding value to the past, ongoing and future research". This was achieved by cross-assessment of the ongoing cluster research projects, preparation of new activities and dissemination of results. The project fell mainly under the area of Measure 3, "information, communication and dissemination activities" including activities for "promotion and exploitation of results and transfer of technology" and "actions for raising public awareness and understanding science and technology with the aim of creating framework for impact assessment". It also promoted the exploitation, transfer and take-up of RTD results by exchanging information and data with the user community and policy makers.

6.2.3 Contribution to EU policies

The problems of growing traffic and the sprawl of urban areas together with the associated adverse environmental, social and economic impacts are experienced everywhere in Europe. Therefore, accumulating know-how, developing methodologies and searching for sustainable urban policies, planning methods and guidance in decision making is of strategic importance and a field meriting a European-wide approach and concentration of know-how and resources. The Cluster, with its sub-consortia covering most EU countries, is geographically balanced and knowledgeable of those characteristics of European cities that differ.

The project contributed to the implementation of many of the EU's policies, especially environment, energy and transport. It also addressed questions of European wide interest and of strategic importance. For instance,

- it addressed important economic questions like efficiency of the land use and transport system, regional economy and employment as well as social aspects like health, equity and opportunities;
- it aided policy makers at the local, national and European levels to arrive at decisions that support the common goals set for sustainable urban development
- it directly addressed one of the crucial questions of urban sustainability: integration of land use and transport planning as well as the integration of the urban sustainability viewpoint with both;
- it produced generalised conclusions about sustainable urban policies for other European cities.
- it aimed at efficient dissemination and exploitation of the results gained and thus facilitated the exchange of experience between authorities at all levels in relation to sustainable urban development.
- it aimed to complement the work of each project and also in each country, providing a joint vision of the different aspects.

The European-wide approach had many obvious benefits. The project integrated different state-of-the-art approaches to sustainable urban development. The project concentrated expertise from different fields of speciality within the consortium in order to serve the project goals.

6.2.4 Contribution to Community social objectives

ASTRAL arose from an existing cluster formed by six inter-related research projects in the fields of transport and land use integration. As a cluster, it aimed to contribute to a more effective discussion and exploitation of the issues in question, hence generating an added value for the different actors at European, national, regional and local levels. Transport and land use integration is an essential aspect of sustainability in the city of tomorrow that was addressed individually by each project and further complemented in ASTRAL with the aim of creating more awareness of these issues.

ASTRAL encouraged synergy between existing research programmes and facilitated dissemination and take-up of best practice. In these ways it contributed to the Community's objectives for sustainability, environment and quality of life, as encapsulated in the Vancouver Principles (issued in the OECD Vancouver Conference – 1996):

- Access: people are entitled to reasonable access to other people, places, goods and services.
- Equity: to meet the basic transport-related needs of all people, including women, the poor, the rural, the disabled, and children, nation states and the transportation community must strive to ensure social, interregional and intergenerational equity. Developed economies must work in partnership with developing economies in fostering practices of sustainable transport.
- Individual and Community Responsibility: all individuals and communities have a responsibility to act as stewards of the natural environment, undertaking to make sustainable choices with regard to personal movement and consumption.
- Health and Safety: transport systems should be designed and operated in a way that protects the health (physical, mental, and social well-being) and safety of all the people, and enhances the quality of life in communities.
- Education and Public Participation: people and communities need to be fully engaged in the decision-making process about sustainable transport, and empowered to participate.
- Integrated Planning: transport decision makers have a responsibility to pursue more integrated approaches to planning. They must involve partners from relevant sectors such as environmental, health, energy, financial, urban design etc.
- Land and Resource Use: transport systems must make efficient use of land and other natural resources while preserving vital habitats and maintaining bio-diversity
- Pollution Prevention: transport needs must be met without generating emissions that threaten public health, global climate, biological diversity, or the integrity of essential ecological processes
- Economic Well-Being: taxation and economic policies should work for, and not against, sustainable transport. Market mechanisms must account for the full social, economic, and environmental costs, both present and future, in order to ensure users pay an equitable share of costs.

Specifically it was designed to assist cities in developing land use/transport strategies, suitable for their own circumstances, which :-

- encourage sustainability by seeking ways to reduce car use, and hence reduce the impact of transport on climate change;
- improve health by reducing substantially the emissions from motorised transport;

- enhance the environment by reducing the impact of car use and motorised transport more generally, and by imposing fewer requirements for new infrastructure;
- increase safety by ensuring that car and commercial vehicle use occur at speeds and in operating circumstances appropriate to the urban environment;
- improve accessibility by public transport, walking and cycling, and thus reduce social exclusion and encourage greater access to employment;
- increase efficiency and hence improve economic performance and competitiveness;
- enhance quality of life in all of these ways and by facilitating citizen involvement in transport policy development.

6.2.5 Economic, scientific and technological objectives

ASTRAL aimed to exploit the synergy which existed between the initial Cluster of six projects addressing Task 4.4.1 of Key Action 4: City of Tomorrow and Cultural Heritage. These six projects focused on: The development of guidance in decision-making; Enhancements in land-use transport interaction models; Improved evaluation procedures; Design to enhance non-motorised modes; Identification and dissemination of best practice; and Tools for the analysis of sustainability.

Three of the five key objectives of ASTRAL were concerned with ensuring that the results emanating from the activities of the individual projects were disseminated to as wide an audience as possible in a coordinated, consistent and structured way. These objectives were:

- Dissemination to a wider audience of these preliminary results, and advice on future research plans;
- Development and maintenance of a website which will allow users to interact with the projects; and
- Dissemination to cities in the EU and Accession Countries of the full range of project results.

Various groups of users were expected to be interested in the results of ASTRAL:

- Politicians and technical officers responsible for land-use and transport planning, as well as politicians involved in the framing of legislation related to these subjects;
- Consultants active in these fields;
- Citizen groups and NGOs who take a special interest in understanding and controlling the land-use planning process;
- Researchers in these fields and academics responsible for land-use and transport planning courses, who need comparative material and synthesis available for presentation in their courses.

Each cluster project had its own Technology Implementation Plan. It was agreed that ASTRAL would rely on these, and appropriate collaboration between them, rather than developing its own separate TIP.

It is important that heightened awareness about potential strategies and methodologies regarding successful and innovative integrated transport/land-use policies is created both among policy makers and the general public. To be at the centre of this research and learning

process will clearly benefit all the ASTRAL partners, improving their scientific knowledge and visibility at the European as well as the national arenas.

The ASTRAL participants were divided into three groups:

- Private research institutes which are all engaged in national and European markets supplying professional services to national, regional and local governments in the field of transport and urban planning, and related activities. They were able to exploit ASTRAL results through increasing their activities with local authorities, and especially in their regional and national markets.
- Public bodies, e.g. Universities and other Governmental bodies which received from the project an increase in their institutional activities in the field of integrated land-use and transport planning;
- Users, e.g. city administrations and municipal agencies, directly interested in the exploitation of the constituent projects of the Cluster findings in their planning activities.

6.3 Summary of related projects

This additional section provides a summary of each of the six participating projects. For four of them the summary reflects the final report; for PROMPT and ISHTAR it is a progress report. For simplicity they have been reproduced in the format in which they were provided.

6.3.1 PROSPECTS

Objectives: The principal objective of PROSPECTS is to provide cities with the guidance which they need in order to generate optimal land use and transport strategies to meet the challenge of sustainability in their particular circumstances. The project has five sub-objectives, of which the final three have been achieved in the reporting period: to enhance forecasting and analysis tools for the land use transport system, to publish a Decision Makers' Guidebook and supporting Methodological and Policy Guidebooks and to disseminate the results and exploit the three guidebooks and enhanced tools.

Scientific achievements: Work in the first twelve months saw the completion of Work Package 10, early work on Work Packages 20, 30 and 40, initial activity on dissemination in Work Package 50, and the management activity under Work Package 60 necessary to coordinate the project and ensure the quality of its outputs.

The objectives of Work Package 10 were to

- produce a set of objectives and indicators which reflect the aims of the cities whilst being theoretically compatible with the concepts of sustainability, environment, quality of life and social inclusion (Task 11);
- review past trends and scenarios for the core cities and develop local and generic, EU-wide, scenarios for future development (Task 12);
- specify the full range of options for both land use and transport policy (Task 13);
- review and document the current decision making processes of cities (Task 14);
- identify barriers to implementation of policy options (Task 15);
- conduct a wider survey of 100 cities throughout the EU and selectively in Eastern Europe (Task 16);
- report on the cities' overall requirements.

Work in the second year saw the completion of Work Package 20, work on Work Packages 30, 40 and 50, and the management activity under Work Package 60 necessary to coordinate the project and ensure the quality of its outputs. The second year also included the Mid-Term Assessment carried out in month 20.

The objectives of Work Package 20 were to

- produce enhanced procedures for evaluating transport and land use policies which address all of the indicators from Task 11 in the format needed for the decision making processes of Task 14 (Task 21);
- review and produce optimisation methods capable of addressing the indicators from Task 11 and of application to the models in WP30 (Task 22);
- design formats for presentation of the output of strategy analysis suitable for politicians and lay users using GIS presentation tools (Task 23).

All of these were based on the requirements identified in WP 10. These tasks were all completed, though the development of the evaluation framework took longer than anticipated.

Work in the final year focused on completion of Work Packages 30 and 40. The evaluation and optimisation methods to reflect the principal objective of sustainability and the six sub-objectives (reported in D2), were applied and demonstrated in our Sketch Planning Model and four LUTI models. A range of optimisation methods including automated downhill simplex algorithms and regression based approaches were used to identify the best combinations of policy instrument, when assessed against these objectives. The methodology includes the identification of policy profiles over time and considers the impact upon future generations via an inter-generational equity factor. This required novel implementation of equilibrium based models deriving optima for more than one future year but was more naturally represented by the time-marching models available to the PROSPECTS consortium. A major “experimental” development was the implementation and calculation of user benefits as land use varied. This was implemented following the work by Simmonds (2001) and was considered as a novel element within the overall framework. Another novel approach to including equity within the objectives was applied in the Oslo case study where it acted as a constraint on the resulting optimum policy.

Three guidebooks have been produced. The first, a Decision-makers’ guide covers the logical process for developing and implementing a sustainable land use/transport strategy. It is aimed primarily at senior policy makers and at members of the public involved in advising on strategies. It is available in 6 languages (English, French, German, Italian, Spanish and Swedish). The Methodological guidebook provides detailed guidance to professionals on the tools available, with each section referenced from the relevant application areas in the Decision-Makers’ guidebook. It describes the methods used in detail and provides guidance on their application, current limitations and possible future enhancements. It also provides examples from the PROSPECTS case studies and discusses our experience in using the proposed methodology. The Policy Guidebook provides guidance on the appropriateness of each identified transport and land use policy instrument, and their contributions alone or as part of a package of instruments. It is aimed at all those involved in policy making and the opportunity has been taken to incorporate our results into a Web based knowledgebase KonSULT which is to be continually updated by the co-ordinator.

The three guidebooks form the main means of dissemination. The Decision-makers' and Methodological Guidebooks are available on the project website. Printed copies are being distributed by the partners. The Policy Guidebook is available at www.transportconnect.net/konsult. The sketch plan model developed within PROSPECTS is currently being used in a follow-up project run by the co-ordinator, the other LUTI models will be used in research conducted by the relevant partners; the enhanced policy explorer PLUTO is being used for teaching purposes by the partners and is available under licence from the co-ordinator.

6.3.2 PROPOLIS

PROPOLIS (Planning and Research Of POLicies for Land Use and Transport for Increasing Urban Sustainability) is a research project within the Fifth Framework Programme of the EC. It belongs to the Thematic Programme "Energy, Environment and Sustainable Development" and its Key Action "City of Tomorrow and Cultural Heritage". DG Research and national organizations from six countries – Finland, Germany, UK, Belgium, Italy and Spain – have funded it.

The objective of PROPOLIS was to research, develop and test integrated land use and transport policies, tools and comprehensive assessment methodologies in order to define sustainable long-term urban strategies and to demonstrate their effects in European cities.

The work was executed through developing a set of indicators measuring the environmental, social and economic dimensions of sustainability. Values for these indicators were calculated using enhanced urban land use and transport models and new GIS and Internet based modules developed during the project. A decision support tool was used to evaluate the sets of indicator values in order to arrive at aggregate environmental, social and economic indices describing the alternative policy options. To include the long-term land use effects, a time horizon of 20 years was used. In close contact with Client-Partners and international networks the system was used to systematically test and analyse policy options in 7 European cities with three types of land use and transport models.

General recommendations for European cities were made based on the analysis of the policy testing results. The effects of these policies are demonstrated in the different types of PROPOLIS case cities. These effects address important issues, such as CO₂ emissions, energy and land consumption, biodiversity, justice of the distribution of impacts, opportunities of people, exposure to noise and pollutants, safety etc.

The innovations of the project are related to the integrated and comprehensive but still transparent approach undertaken. The approach applied has also produced innovative policy recommendations.

The results show that the environmental sustainability without any actions and even in the city specific reference scenarios deteriorates in all case cities compared with the current situation. Also, the social index tends to deteriorate.

The aim of PROPOLIS was to find policies that could, in an ideal case, simultaneously improve all dimensions of sustainability compared with the reference solution and, if possible, even improve the current level of sustainability. This goal was reached in most of the case cities using a same type of approach. This indicates that the approach could work in other European cities, as well, and that the results could thus be transferable.

The local investment plans, normally consisting of an investment programme for both public transport and road investments, performed in the right direction. However, they were not enough to maintain the current level of sustainability. The elements of the programmes were often found to be contradictory and encourage development towards different goals. Investment programmes should be designed to be consistent with the general goals set for the transport-land use system.

Different car pricing methods were able to produce positive results. However, their effects on land use have to be separately assessed.

Also the tested public transport policies, increasing speed and service and reducing fares, worked well. In most cases they were environmentally, socially and economically feasible. However, also here special attention has to be paid to the land use effects and possible contribution to city sprawl. Although intended to decrease travel demand they could in the long-term lead to increases in private car mileage.

Regulating car speed policies had positive effects on traffic accidents, as intended, but they were not enough to compensate for the effects of the worsening opportunity, accessibility and air pollution related indicators.

Different types of individual land use policies did not produce significant positive effects. However, land use policies could successfully be used to support the changes in demand caused by the car pricing and public transport policies.

Best results are achieved by using policy combinations, i.e. push and pull measures consisting of car pricing policies and simultaneous improvements of public transport through reduced fares and better speed and service. The combination produced cumulative positive results and the negative land use effects of the individual policies could be avoided or mitigated.

Adopting the above line of actions leads in PROPOLIS case cities to a 15-20% reduction in CO₂ emissions, 8-17% reduction in traffic accidents and often to at least small reductions in exposure to noise and pollutants and the total time spent in traffic. Also accessibility to the city centre and services is improved. The socio-economic benefits vary but are typically 1000 – 3000 euro/inhabitant (net present value). Searching and defining local optimum levels for the actions can further improve these results, as demonstrated in some case cities.

The PROPOLIS research has demonstrated that it is insufficient to merely evaluate policies on a one by one basis. Instead a complete urban policy programme should be evaluated both policy by policy and as a whole. A good urban policy programme consists of co-ordinated elements that work together to produce cumulative long-term effects that attain a balanced set of environmental, social and economic goals. These elements may include:

- Combination of pricing policies directed at car users, with differentiation between peak and other hours as well as congested and non-congested areas, with appropriate level of pricing of public transport fares
- Investment programmes supporting the changes in demand caused by the above policies and especially responding to the increased demand for better public transport speed and service

- A land use plan supporting the new need for people to live near central areas, in satellite cities or along well served public transport corridors and the people's increased need and opportunity to use public transport

This policy line is likely, as demonstrated by the PROPOLIS case cities, to improve all dimensions of urban sustainability in typical European cities compared with their reference scenarios or continuation of existing policies and, in best cases, increase the current level of sustainability – improve our cities of tomorrow.

6.3.3 PROMPT

The main purpose of the PROMPT project has been to find new means to promote walking in cities by improving conditions and quality of urban public spaces. The objective has been to identify best practices as well as to develop new tools and generic solutions for that purpose. These concern as well problem identification, problem solving as implementation of planned measures. The tools and solutions are aimed at designers, planners and decision makers to be used in the development of urban structures and public spaces. The scope of the considerations ranges from the overall urban structure to the detailed street level.

The project began with the identification of relevant *problems*. Totally 22 case areas in six different countries (16 cities) were selected for that purpose. These areas were at first analyzed according to five different themes: *safety, accessibility, comfort, attractiveness* and *intermodality*. Further, also the *implementation* possibilities of various means to promote walking were considered on the national level of the six participating countries. The methods used in the analyses included mappings and measurements of relevant indicators, questionnaire studies, interviews, round tables and local work shops.

Only after all the analyses *holistic solutions* for the revealed problems were sought for. The reason for this procedure was that there is a danger that solutions for only a part of problems may conflict with other relevant problems. The main purpose was, thus, to discover solutions which are not contradictory as regards the revealed different problems and which could even solve several problems at the same time. The search for the solutions was boosted by a brainstorming workshop after the case area analyses.

Finally, over 140 different problems were detected along the analyses. New types of problems were identified especially about comfort, attractiveness and intermodality issues of walking.

In most of the case areas too high car speed was the main *safety* problem, with few exceptions. Also many other safety problems were detected, mostly concerning the interference with other traffic modes.

As regards *accessibility* the lack of suitable crossing facilities for pedestrians was the most common problem. Segregation and border effect mainly caused by high-volume and high-speed car traffic was an other severe accessibility problem.

Insecurity caused by people or traffic, other disturbances caused by traffic, noise or high sound level and poor offer of equipment and facilities, especially for disabled, seem to be common *comfort* problems. Other such inconveniences relate to the geographical situation, topography, climate or cultural settings of the areas.

Intensive physical and visual impact of the vehicular traffic and shortage of appropriate pedestrian spaces were common *attractiveness* problems. Other such problems relate to the poor visual quality of the environment, to the lack of natural elements and to the partial or total lifelessness of the environment.

The main problem of *intermodality* stems from a poor supply of the public transport. One reason for that is the low density of the area. Other intermodality problems relate to long or not very pedestrian friendly walking paths to stops, poor stop facilities or to a feeling of insecurity at stops.

Numerous solutions of different type and level were detected to the revealed problems. Partly these are already implemented best-practice examples, partly totally new solutions. In order to better piece together all these solutions they were grouped into solution "families". However, these families are not independent. As a matter of fact, all solutions and problems are intricately interrelated. One problem can be solved with many different ways and, on the other hand, one solution can address several problems simultaneously. Furthermore, solutions themselves are also interrelated. Each solution can be considered as a mean to implement a higher level solution and vice versa. In this way all the solutions form a group of intertwined families with 'parent' and 'child' solutions. Altogether 13 solution families were formed. Such are, for example:

Each municipality should have a pedestrian policy

The municipal level is undoubtedly pertinent to accomplish policies in favour of pedestrians. Nevertheless, many good ideas often remain only on the level of discussion, when one begins to talk about resources.

Accessible public transport for all

A good and flexible service standard of the public transport is the first premise to make it economically viable. Important is also a good accessibility to and from the vehicles, especially for the handicapped people. Furthermore, stops themselves must be comfortable and secure and provided with appropriate equipment.

Give priority to pedestrians in transport planning

The usual car oriented perspective of the transport and land use planners should be changed: walking should be considered as a privileged mode of transport. Pedestrians should be at the centre of the transport planning as main actors of the travel chain. Very different aspects are essential for pedestrians than for car drivers.

Living streets day and night

An attractive and secure public and private realm within the street environment should be guaranteed during both day and night time. This means mixed activities and mixed uses of buildings, public squares, green areas along the streets and people living along them or nearby. Both structural and social aspects are important.

Public space as a living room

The urban pedestrian environment should be designed and maintained from the pedestrian's point of view, so that they can feel at home there. The quality of the physical environment is an essential factor in this respect. Three conditions seem to be essential: local identity,

changing images and spaces entitled especially to pedestrians. Financial, political and legal aspects should be considered jointly with the design aspects.

A green network plan for every city

Everybody should find pleasant paths to reach every part of the city on foot. Green areas should be as close as possible to everyday activities. Existing green areas should be enlarged and interconnected with green paths. A drastic re-orientation of the present policies could open new perspectives to finance and develop urban green networks.

Implementation was considered within several policy fields. The aimed measures can be assessed according to their effectiveness and easiness. As an example, as measures mostly efficient and also easy to implement were identified:

- Provide more safe and comfortable pedestrian crossings.
- Organize a "Know-how transfer".
- Improve the maintenance of the public areas.
- Improve the lighting of the public spaces.
- Improve the pavement of the pedestrian paths and sidewalks.

As measures mostly efficient but difficult to implement were identified:

- Re-organise the public spaces in order to limit radically the use of cars.
- Restrict every new urban development.
- Promote mixed activities.
- Integrate (co-ordinate) the mobility policies with urban planning.
- Increase the level of financing the developments for pedestrians through transfers within the public budget.
- Redefine drastically the urban land-use policies.

Several reports were made of the case area analyses and their syntheses. The main deliverables are:

D11: Topical summaries of the case analyses

D12: New tools and solutions for promoting walking in cities

D13: Guidebook with an accompanied CD-ROM.

D12 includes the description of all the identified or detected tools and solutions. Tools are the novel methods used in the analyses and are described in the report in order to be utilized in other similar situations. Best-practice examples and other solutions are gathered in the report to families and family clusters.

The Guidebook (D13) is aimed as the main tool for the planned end users of the project. It contains a brief information of all the revealed problems, of solution families and of some most interesting solutions. It is accompanied by a CD-ROM, where the best practices and solutions can be found as a hyperlink application. The CD-ROM includes also a lot of other relevant material gathered during the analysis phases of the project.

More information about the project can be found in its www-pages: <http://prompt.vtt.fi>.

6.3.4 SUTRA

Sustainable Urban Transportation was the topic of SUTRA (EVK4-CT-1999-00013), a project within the Key Action of the City of Tomorrow: <http://www.ess.co.at/SUTRA/>.

Over a three year period, the project has developed an approach to design consistent policies and strategies for sustainable urban transportation and land use, using the cornerstones of

sustainability as the guiding principle: economic efficiency, environmental compatibility, and social equity.

The methodology developed and the set of models together with the indicators development scenario definitions were successfully tested in a number of case study cities that span a wide range of geophysical and socio-political settings, namely Gdansk, Geneva, Genoa, Lisbon, Thessaloniki and Tel Aviv.

The approach developed was based on a broad integration of socio-economic, technological and environmental issues, including land use changes driven by demographic and socio-economic change, within the interdisciplinary and integrative spirit of the Key Action.

SUTRA successfully used a scenario analysis approach, embedded in a framework of Indicators of sustainable urban transportation. A cascade of simulation models was used to represent the individual scenarios of urban development. The core of the modeling system is a transportation model that describes an equilibrium-based solution to satisfy the transportation demand expressed in an origin-destination matrix given a transportation network and its capacities and constraints. The transportation demand was derived from the scenario assumptions (in terms of land use change, demographics change, economic, technological, and regulatory changes), that was used to scale the baseline scenario for each city. Technology mix or market penetration for alternative low or zero emission transportation technologies was made consistent with a long-term energy modeling approach wherever the techno-economic data base was sufficiently detailed for a long-term forecast. An emission model was used to translate the traffic model results (fleet composition, vehicle frequencies, and driving conditions) into a spatio-temporal distribution of pollutant emissions. The emissions, together with other sources such as industry and household (again scaled according to the urban development scenario assumptions) were then further processed by a set of environmental impact models.

These simulation models range from a detailed, 3-D dynamic street canyon model via a city level model based on a convolution approach for the entire transportation network to a regional and seasonal photochemical model. A further set of post-processing tools including an expert system based on fuzzy logic is used to translate the ambient concentrations of pollutants into environmental and public health impacts. With the same modeling approach, transportation model results are used as the basis for estimates on accidents and their socio-economic consequences. The basic city level model is available on-line for interactive analysis: http://193.81.244.67/sutra/sutra_tools/index.php.

The linkage between the cascade of models with their different scope and resolution in time and space, and also the linkage of the basic urban development scenario assumptions, the simulation models, and the policy oriented interpretation of results is based on a set of indicators of sustainable, environmentally sustainable transportation. The indicators have also been compiled for a larger set of European cities, compiling various existing data bases into a benchmarking tool, available on-line: the City benchmarking tool and data base is accessible from the project home page: <http://www.ess.co.at/SUTRA/>.

The main approach of SUTRA is model-based scenario analysis.

A set of common scenarios is defined across all case study cities using the basic framework of indicators to specify consistent change and development scenarios. The four main scenarios are defined as follows:

1. Dynamic and virtuous (technologically and environmentally)
2. Dynamic and vicious (emphasis on individual transport)
3. Stagnant, aging, but virtuous (virtuous pensioners' city)
4. Stagnant, aging, but vicious.

The scenarios vary in their assumptions about demographic development (absolute size and age composition of a city), land use development (urban sprawl versus mixed use and a high density of urban functions), structural economic development (primarily the mix of economic activities, share of the service sector, and the possibility for tele-working), the availability of new transportation technologies (from different forms of public transport to low or zero emission technologies), and citizen's behaviour, in particular in relation to private transport. Results for many indicators show differences of more than 100% between the extreme scenarios. This suggests there is ample room for improvement. However, no single measure included in the scenario analysis alone can make such a major impact within the ranges of plausible rates of change in the driving forces. Clearly, a well balanced set of integrated measure is necessary to maintain and improve sustainable urban transportation. This set of measures must be defined for each city considering its structural, socio-economic, and technological constraints to find the best, cost-effective solution.

For this purpose, the approach and integrated set of tools developed by the SUTRA project is now being made available to potential end users world wide. Exploitation activities are exploring EU programs such as INTERREG, LIFE, ASIA-URBS, EUREKA, but also UN sponsored efforts such as the WHO's Healthy Cities program in addition to direct, commercial offerings to individual city administrations.

To support the exploitation, the SUTRA web site is continuously developed, with all project results available on-line, as well as on-line access to the SUTRA City data base, the European City Benchmarking tool, and the interactive city-level air quality modelling: <http://www.ess.co.at/SUTRA/>. and successfully tested in the case study cities Gdansk, Geneva, Genoa, Lisbon, Thessaloniki and Tel Aviv.

6.3.5 TRANSPLUS

Objectives and Approach

TRANSPLUS (Transport Planning, Land Use and Sustainability) addresses the problems of pollution and congestion created by unsustainable transport patterns in European cities, analysing the effectiveness of integrated land use and transport planning and implementation practices and tools. The research project departs from the acknowledgement that currently authorities at the urban, regional and national level manifest an insufficient degree of information sharing and a lack of coherent institutional/action frameworks for the integration of land use and transport policies. The process of integration is seen as necessary if common goals of sustainable transport and urban development are to be achieved. This deficiency of integration affects: 1) urban departments in charge of different policies, 2) layers of government - national, regional, local - with different planning and regulatory powers, 3) public administrations and citizens' associations or other private stakeholders interests. The result is severe socio-economic problems, including: a) social tensions coming from the adoption of projects which do not meet people's needs, b) waste of economic resources occurring when impacts of non integrated projects are conflicting, c) exaggerated exploitation

of environmental resources due to irrational city developments, which fail to minimise space consumption and travel needs. The mission statement of the project thus becomes "to identify best practice in the organisation of land use and transport measures in order to achieve a sustainable pattern of transport and land use in European cities and regions and promote economic, social and environmental improvement".

The main contribution of TRANSPLUS to the solution of the urban problems is to promote and monitor the replication on an European-wide scale of the most effective integrated solutions, i.e. those which can be easily transferred between different member states and applied without any significant modification to existing institutional frame conditions. TRANSPLUS also highlights the possible modifications to the organisational, legal, financial and other non-technical national frameworks which might facilitate integrated approaches.

The project embraces an integrated land-use and transport planning approach to analyse transport demand and contribute towards the creation of a common understanding of the issues at stake and the possible ways to tackle them. In so doing, TRANSPLUS initiated and fostered a continuous learning process that involved consultants and European cities interested in exploring and adopting innovative policy measures. The research process is articulated as follows: 1) System analysis of mega-trends in urban development and strategic approaches towards sustainable transport (which includes collective transport promotion, promotion of non-motorised modes, restriction of motorised individual transport) and identified specific strategies with close land use inter-relation; 2) Learning process involving researchers and users for the analysis, in each identified strategy, of the overall planning and implementation cycle, including the design of specific measures and ways of gaining political acceptance, and the evaluation of final outcomes and side effects; 3) Analysis of barriers to realisation and appraisal of structural compatibility and potential transferability of policies implemented in different contexts, based on the lessons learned in the analysis of significant practices; 4) Analysis of different methodologies to promote citizens, stakeholders and users participation to the different phases of policy planning and implementation; 5) Networking and dissemination activities supported by the development of a website, brochure and newsletters, organisation of workshops with the participation of interested cities, and the final production of the TRANSPLUS Guidelines.

Main Outputs

In nearly four years of research (2000-2003), during which the project has taken on board an additional set of case studies in Acceding and Accession Countries (AAC), TRANSPLUS has produced a large score of knowledge which effectively combines a mixture of documents targeting both field experts and practitioners. Notably, the project presents: 1) an identification of mega-trends and assessment of impacts on land use and transport in Europe; 2) an overview of integrated planning and implementation approaches; 3) an overview of barriers to implementation of policies and realisation of outcomes, as well as of effective solutions applied in a number of case studies; 4) an understanding of transferability and dissemination of good practice, illustrating the concept, the practice and possible mechanisms that shall be implemented to foster the transfer of knowledge and know-how among the different city decision makers throughout Europe; 5) an overview of information, communication and participation processes in a number of case studies; 6) case studies reports from cities both in the European Union and in Acceding and Accession States; 7) technical reports focussing on the: a. Assessment of integrated land use and transport Planning strategies, b. Assessment of implementation strategies, c. Assessment of barriers, solutions and transferability, d. Promotion of the integration of citizens and stakeholders in

urban decision making, and e. Models of participation and their adoption in strategic approaches in urban planning.

The project's trademark product are the *TRANSPLUS Guidelines*, presenting 1) the state of the art of land use and transport (LUT) planning approaches and monitoring and evaluation tools, 2) the good practices in LUT planning and implementation, 3) the barriers encountered and solutions that have been found effective, 4) the role of information, communication and participatory planning approaches, 5) an analysis of the concept, the practice and specific mechanisms of transferability, aiming to understand what solutions and approaches are more or less easy to transfer in different country and city contexts, and 6) final recommendations on how to achieve sustainable transport and land use with integrated policies at city and higher levels of government. Linked to the structure of the Guidelines is the *TRANSPLUS Internet Database*, a relational database containing all the information produced by TRANSPLUS and effectively representing a reference online library where cities can upload information and data on their integrative strategies and conversely retrieve information on similar experiences elsewhere. The Database also represents a major asset of dissemination and exploitation since it provides partners and end users with key information and contacts with cities engaged in developing and implementing integrated LUTR strategies.

Other concrete achievements of TRANSPLUS include 1) the development and continuous update of the TRANSPLUS Website (www.transplus.net), 2) the development and use of the Netboard (www.isis-it.com/netboard), a knowledge management tool used to enhance communication and information storage within the consortium and the LUTR Network, 3) the organisation of three Workshops, with the participation of delegates from EU and NAS cities and experts, 4) the production of dissemination means such as a TRANSPLUS Brochure, a LUTR Cluster Leaflet, Advert Leaflets for the Workshops, a TRANSPLUS Poster, and a Final Newsletter containing a short version of the TRANSPLUS Guidelines.

6.3.6 ISHTAR

The main technical and scientific objectives of the first 24 months of activity in ISHTAR were :

- the performing of a number of reviews of data, models, software tools available at international level and in particular among consortium partners
- the selection of the models to be integrated for the building of the models suite
- the identification of solutions for the integration of these modules within the future models suite.
- the development of the models not available commercially
- the definition of the agreement with the external organisations providing software tools
- the analysis of the policies and measures of interest for ISHTAR involved cities
- the definition of the seven case studies to be run for the demonstration and the assessment of the tools and of the integrated suite to be developed

In terms of management and co-ordination activity the key targets of the activity during this reporting period were:

1. the Scientific Co-ordination, aimed at directing the choices being developed in various Work Packages towards a common and coherent solution
2. the Organisation of general and specific Meetings

3. the Drafting and the Signature of the Consortium Agreement
4. the control of partners Reporting (Bi-Monthly Management Reports collection)
5. the financial management (second payment and collection of year 2 cost statement)

In particular, the main goals of the dissemination activity have been:

- a) the identification and involvement of a wide list of potential users world-wide
- b) the setting up of a dissemination web site
- c) the preparation of the first and second annual brochure
- d) the preparation of dissemination material to be distributed to potential users
- e) the presentation of ISHTAR at national and international conferences.

Scientific/Technical progress made in different work packages according to the planned time schedule

In terms of overall scientific results it can be stated that:

- all the reviews activities have been completed
- the identification of the commercial tools was achieved in WP4 (Soundplan noise software) but still under negotiation in WP2 (Metropolis software involved)
- all the 'selection' and 'model design' activities have been completed.
- most of the software developmental work seems to be done although a remarkable delay is recorded in their integration software
- a detailed definition of case studies was achieved, together with an identification of the local teams in charge of running the case studies work.

In more specific terms the achievements in each work packages can be so summarised:

- WP1 : policies have been analysed and measures of interest in the seven application sites described; the cellular methodology is defined and its software near to completion
- WP2 : models have been reviewed and selected. Several cities will use the already used model, but the suite will integrate an innovative tool (very probably 'Metropolis') : this tool will add 'environmental accuracy' to the results in view of the capacity to model congestion better than standard assignment tools
- WP3 : models of emission, noise and safety were reviewed and a scheme of integration proposed based on a common traffic input. ENEA's TEE model is the software basis for the WP3 tool that will include a noise emission model to be linked to the WP4 noise software of Soundplan. The software writing was significantly made and the writing of the TEE software connector needed for the integration in the suite was started.
- WP4 : pollutants dispersion models have been reviewed and the selection of two models produced by partner ARIA (ARIA Impact and ARIA Regional tools) agreed ; the selected tools are a good compromise among manifold needs. As noise is concerned a commercial 3D noise model was identified in Soundplan after a strict comparison with two commercial alternative tools
- WP5 : final definition of 5 all the 7 case studies and identification of the local teams ('who will do what' tables received). Data for pre and post analyses seem to be globally all collected
- WP6 : models and data for exposure and health impacts have been reviewed. The methodology for the development of the software has been essentially defined. The STEM software by Imperial College will not be the basis for the WHO tool but will be

considered as a reference anyhow. WHO has assigned a subcontract for writing the exposure software. The exposure methodology and software will include the consideration of the trips of population from origins to destination within the urban network.

- WP7 : approaches and data for the modelling of monuments damage were identified; the software was totally designed and the software writing significantly performed. Activity on the software connector for integration was started and discussed with WP8 leader.
- WP8 : the overall architecture of the Suite was designed. Informatic solutions for linking the tools
- were found and the language for data transfer was agreed. The specifications for interface and internal architecture of the suite have been recently defined. Test software for integration was produced
- WP9 : the review of approaches and tools was concluded and a proposition of approach and possible software tools was agreed. The methodology was detailed and the software in good progress. Activity on the software connector for integration was started and discussed with INRETS.

6.4 Methodology, scientific achievements and main deliverables

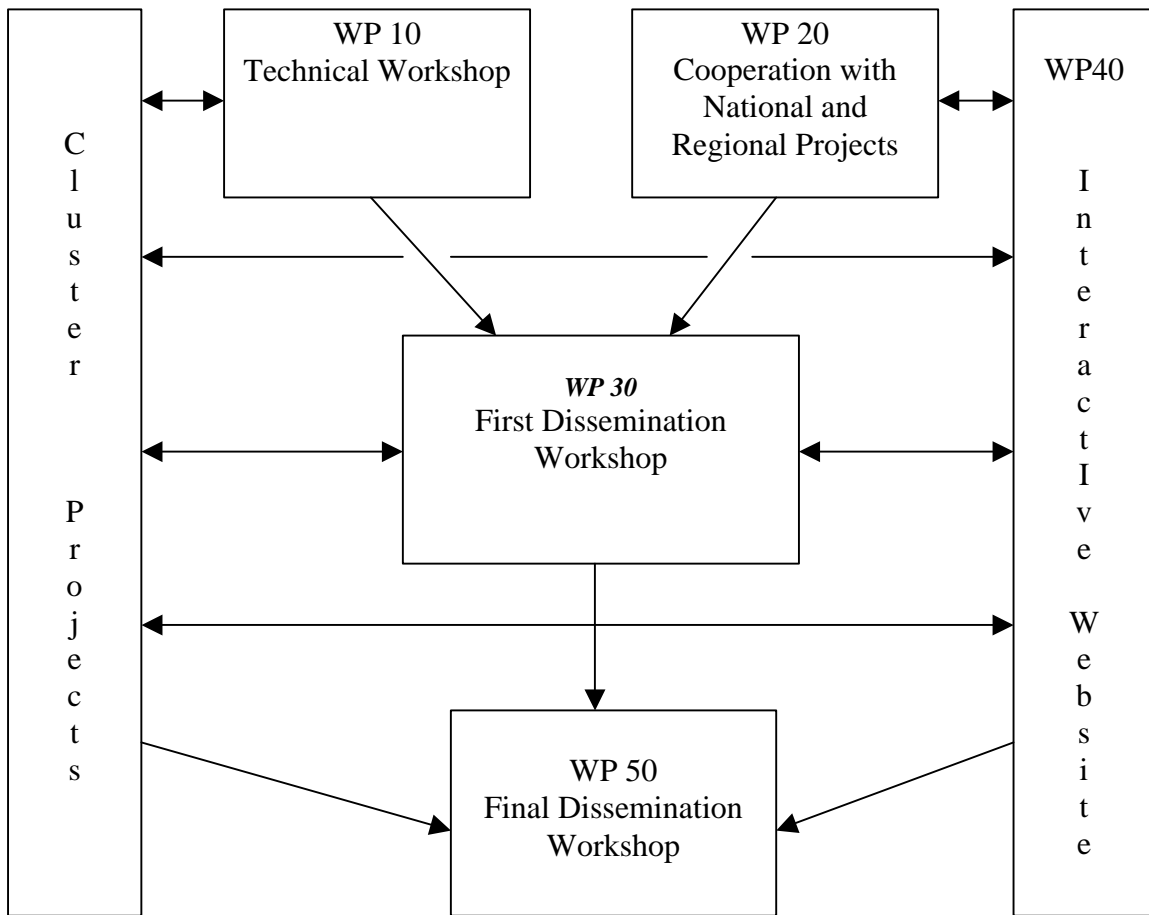
6.4.1 Project work plan

Structure

ASTRAL was designed to enable the users of research funded under Task 4.4.1, under the Key Action more generally, and related national and in regional projects, to benefit fully from the potential synergy which existed between them. This objective was achieved through a series of Work Packages, as listed below, and described in more detail in the following sections. Five were technical Work Packages, each with its own Deliverable. These followed a logical sequence, as shown below. Work Package 60 provided for coordination, management and quality assurance, and ran throughout the project.

Work Packages and Deliverables

Work Package	Title	Deliverable	Title
10	Technical Workshop	1	Research Synergies
20	Cooperation	2	Related Projects
30	First Dissemination Workshop	3	Dissemination Strategy
40	Interactive Website	4	Website Documentation
50	Final Dissemination Workshop	5	Policy Guidance
60	Coordination, Management		



6.4.2 Work package 10: Technical Workshop

Objectives

The objectives of WP10 were to:

- identify key areas of interaction and co-operation between the six cluster projects
- prepare an action plan based on the above areas of co-operation and common interests
- ensure greater synergy and more efficient use of resources in the six cluster projects.

Methodology and scientific achievements

WP 10 has been completed, and is reported in detail in D1. This section summarises the achievements against the WP 10 objectives.

A Technical Workshop was held in Helsinki in August 2001, including the project officer and 13 other delegates from 10 partners, representing all six of the original ASTRAL projects and three of the further four for whom funding had since been announced. The focus of the Workshop was on briefing one another on the progress with individual projects, and on identifying areas for future collaboration. It led to an Action Plan, which is set out fully in Deliverable 1. It also identified the need for continuation of the ASTRAL activities, as it was foreseen that the number of cluster projects will grow and that ASTRAL will be completed before the individual projects are completed.

The Action Plan included four distinct approaches to cooperation:

- i. cooperation within the whole cluster on tasks required by the ASTRAL contract
- ii. cooperation within the whole cluster on other tasks of common interest to all projects
- iii. tasks of common interest to all projects, to be financed through the proposed Thematic Network, PLUME
- iv. areas of interest for two or more projects, to be financed through the individual projects.

Under (i), the key elements were the identification of future research needs, which was pursued further through WP 30 and subsequent preparation for FP6; a list of external experts, developed in WP 20; a set of further meetings of ASTRAL and the LUTR cluster; a common website, since developed in WP 40; a common leaflet, which has since been updated; and common dissemination, under WPs 30 and 50.

Under (ii), the main needs identified were a common definition of sustainability; an outline of conceptual frameworks; a common list of indicators; the basis for a glossary of terms; a city database; and a common list of policy instruments. These were to be pursued by designated leaders within the consortium, using project resources. Later on part of the above issues have also been under discussion within the PLUME project.

Under (iii), the requirements identified were a fuller glossary of terms; the application of benchmarking principles; and a set of common conclusions and recommendations for best practice. These were pursued once PLUME commenced in late 2002.

Under (iv), the principal issues were definition of the policy process; the role of thresholds and targets; citizen participation; the implementation process; the identification and treatment of barriers; the development of evaluation and modelling tools; and the consideration of transferability of results. There is evidence that individual projects have been in contact and information change has taken place in the above and other issues.

The above actions have been taken over, reconsidered and updated and are now managed within the PLUME framework.

Socio-economic relevance and policy implications

All of the areas for collaboration identified in the Action Plan are ones which will help to achieve synergy between the ten projects, and hence more robust and transferable results. These results in turn are ones, which should contribute significantly to increased sustainability in urban areas. It is important that efforts continue to pursue the items above within the PLUME framework.

Discussion and conclusion

The objectives of the work package have been fully met; although the benefits will only be gained in full once additional effort is devoted to pursuing the Action Plan in its updated form within PLUME.

6.4.3 Work package 20

Objectives

The objectives of Work Package 20 were to

- identify all international, national and regional projects in member states and, where possible, accession countries, as well as projects under programmes such as COST and EUREKA, which are relevant to the work of Task 4.4.1
- invite the directors of those projects to participate in the work of the Cluster
- ensure that, where possible, the results of those projects are reflected in the work of the Cluster
- investigate ways of using the projects to assist in the dissemination of the results from the Cluster.

Methodology and scientific achievements

The approach adopted in the Work Package was to allocate member states to partners, and ask each partner to obtain information on relevant projects to a consistent format. The lead partner also covered the research of international organisations and those outside Europe. A total of almost 60 projects have been identified, covering eight countries and nine international activities. This information has since been collated as Deliverable 2, and the contact details are being used elsewhere in the project to provide the wider expert group.

The main problem experienced has been in obtaining information on projects in countries not represented in the consortium, although in one case a partner has still to provide information on his own country's research projects. Deliverable 2 has now been approved, and has subsequently been further updated and used as a source document for PLUME.

Socio-economic relevance and policy implications

The details of the projects identified in the work package will be of value, both in encouraging synergy between LUTR and these other projects, and as a basis for wider dissemination of LUTR's results to the research and user communities.

6.4.4 Work package 30: LUT Stakeholders Conference

Research on sustainable mobility being undertaken by the LUTR cluster of projects was presented at a major conference on 31st January 2002 in the European Parliament. The conference, "Towards sustainable urban mobility", was co-organised by the European Parliament and European Commission. Four MEPs (Members of the European Parliament) chaired the main sessions, and introductory addresses were given by Mr.—Busquin, Commissioner for Research, and Mr.—de Esteban, Deputy Director General of DG Energy and Transport. The cluster, LUTR – Land Use and Transport Research – is financed under the Key Action "City of Tomorrow and Cultural Heritage", within the EC research programme on "Sustainable development and global change".

The meeting was attended by over 150 participants from both EU and accession countries. They included 47 national, regional and city representatives, 55 members of the research community, 23 representatives of other stakeholders, 20 members of the European Parliament, and 17 members of the European Commission.

The conference endorsed the approach being adopted by the LUTR cluster, and the policy makers present reinforced the emphasis which the cluster is giving to a holistic approach, embracing both transport and land use planning. At the same time, delegates made a number of valuable suggestions on the directions for future research. These were summarised by Professor

Tony May of the Institute for Transport Studies, University of Leeds, UK, who coordinates the LUTR Cluster:

1. Further research is needed into the challenge of disconnecting economic growth from transport growth. Both ends of the spectrum are important: can we have further economic growth without increasing car use, and can we curb car use without harming economic activity? Although telecommunications have been suggested as a possible means of substituting for personal travel and face-to-face meetings, the reality is that they are also complementary. Thus solutions which will render homes, work places and services more easily accessible with less travel remains a central strategy to achieve de-coupling in the years to come.
2. More emphasis is needed on intra-generational equity issues, particularly as they concern low income groups and those who are socially disadvantaged. Adverse impacts can arise directly through transport interventions and indirectly through housing costs; similarly enhancements can be identified in both areas of policy. Co-ordination of transport pricing policies and land use taxation may present better location incentives, and reverse the growing competition between central cities and suburbs. However, any such co-ordinated fiscal policy should provide protection for categories of disadvantaged people.
3. We need to bear in mind the wider impacts on historic buildings and cultural heritage; this is an area in which Europe has a particular responsibility.
4. Research needs to take fuller account of the complex time lags in the system, particularly in terms of land use responses. While transport policies can affect 100% of mobility today, land use policies usually concern no more than 10% of the urban fabric – the new places of living and working – and their effects become more visible over decades.
5. We must work through the LUTR cluster to avoid duplication of research, and to ensure co-operation and synergy between the projects (this, of course, we are doing, but it is helpful to have the need emphasised by others).
6. While focusing on challenging research issues which will help achieve improvements in future, we need to contribute to solving today's problems, and to work with those cities which want immediate guidance and support. Good practices need to be constantly demonstrated and shared between cities, as evidenced by the FATIMA and SPARTACUS projects in Framework Four. Moreover, we need to bear in mind that our research programmes are designed to serve society; we must avoid undue pursuit of excellence; the best should not be the enemy of the good.
7. We need to develop better support structures for cities to achieve effective dissemination of good practice. Stronger links to the ACCESS and POLIS networks should be encouraged, and we need to bear in mind that the structure of decision-making, and the support available to cities, vary widely across Europe. Special efforts are needed to strengthen the links with cities within Candidate Countries.
8. We should also support information and education schemes to raise the awareness and change the attitudes of citizens. We need more educated people, fully aware of the social and environmental consequences of their individual choices, and any measures to this end – awareness campaigns, TV programmes, citizens' participation to urban planning etc. – must gain more substantial support from local and national institutions.
9. We should consider carefully the need for guidelines for intervention at a European level, to encourage appropriate action by member states, but also to provide an appropriate context for such action. Subsidiarity should not be taken as an argument to justify the lack of adequate action at the European level.

Further comments were requested to the participants, especially with the perspective of clarifying the role of Land Use and Transport Research in the 6th Framework Programme and the future development of the European Research Area.

After the meeting, a briefing note synthesising the presentations and the main lessons emerging was sent to all participants. At the same time a short questionnaire was prepared and participants were asked to express their opinions on the overall relevance of the themes analysed and on the interest of the transport and land use research. The participants replying to the questionnaire fulfil functions more orientated towards the transport planning field than the land use planning area, although in the majority of the cases both functions are inter-related and contemplated by the organisations. These organisations can be grouped into two main types: the end users community, including 2 city authorities, 1 National Ministry for Environment, 1 public transport association from CEEC (Romania), and 1 representative of car manufacturer (in total 5 respondents); the research community, including 3 public institutions (of which one from CEEC, Poland) and 4 private consultants (in total other 7 respondents).

Specific comments on the research referred to the still rather weak LUTR theoretical background and the need for more models to describe relations between transport and land use. Emphasis on co-operation with other projects in the fields of multifunctional and intensive land use, as well as in the geographical information in spatial management is also mentioned. Other comments were related to the need of establishing stronger links with different but conceptually interrelated fields of research:

- impacts of e-commerce and influence on logistic and vehicle design;
- mobility patterns and special needs of the elderly, whose number is notoriously growing (aging society)
- issues concerning the impact of Transport on the Protection and Conservation of Cultural Heritage were completely missed in the agenda, and only few comments were advanced during the discussion (the CARMEL Project funded under KA4, Theme 4.2.1 has been quoted here for reference)

In what concerns key end user issues, the comments received indicate that LUTR could be improved in terms of:

- more discussion on the roles and links between European/national and local actors in order to better understand barriers to integrated transport planning;
- be aware of the fact that the main issues about car use are not to make them more expensive but instead to offer different forms of transport by combining different modes in the dislocations from A to B;
- promoting the development of non technical approaches and tools enabling authorities in the different geographical levels to better control and plan mobility needs in the long term;
- promoting the dissemination and exchange of experiences in real situations against different decision making structures, legal frameworks and supportive actions.

Research needs – according to the point of view of the end users (authorities, public transport associations etc.) - should be focused on more practical approaches and support tools for problem solving taking as basis the results of researches undertaken in previous programmes. The dissemination of practices and experiences especially in terms of funding networks at national level seems to be a key aspect for the use and implementation of research results at the different scales. These networks assume a relevant role when it is recognised that very

often the results of research projects do not have the necessary audience at national levels. Specific but representative comments from city authorities have been:

- To foster a more effective relationship between research programmes and practitioners on the ground, there is the need for more effective communication on actual achieved outputs. The programmes of detailed monitoring and measuring of travel and land use development patterns undertaken by member states, regions and cities are evolving rapidly. Performance indicators, perception and attitude surveys together with effective benchmarking networks will help shape and direct research programmes to better reflect the interests of end users (*Nottingham city council*).
- Further research on the mobility field taking as a starting point the experience of the Flemish community with the Conventions. The base of the conventions is a mobility plan for the city where some actions are indicated which will become projects in the future. Additionally they oblige a close co-operation between participants of the project and should be approved by the same organisation, therefore a specific emphasis is put on the promotion of participatory approaches. It is also suggested that the structure of these conventions can be used in the LUTR research and follow up actions. (*Ostend city – mobility manager*);

Relevant and wide-scope suggestions have been provided by the Romania Union of Public Transport, an NGO representing the interests of most of the Romanian public transport operators. This answer, although representing a single opinion received from Eastern countries participants, provides useful insights on the research needs in this specific group of countries. Key questions appear to be:

- How mobility could be used both in creating new jobs and encouraging different public transport modes;
- Disseminating Best Practices in Public Transport through a long term transfer and implementation;
- Technical seminars for an efficient specialists training;
- Assessing the risks when implementing projects results;
- Educational seminars, especially but not exclusively targeting the young generation, aiming information and education schemes to raise the awareness on social and environmental consequences of their individual choices. Two main subjects could be: to analyse the “attitude” concerning the use of public transport in traffic and to find out best solutions to change the outlook concerning the relationship between the passengers and the operators (especially drivers);
- Measurement tools for the “performances” of certain policies – how can we define some specific indicators;
- More targeted actions towards the design and implementation of priority systems of public transport in traffic, ecological vehicles taking into account the establishment of minimum conditions to grant a successful implementation.

The organisation of the LUTR Stakeholders Conference and the answers received from the respondents to the questionnaire allow to draw some lessons for future meetings and actions. Indeed, the improvement and development of less theoretical description of project results and the adoption of more practical tools could enable a better control and understanding by users (i.e. city authorities) and consequently the establishment of more fruitful links between researchers and practitioners. Briefly:

- guidance and support in solving today's problems in our cities is needed, as too often it is experimented a complete separation between what are the research results, and what is applied in practice. Very often the cities administration flank researchers and seem to

share the new ideas and attitudes, but when it comes to implementation, made with their own money, they feel free to stick to their own ideas and practice;

- it is important that the cities spend their money to apply solutions and measures that have been proved good by the research developed in the EC research frameworks. It should be started a wider implementation campaign that can give support to the cities in their choices, both economically and technically, so to push them in the direction of sustainability;
- the connection of sustainable mobility and cultural heritage, as well as the one with health and wellbeing, could be two topics that should be deepened, because they are shared by people and can become two good levers to spark off a higher attention towards sustainable mobility.

In conclusion, the LUTR Stakeholders Conference has been seen as a successful initiative, appreciated both from the end users and research communities, but further efforts have been claimed, towards more targeted dissemination actions and future events with more tailored agendas.

6.4.5 Work package 40

The structure, functionality, and implementation of the LUTR web site, <http://www.lutr.net>, operated by the ASTRAL project in support of the LUTR project cluster, is described in detail in the corresponding deliverable, Deliverable 4: Final Version 1.0 (dated 2003 01 31): Interactive Web Site, <http://www.lutr.net>.

The main product and actual Deliverable of Work Package 40, however, is the web site <http://www.lutr.net> itself and the associated auxiliary data base and discussion forum server.

The principal objective of ASTRAL is to assist cities, national governments, international organisations, non-governmental organisations, interest groups and individuals in obtaining maximum benefit from the research undertaken by the Cluster.

WP4 involved design, development and maintenance of an interactive website for use by Cluster researchers, other national and regional projects and the full range of end users. It will provide results, and enable cities, and citizens, to access advice on good practice and tools for developing sustainable strategies.

The objectives of the interactive web site are:

- To serve as a primary dissemination medium for the ASTRAL cluster
- To serve as a communication and coordination tool for the cluster in the area of indicators and benchmarking
- To provide an information resource (consistent and comparable data) for the cluster projects and related FP5 projects as well as their target users, i.e., European cities
- To provide a Thematic Portal for the area of **sustainable urban development, transportation, land use, and environment**, for the research community, city administrations, and the interested public.

The site, implemented under a dedicated URL: www.lutr.net and an associated server for the interactive discussion forum as well as the City Data Base including the relational data base server, includes a number of main sections structured in a JavaScript menu bar accessible (optionally) from all pages.

The main thematic sections include:

- Home page with basic navigation buttons, main icon menu, links to the discussion forum and, optionally, selected special topics as appropriate, e.g., announcement of main workshops and related tools;
- Basic cluster description, optional links for cluster-level results;
- A (dynamic) News and Announcements section;
- Descriptions of the participating projects, contact information of cluster projects (coordinators) and their participants,
- Repository of on-line documents (with a public and a members-only section) both in HTML and for ftp download (MS Word, PDF), primarily project Deliverables (by project);
- Related shared information resources:
 1. Other national (by country) and international projects,
 2. Internet links and
 3. Literature (annotated bibliography)

- City data base (map-based selection/ranking tool and city profiles).

Interactive features implemented on the server include:

1. A full-text search function for all HTML documents,
2. A user registration page,
3. An on-line questionnaire for the assessment of the First Stakeholder Workshop (now removed after the completion of WP 03) ,
4. An on-line project registration form,
5. The LUTR Case Study Cities Data Base with interactive sorting/ranking and selection as well as dynamically generated city description pages, and the
6. Discussion Forum with associated functions like mail subscriptions.

Other support features include

- Descriptions of data requirements and checklist (as part of the restricted documents section,
- On-line documentation of the city data base tools, and
- Web access statistics.

The Discussion Forum has its own rich set of functions and interactive tools including extensive on-line documentation as well as its own access statistics.

As a general support feature, a mailing list (astral@ess.co.at) is maintained for the efficient information of all cluster participants.

The first prototype version of the server was made operational by December 2001; the web site has undergone several revisions and restructuring based on input and suggestions provided by the partners.

Server operations were discontinued at ESS, at the request of the project coordinator, and the domain registration www.lutr.net was transferred to ISIS by May 2003, for continuing operation under the PLUME framework.

6.4.6 Work package 50

The main objective of the WP50 in ASTRAL was the organisation of its Final Dissemination Workshop, later called the *LUTR Conference*, and the writing of the minutes of this workshop.

The initial idea of the conference was to guarantee an effective dissemination of the results of the five original cluster projects to the end-users after the completion of all these projects. However, only three of these were completed by the date of the conference. Because of this, the contents of it were slightly modified. By combining it with two final workshops of the two cluster projects, TRANSPLUS and PROPOLIS, it was expected that the attendance at all these three events would have provided an opportunity to "explore policies, innovative solutions and decision support tools in detail, and to obtain an overview of the wider range of research results and opportunities for implementation arising from the Programme". Also representatives of local/regional authorities in charge of land use and transport tasks were invited as speakers at the Conference. Their contribution was considered to serve for testing the results and methodologies of the projects.

Several problems were confronted with the arrangements of the conference. One big problem was the venue. It was decided to be in Budapest, but we had difficulties to get the right contacts there. This caused problems with all the preparations of the conference. Finally, a very modest budget made it really difficult to gather a big enough audience to the conference. However, thanks to the generous budget of the TRANSPLUS project for inviting people to their own final workshop in Bratislava it was after all possible to get a reasonable amount of people to attend it. Altogether 96 people were finally registered to the conference, although only about 2/3 of them were actually present. After all, despite many problems in organising the conference it was finally quite successful.

The conference gave a rather good total picture of the present situation in land-use and transport policies; both in Accession countries and in present EU countries. There are certain differences between these countries due to their different histories. Car ownership in Accession countries is still lower than in the EU countries in general, but the lead has been quickly reduced. The whole LUTR research field became also quite well clarified in the conference, although only glimpses of it were presented. The results of the projects finished so far seem to be essentially congruent and also complementary. Nevertheless, it became also evident that still a lot of work should be done in this field.

However, for the main purpose of the conference, an effective dissemination of the results, it was not at all sufficient. Most of the audience was already "insiders", involved in the cluster projects, and not many local people either participated in it. The dissemination will be continued in PLUME.

Finally, a proceedings report of the conference was written. The main part of it consists of the individual presentations in the conference, which is included as the annex to this report. These were transcribed from the available PowerPoint material. Furthermore, a summary of the presentations plus conclusions were written.

What was learned?

- The venue should be settled early enough with people really involved with and interested in the matter.

- The conference budget should be big enough allowing to invite several key speakers and stakeholders, at least by reimbursing their travel costs.

With modest budgets it is a good idea to combine such events with some bigger events or combine several similar events together, as was done in this case.

6.5 Conclusions

ASTRAL has identified a number of areas for collaboration between the LUTR Cluster projects, and provided links to some 60 related projects worldwide. It has also developed a website through which further collaboration can be stimulated. It has provided the starting point for the more extensive project PLUME, which will involve researchers and end users in the assimilation and testing of research results, and their wider dissemination and exploitation.

The direction of the project was changed substantially with the launch of PLUME, to which many of its activities were transferred. While ASTRAL itself was under-resourced for what it aimed to achieve and always at the mercy of the resource demands of the constituent projects, PLUME has established a more effective means of coordinating and comparing the industrial research projects, as well as providing more appropriate resources for the involvement of end users and the dissemination and exploitation of results.

Experience has been gained in the management of such complex clusters, which should be of value to the Commission in Frameworks 6 and 7.

6.6 Dissemination and exploitation

The LUTR Website

In order to widely disseminate the main results and solutions identified by the LUTR Project Cluster, the project developed, implemented and regularly updated a dedicated website (www.lutr.net). Over the course of ASTRAL, the LUTR website was progressively improved to provide information and links to the participating projects, as well as links to other relevant projects, updates on transport and land use planning related news and events, a LUTR pertinent glossary, and key downloadable documents resulting from the state of the art of the LUTR research.

A further upgrade was implemented in coincidence with the relay of all website operations from ASTRAL to its successor, PLUME. While retaining the general approach, the revamped LUTR website sought to afford the enlarged Cluster (now 12 projects) and the end users with an increased range of information and online tools. In a nutshell, the website was re-developed adopting a clean layout and a common format for all LUTR projects, and was structured as follows:

- *Public website:* providing a window on all LUTR projects activities and findings. Public documents and databases, news, events, feedback opportunities and links are available for everybody to use. This part of the web-site liaises with relevant world-wide initiatives and projects, including UN, European, national and regional projects. Links are created also with other web based permanent platforms and portals, such as ELTIS, EPOMM, etc. The objective is that of maximising the exposure of LUTR activities;

- *Private website*: providing an online password-protected support tool for participants to the network exclusive access. This part of the web-site (in construction) addresses in particular those internal communication necessities between international, national and regional projects, etc.. Examples of use are: facilitation of sharing of internal documents and standard administrative forms, creation of a diary of events, maintenance of contacts, news, feedback and links database, etc.

To support networking and interactive dissemination at the national and European level of research projects and of the implementation activities of the end users, the website was enriched with database of contacts. The aim was to reach all stakeholders potentially interested in LUTR research, among which: land use and transport authorities, transport operators and users, public and private employers, retail, freight and banking companies, schools and universities, media, environmental associations, individual citizens and associations.

The database include and/or will include:

- *Target audience database*: a contact list of stakeholders classified according to their potential interest to use or apply solutions available from the network (this database is already online in the private website);
- *End user database*, including basic information on end user main characteristics, current practices and needs, collected recurring to key informant surveys and while assessing user needs;
- *City database*, including figures on the LUTR case study cities, among which benchmarking indicators related to specific issues of land use planning and transport for sustainability.

Exploitation

The exploitation of LUTR project results has been take over in the PLUME Thematic Network, with the constitution of an Exploitation Group composed by national members from Austria, France, Germany, Greece, Italy, Ireland, Netherlands, Portugal, Sweden, Spain, UK.

The general objective of the EG group is “to facilitate the transfer of innovation in the field of planning and urban mobility from the research community to end-users in each national context”. Related to this general objective, two specific objectives have been set out in the Exploitation Plan: i) strategic objective: to develop and promote the implementation of coherent Land Use and Transport Integration strategies in the European Union, as part of the EU Sustainable Development Strategy and the Thematic Strategy on Urban Environment (TSUE); ii) tactical objective: to disseminate to a wide range of target users the results of Land Use and Transport Research (LUTR) as identified in the PLUME State-of-the-Art review and Synthesis Reports (SRs)¹, and in a form suitable for specific user needs.

The knowledge synthesis presented in the SRs is exploited providing guidelines for achieving sustainable transport and land use with integrated policies. A common framework of action is recommended where:

¹ PLUME has produced synthesis reports (SRs) for: Environmental problems, Economic problems, Land Use Planning Measures, Walking and Cycling as Solutions, Strategy Development, Urban sustainability and its appraisal. A further batch of SRs – including Socials problems, Attitudinal and behavioural measures, Infrastructure provision, Pricing, Freight delivery, Implementation of strategies, Public Participation, Vehicle technology – will be ready in March 2004. These SRs summarise the main findings of the LUTR projects in a form accessible to practitioners.

- headline objectives of LUT policies to achieve sustainable transport and land use are identified as: i) to reduce the need of travel; ii) to reduce car dependency and motorised individual transport; iii) to reduce the use of greenfield land; iv) to reduce disparities in housing and travel costs of households, as well as of costs of access to essential public services; v) to reduce transaction costs in a number of marketplaces;
- integrated policy implementation is a key aspect, and include a number of tasks: i) deliberation; ii) implementation; iii) monitoring; iv) evaluation, v) influencing; vi) co-ordinating, vii) participation;
- these tasks are interlinked in a complex web of relationships to be established between different actors, tasks and at different levels of government (local, higher level).

The exploitation strategy and activity of the PLUME exploitation group consists in understanding what are the specific aspects to be taken into account in the different national contexts to realise an effective integration of land use and transport policies and a more sustainable urban environment, and how the LUTR projects results may contribute in this process.

6.7 Publications

All publications have been generated by the participating projects, and are listed in their reports.