

TEN-ASSESS

CONTRACT NO. ST-96-AM.601

Deliverable [R(5)]

**Interconnection Among Tasks:
A Guide to the Fourth Framework
Strategic Transport Research
Programme**

**Technical Annex:
Proceedings of the Vienna
Meeting, June 1998**

Project Co-ordinator:

*The Interdisciplinary Centre for Comparative
Research in the Social Sciences*

Vienna, December 1998

Executive Summary

This report deals with the interconnections among research tasks in the Fourth Framework Strategic Transport Research Programme. We show through a systematic analysis of both the programme tasks as formulated by the Commission services (the demand side) and of the projects commissioned under the programme (the supply side) that there are many links which, if taken advantage of, could finally effect the establishment of a solid European knowledge base for the identification and resolution of major transport problems, including of policy conflicts. Whilst this is true in general of transport research, it is particularly true of the strategic transport field.

The emergence of a strategic transport research agenda reflects the gradual recognition of two interdependent issues: first, that transport represents a policy arena and not alone a field for infrastructure investment; second, that there is a need to promote a comprehensive science and policy interaction. The demand for a strategic transport research programme at European level is related, in turn, to the drive towards harmonisation through the step-by-step formulation and introduction of a Common Transport Policy (CTP).

The Common Transport Policy is primarily promoted through two sets of measures: infrastructure investment in the trans-European networks (and their extensions to the CEEC and CIS); and the introduction of common legislation in the transport sector.

The transport RTD programme has a complementary role to play with reference to CTP, albeit a very important one. On the one hand it is expected to provide in a stepwise fashion the connecting tissue, so-to-speak, for the emerging European transport system through technological, management or organisational solutions which are user-driven—this orientation characterises in particular the sectors rail, road, air, waterborne, combined and urban of the transport RTD programme. In this framework it is in part also considered a policy monitoring device.

On the other hand, the transport RTD programme is anticipated as a device that allows to analyse the 'mutually related links between the transport sector and the main sectors of society' with particular attention drawn to the problems currently faced in the transport sector, namely, economic inefficiencies, congestion, accidents, environmental damage, high energy consumption as well as geographical imbalances. The provision of 'necessary knowledge to support for short term corrective policy actions as well as for long term strategic policy actions' is thus the main goal of strategic transport research.

The programme tasks in conjunction with information from the projects commissioned under the programme suggest four focal areas of interest in the strategic transport research programme:

- Information Systems, Databases and Dissemination, a set of tasks that could be best described as horizontal measures, since their input is of relevance for all other tasks in the strategic and other fields.
- Scenarios for understanding future development trajectories, the influence of external factors on transport and the way policy impacts on transport.
- Impact Assessment for understanding direct and indirect effects of transport on specific groups or areas and for analysing intermediate constraints or facilitators: sub-areas of interest include socio-economic assessment, intermodality and interoperability, technological assessment, environmental assessment, quality assessment and work cultures.
- Policy Assessment for investigating the role of policy in shaping actual and future developments.

A preliminary review of the projects commissioned under each of the above four themes and how they interconnect reveals the strengths and weaknesses of the programme's output. In practically all focal fields of interest significant advances have been made with regards the development of analytical tools and techniques applicable to the European context. The production of policy-relevant knowledge has nevertheless not been the immediate objective of most projects, mainly by reason of the lack of the necessary analytical tools for such an exercise. As the programme and most projects draw to an end, thus reaching maturity, more such results can be expected.

Introduction

This paper deals with the interconnections among research tasks in the Fourth Framework Programme. The idea for this originated at the onset of TENASSESS project during the negotiations concerning the merge of the two consortia leading tasks 1.6/32 and 1.6/36 respectively.

There were two reasons for this:

- a) The first concerned the specific research tasks covered by the TENASSESS project: whilst recognising the distinctive character of the methodological approaches represented by the two consortia selected for leading tasks 1.6/32 and 1.6/36 the evaluators and task managers at the Commission level were precisely for this reason particularly interested in effecting a merge between the two projects. Such a merge, they thought, could not only bring forward important synergies in terms of contents but would also provide an opportunity for really putting interdisciplinary to the test;
- b) The second reason concerned the lack at the time of any concerted action in the field of strategic research despite the increased importance of the latter in the 4th Framework Programme. Partly the reason for this was lack of funds; partly a continuing lack of focus.

The interconnection between tasks 1.6/32 and 1.6/36 has already been in part discussed in chapter 4 of Deliverable R(3) of TENASSESS¹ ('Between Complexity and Rationality') and will again concern us in the final report for the project which is due in Spring 1999.

The more general question of how the various tasks of the strategic research programme interconnect was the subject of the second TENASSESS seminar organised by the ICCR and ERRI (Vienna, June 25th 1998).² This provided the opportunity for the first time, besides the Annual Co-ordinators' Meeting organised by DG VII, to meet with representatives of other research projects to

¹ TENASSESS 1998 (Contract No. ST-96-AM.601), *Deliverable [R(3)] - Comparative Report Case Studies: The Implementation of European Transport Projects; Strategies and Policies*. Authors: Marianne Ollivier-Trigalo and Sandrine Rui (INRETS), Simon Milner and Mark Brown (HALCROW FOX), Liana Giorgi (ICCR), Project Co-ordinator: ICCR, Vienna, February 1998

² The proceedings of that meeting are attached as a Technical Annex to this Deliverable.

discuss ongoing research activities and to try and place these in a comparative perspective. What this and other meetings since have shown, is that there are many links among the various projects, which if taken advantage of (in the Fourth Framework Programme or more significantly in the Fifth) could finally effect the establishment of a solid European knowledge base for the identification and resolution of major transport problems, including of policy conflicts. Whilst this is true in general of transport research, it is particularly true, we contend, of the strategic transport field.

Meetings like the one organised in the framework of TENASSESS last June are without doubt of major importance for promoting the integration of knowledge. We felt nevertheless that it would be important to also prepare a document that could be used by researchers and administrators alike to guide them through the labyrinth of knowledge production. That knowledge production is not always transparent and that this is one of the main barriers to its applicability is, in the meantime, well-known. Research is not a linear process which explains, at least partly, why it is often difficult to either assess or understand it whilst in the making. This is also the reason why this deliverable could not have been produced earlier in the TENASSESS process.

The view of the strategic transport research programme reported below is not necessarily the only one. Nor do we claim that our research has been exhaustive or that it pre-empts the necessity for further investigations. But we consider it a good starting point to begin thinking about how to integrate knowledge which is perhaps one of the most important elements of the knowledge production process itself – not without reason both at the onset and towards the end of any research project or programme.

The paper has two main chapters. In chapter one we consider the transport RTD programme as formulated by the Commission, its goals and objectives, the process of formulation as well as the contents and its structure. This is an outline of what we call the ‘demand’ side of the programme. Chapter two looks at the ‘supply’ side: this comprises the individual projects commissioned by the strategic research programme. In this chapter we focus on identifying and analysing the interconnections among the various projects. How the ‘demand’ side informs the ‘supply’ side and vice-versa is important for understanding the complex relationship between science and policy. The latter will concern us in more depth in Deliverable R(7) of TENASSESS (due early in 1999) which will also report on the results of our Delphi survey carried out in four waves in the years 1996 to 1999 among policy-relevant actors across Europe.

1 The DEMAND Side: The Strategic Transport RTD Programme

1.1 Introduction

The emergence of a strategic transport research agenda reflects the gradual recognition of two interdependent issues: first, that transport represents a policy arena and not alone a field for infrastructure investment; second, that there is a need to promote a comprehensive science and policy interaction. The demand for a strategic transport research programme at European level is related, in turn, to the drive towards harmonisation through the step-by-step formulation and introduction of a Common Transport Policy (CTP).

1.2 Goals and Objectives

Following the Treaty on the European Union, all research and technological (RTD) activities of the European Union are intended to serve Union policies. For transport research this implies relating closely to the Transport White Paper published in 1992.³

The Transport White Paper sets three overarching goals for CTP: economic growth, cohesion and sustainability. Analytically it identifies the following policy areas as of particular relevance for promoting these goals:⁴

- Development of the transport system (including the external dimension);
- Integration of the transport system;
- Environmental protection and sustainability;
- Safety;
- Market access and structure;
- Fair and efficient pricing; and
- Social dimension.

³ Transport White Paper, “*The future development of the Common Transport Policy. A Global Approach to the Construction of a Community Framework for Sustainable Mobility*”, COM (92) 494 final.

⁴ TENASSESS 1996 (Contract No. ST-96-AM.601), Deliverable [R(1)], *Comparison of National Transport Policies*; Authors: Paul Freudensprung and Liana Giorgi (ICCR), Project Co-ordinator: ICCR, Vienna, Summer 1996.

The Common Transport Policy is primarily promoted through two sets of measures:

- First, infrastructure investment and policy advocacy of the so-called Trans-European Networks (and their extensions to Eastern Europe and beyond),⁵
- Second, common legislation in the transport sector, known as the Transport Acquis.⁶ The latter focuses primarily on effecting a liberalised transport market structure and on the establishment of common quality standards, especially in the field of safety, but also with regards interoperability and the integration of the transport system more generally.⁷

The transport RTD programme has a complementary role to play with reference to CTP, albeit a very important one. On the one hand it is expected to provide in a stepwise fashion the connecting tissue, so-to-speak, for the emerging European transport system through technological, management or organisational solutions which are user-driven—this orientation characterises in particular the sectors rail, road, air, waterborne, combined and urban of the transport RTD programme. In this framework it is in part also considered a policy monitoring device.

On the other hand, the transport RTD programme is anticipated as a device that allows to analyse the ‘mutually related links between the transport sector and the main sectors of society’⁸ with particular attention drawn to the problems currently faced in the transport sector, namely, economic inefficiencies, congestion, accidents, environmental damage, high energy consumption as well as geographical imbalances. The provision of ‘necessary knowledge to support for short term corrective policy actions as well as for long term strategic policy actions’⁹ is thus the main goal of strategic transport research.¹⁰

⁵ Consider the relevant TEN Directive and the Christopherson list of 14 priority projects in Western Europe; and the so-called Helsinki corridors for CEEC and CIS.

⁶ See DG VII, *Guide to the Transport Acquis*.

⁷ There are some 100 directives making up the Transport Acquis (including amendments). One third of these deal with the subject of market access and structure across relevant modes (road, rail, air and waterways) and for combined transport. A further one third deal with safety regulations. Close to 10 per cent with harmonisation of standards in the social dimension.

⁸ *RTD Programme in the Field of Transport; Additional Information Papers*, 1996, p.11.

⁹ *Op. cit.* p.12.

Beyond supporting CTP, the transport RTD programme, like any other EU research programme, also seeks to promote the science and technology policy agenda of the European Union which involves among others: promoting networking among national research communities in order to consolidate a European research basis and community; promoting the interaction between basic and applied research as well as between research and industry and research and policy with a view of correcting the so-called 'European paradox';¹¹ co-ordinating national and European research following the principle of subsidiarity; supporting indirectly the development of a research base in countries displaying structural deficiencies.

1.3 Process of formulation

Following the principle of subsidiarity it is important to co-ordinate national and European research. Thus national governments and other potential or interested users (from the policy community but also from the industrial and infrastructure sides) need to be consulted when formulating the programme.

The process could be described as one of co-ordinated decentralisation or of 'negotiated compliance'.¹² In the Fourth Framework Programme national interests have been filtered through the Management Committee which is made up of one to three national representatives per country, mainly high-level civil servants at relevant ministries. The latter are in charge of elaborating position papers to the proposals of the Commission. In some countries these position papers are elaborated in a top-down fashion, either from the administration or

¹⁰ The distinction drawn between the goals of strategic transport research as opposed to those of other transport RTD sectors should not be taken to mean that policy assessment projects, for instance, are not to be found at all in other transport RTD sectors. But they do not predominate. In fact the most 'hybrid' sub-programmes are those of the urban transport and those of road transport, the former possibly by reason of the multimodality and land-use planning, the latter by reason of its hegemonic position in land transport and possibly also the more advanced state-of-the-art research. The interfaces among the transport RTD sub-programmes both on the demand and the supply sides are the subject of the so-called SITPRO project of the 4th call which is currently running (project co-ordinator: Halcrow Fox).

¹¹ Cf. Green Paper on Innovation, 1997.

¹² This term appears to be of Dutch origin rooted in the consensus democracy model of the Netherlands. It has been used widely by the OECD, especially with reference to the elaboration of the Environment and Technology Programme and as a proposed model of 'best practice' for the formulation and implementation of environmental policies.

from national experts commissioned with the task. In other countries, a more bottom-up approach is favoured, which is open to the wider research community (i.e. through the organisation of workshops or expert meetings).

There are clearly advantages and disadvantages to this ‘negotiated compliance’ model. The main advantage is its participatory character, which enables many and different interests to find their way into the research agenda. The main disadvantages relate to the bureaucracy of co-ordination and management it necessitates on the one hand; and the difficulty imposed on effecting overall integration on the other.

What this process implies is that it would be wrong to talk of either uniform demands or of *policy-led* research. The programme of research elaborated by the Commission and which is described in the section below can be said to be *policy-relevant* and only as such seeking to serve Union policies. In this connection it is perhaps also worth noting that CTP is likewise neither uniform nor free from contradictions. In the Transport White Paper this is recognised with reference to the discussion of barriers to CTP implementation: barriers are associated with imbalances, inefficiencies and disequilibria between modes of transport, demand, competition and complementarity (see also Adam, 1998, Deliverable R(8), TENASSESS).

This is more generally the problem with the discourse of ecological modernisation¹³ which considers it possible to balance economic growth and sustainability demands. The term as such of ‘sustainable mobility’ which underlies CTP and the transport RTD programme represents a vision but is certainly not (yet) a clear political programme for the simple reason that not enough is known about the relevant issues at either the local or global level. This inevitably increases the demands made on research but also its responsibility. At the same time it makes research more difficult as there are many more unknown parameters that need to be considered.

1.4 Contents, Structure and Implementation

The Transport RTD Programme is divided into seven sectors. The following table displays the research themes per sector and the number of tasks corresponding to each.

¹³ Cf. Hajer (1997), *The Politics of Environmental Discourse; Ecological Modernisation and the Policy Process*, Oxford, Oxford University Press.

AREA	Research THEMES	No. TASKS	
Strategic Research	Information Systems	9	
	Development of Scenarios	4	
	Economics of transport systems	5	
	Developing intermodality	3	
	System organisation & interoperability	4	
	Integration of new technologies	5	
	Policy Assessment	5	
	Rail Transport	Train Control Systems & ERTMS	26
		Safety	6
	Interoperability	11	
	Economic, organisation and social aspects	19	
Integrated Transport	Quality of Network	4	
	Quality of Terminals	3	
Air Transport	ATM Domain	25	
	Air Transport Safety & Environment	14	
	Airports	7	
Urban Transport	Transport Management—Systems	3	
	Transport Management—Techniques	3	
	Transport Management—Policy	5	
	Strategies for Changing Modal Split	7	
	Transition in Multimodal Transport	4	
	Pricing and Financing	5	
Waterborne	Maritime Transport	11	
	Inland Navigation	6	
	Efficiency, Safety, Environment	18	
	Human Resources	14	
Road Transport	Sustainable Mobility	8	
	Safety Policies	7	
	Traffic, Transport & Information	7	
	Road Infrastructure	7	

Source: EC, DG VII, RTD in the Field of Transport, 1996; Status up to 3rd call.

The Strategic Research sector which is the focus of the analysis in this paper accounted for 13 per cent of all tasks and almost an equivalent amount of the total budget.

The themes that were identified as of particular relevance for strategic transport research were listed as information systems; scenarios; economics; intermodality; interoperability; integration of new technologies and policy assessment. Characteristic is that the budget was divided almost equivalently across these themes.

Reading through the terms of reference for the various tasks one obtains a better idea of what the demand side has had in mind when setting the agenda for the strategic transport research. There are four focal areas of interest:

- Information Systems, Databases and Dissemination, a set of tasks that could be best described as horizontal measures, since their input is of relevance for all other tasks in the strategic and other fields.
- Scenarios for understanding future development trajectories, the influence of external factors on transport and the way policy impacts on transport.
- Impact Assessment for understanding direct and indirect effects of transport on specific groups or areas and for analysing intermediate constraints or facilitators.
- Policy Assessment for investigating the role of policy in shaping actual and future developments.

In relation to all of the above areas, the emphasis is placed not only on obtaining results and analysis but also on the review and development of methodologies or models. Hence for example tasks concerned with the analysis of existing transport data also require the review of the applicability of existing methods of data collection and the definition of schemes for future actions of data collection or of methodologies for establishing general databases; scenario tasks require the establishment of modelling for analysing interrelationships; tasks concerned with impact assessment (whether concerned with the economics of transport systems, intermodality, interoperability or technology assessment) expect the development of tools for modelling impacts; and tasks concerned with policy assessment likewise require the elaboration of methods for analysing and understanding transport policies. Furthermore, all tasks are also expected to relate to sustainability considerations, especially environmental concerns and social cohesion with reference to CTP.

The programme also identifies possible linkages among tasks. The Commission services have sought to advance the establishment of these linkages in four ways:

- concerted actions;
- the merging of research consortia;

- the encouragement of proposals covering two or more interrelated tasks; and
- the phasing of calls for tenders in four calls.

The strategic research programme comprises 52 research projects for covering the approximately 40 research tasks (including the Fourth Call). 19 projects were granted in the first call; 15 in the second; 7 in the third; and 11 in the fourth.

The Fourth Framework Programme is now approaching its end, with the longest or most recently commissioned projects running till the year 2000. Two evaluation studies have been granted to review the results from the scientific, policy and technological viewpoint. The results will become available in 1999.

A mid-term assessment study (1997),¹⁴ covering the first half of the Fourth Framework Programme and the previous APAS and EURET activities, came up with 10 recommendations concerning the contents and management of the Transport RTD programme as a whole. In brief, these were the following:

1. To keep the transport RTD programme distinct, yet
2. To promote better co-ordination with other General Directorates in charge of other research programmes, part of which might be relevant for transport;
3. To continue to focus on both technology and policy research;
4. To give priority to projects with a clear European-added value;
5. To improve the transparency and overall comprehensiveness of the programme, allowing for more long-term projects that can assist in the drawing of the interconnections among the tasks;
6. To enlarge the scope of the strategic research programme to allow this to function as an umbrella for other sub-programmes;
7. To acknowledge the key role of the Commission services in terms of managing the programme, which includes both ensuring an effecting interconnection among tasks and adequate dissemination, through the allocation of more human resources to this task;

¹⁴ European Commission (1997), *Five Year Assessment of the Specific Programme: TRANSPORT*, Brussels, EC (Authors: Baanders, A., Hernando Cogollor, J., Holmberg, B., Jones, P.M., Kallberg, H. and Lukaschek, L.), EUR 17595 EN.

8. To build in more flexibility in the scientific and financial management of the programme to allow for elaborating the relevant results for future actions past the official finishing date of the programme;
9. To improve dissemination activities centrally, i.e. from the Commission side and in this connection, albeit at the project level,
10. To continue to promote concerted actions or like-measures.

Eight of the above recommendations deal directly or indirectly with the issue of the interconnections among tasks (numbers 2, 5, 6, 7, 8, 9, and 10). This shows the importance attached to this issue.

It is beyond the scope of this paper to assess the extent to which these recommendations have been implemented, either at the programme or the project level. This, we gather, will be more the task of the two evaluation studies recently commissioned to examine the whole of the Fourth Framework Programme in the field of transport.

What we try to do in the next chapter by reviewing the contents of the commissioned projects of the strategic research programme, i.e. by looking at the supply side, is to analyse more closely the research agenda. Our assumption is that the real research agenda is itself constituted along the way through the interaction between the demand and the supply side. This we hope will be of assistance when seeking to grant the research programme 'a clear and communicable vision' as recommended by the authors of the 'Five Year Assessment' exercise. The Fifth Framework Programme might be setting other priorities, but is unlikely to change the overall framework or strategy in terms of focal areas as these are quite exhaustive already. In order to establish interconnections in the long-term, it is important to try and capture the emerging meaning of terms and concepts as well as the new questions set by ongoing research.

2 The SUPPLY Side: Research Projects

2.1 Introduction

The previous chapter outlined the main themes of the strategic transport research programme. To reiterate, the following focal points were identified:

Information systems, databases and dissemination;
Scenarios;
Impact assessment, and
Policy assessment,

with a cross-cutting emphasis placed on the development of methodologies and models.

Below we examine in more detail the essence of the above themes by considering the research priorities or method of approach of the projects running under these.¹⁵

2.2 Horizontal measures: Information Systems, Databases & Dissemination

A total of eleven projects and/or concerted actions were commissioned to cover the focal area 'Information Systems, Databases & Dissemination', of which three in the field of dissemination and eight in the field of information systems.

INFOSTAT sought to develop concepts and standards for a European Transport Information System (ETIS) through an analysis of existing data sets across European countries. ETIS ought to include data needed to (a) support transport policy making, (b) understand mobility patterns, and (c) carry out impact assessment of transport activities.

¹⁵ Important to note is that it has not been possible to analyse in depth all 50 strategic transport research projects as the resources allocated to this task have been limited and as most of the projects were still ongoing at the time of study and their deliverables were not yet completed or approved for dissemination.

New concepts are necessitated by reason of the emergence of CTP and the emphasis placed by this on sustainable mobility and related concepts (intermodality, environment, social cohesion etc.) and include infrastructure and environmental bottlenecks, the corridor concept, advanced accessibility, the transport chain concept, logistic families, and transport quality.

The proposed ETIS indicators were subdivided in five fields: (a) spatial and land-use characteristics of the planning area; (b) population, economy and society indicators; (c) transport demand indicators distinguishing between goods and passengers; (d) transport network characteristics covering nodes and links; (e) transport service indicators for passengers and goods; and (f) transport impact indicators, covering public health, environmental impacts, economic and land-use indicators and social impacts.

The objective of the review exercise of existing data sets was to identify, both at national and international levels, the main gaps between the information actually available in Western Europe (and partly the CEEC and the Baltic States) on the one hand, and the requirements of ETIS on the other hand. Gaps were identified for all fields and for most of the countries examined in depth (France, Germany, Netherlands, UK, Finland and Poland).

Proposed immediate actions for overcoming these gaps were less concerned with data collection than with formulation of goals and the understanding of interrelations: hence, for instance, it was found that there is a need for a new theory for understanding mobility and that this ought to guide any future actions of data collection or harmonisation, if necessary; or that traffic flow or traffic assignment exercises ought to resolve the zoning problem taking into account that the NUTS classification used by EUROSTAT as a basis for the collection of socio-economic and other data represents on the one hand a break with national statistics and on the other might be problematic for certain transport analyses.

The objective of **BRIDGES** has been to develop a software structure for ETIS, whereby the emphasis of the research work was placed on establishing the links (hence bridges) between existing applications rather than coming up with a new one. The deliverables were mostly technical in nature, including a guide on transport digital data sources, a format for data exchange between transport models, and interfaces for transport planning tools.

One of the recommendations of INFOSTAT has been the establishment of a reference centre for major infrastructure centres. This has been the objective of **ASSEMBLING**: The Observatory Network being established by this project

consists of monitoring centres in the East Mediterranean, the Scandinavian countries, the Rhine Gateway, the Pyrenees and West Mediterranean.

In connection with ASSEMBLING, i.e. with reference to the transport infrastructure networks looked at by ASSEMBLING, **GEOSYSTRANS** has been seeking to develop a methodology that allows to build databases and data models for combining transport flow data with socio-demographic data, whereas **MESUDEMO** has been looking into developing a methodology for establishing databases on passenger, goods and traffic flows which defines an organisation framework and a procedure for estimating missing data.

In terms of impact assessment it is often desirable to have traffic flows which are spatially defined in terms of origin and destination. **OD-ESTIM** was concerned with coming up with a method for developing such OD matrices, considering the shortage of information in this area. This method uses regional economic values to estimate region-to-region traffic flows, assuming a strong correlation between the two.

MEST and **TEST** have been dealing with travel behaviour methodologies. The objective of MEST has been to compile and test a so-called long-distance travel diary which can be used in European-wide surveys for studying travel behaviour. The work has also involved defining cost-efficient sampling designs as well as weighting and imputation methods for dealing with missing data whilst maintaining representativity. Whilst MEST is concerned with developing a survey method for studying travel behaviour, TEST focuses on identifying the best technology or best technologies for carrying out such a survey seeking to balance three main performance indicators, namely high response rates, low respondent overburdening and quality of information collected.

Finally **MYSTIC**, among the projects dealing with information systems and databases, offers to produce a modelling framework that allows the forecasting of traffic and congestion on the Trans-European networks. Particular attention is given on typologising and testing methods for building OD matrices (see also OD-ESTIM).

Turning now to dissemination, we find three concerted action projects that have been dealing with this topic. **CONCERTO** is in many respects a follow-up of the INFOSTAT project, its primary objective being to realise one of the main recommendations of the latter, namely the facilitation and promotion of concertation activities in the domain of information systems. CONCERTO aims to collect information from projects across the 4th Framework Programme that could be thought relevant for the process of developing ETIS. It will also seek to

disseminate this information to the Member States in order to get feedback about available data. Via the Internet the information should become available to a wider audience and especially the research community

EXTRA has a wider scope and is concerned with the dissemination of information on all projects of the 4th Framework Programme in the field of transport. Finally **CAPRI** targets especially policy owners of the member states, seeking to disseminate information on the results of projects across the Transport and Telematics RTD programmes dealing with the pricing of transport in an attempt to build up a consensus on policy measures and implications.

In conclusion what can be said about this horizontal action of the strategic research programme is that it ought to provide the backbone for further research in the field of transport, but that the real test of its applicability and use will be the Fifth Framework Programme. By reason of the timing of the projects, many of the projects in the Fourth Framework Programme could not benefit fully from the results of this action.

Furthermore, insofar as the emphasis of this action has been on the development of methodologies (for data collection, comparison, estimation or imputation) and as the ETIS has still to be compiled as either a database, an information or management system, important for applicability will also be the extent to which the methods or models developed will become available for wider use.

2.3 **Scenarios**

There are only four projects under this focal area, SCENARIOS, SCENES, STREAMS and POSSUM. All four were also part of a concerted action.

The aim of **SCENARIOS** has been to describe and characterise the key factors affecting the transport sector. Four main categories of key factors have been identified:

- External factors, including demographic factors, economic and trade patterns, the spatial organisation of economic activities, and factors affecting mobility patterns;
- Policies with particular attention on environmental and regional policies;
- Transport supply factors, especially infrastructure-related; and

- Technology forecasts, including logistic organisation.

The understanding of how each of the above factors individually and, more importantly, in conjunction affect the transport sector is expected to assist in the formulation of 'better' transport policies in the sense of overcoming sectoral isolation; and to help harmonise policies across spatial levels, i.e. European, national and regional.

STREAMS using preliminary input from SCENARIOS has been developing a methodology for modelling the effects of external factors (i.e. of the first category above) on mobility for the specific application of the trans-European networks. STREAMS has been using this model to forecast patterns of mobility as well as of passenger and freight flows on the TEN.

Building on both the SCENARIOS and STREAMS projects, **SCENES** will produce transport demand scenarios, use these to forecast those factors which can be said to affect transport demand in the future (including many of those considered in SCENARIOS above) and develop a strategic transport model for the EU.

The formulation of transport demand scenarios will consider external, socio-economic and policy factors as analysed by SCENARIOS. In SCENARIOS national transport strategies were compared with the CTP strategies to obtain 'ideal' policy strategies considering in addition the goals of sustainability, regional and social cohesion.

The **POSSUM** project has also been dealing with policy scenarios, only in the latter case attention was primarily given to the elaboration of images of the future using the so-called backcasting method and the identification of policy measures needed to reach these.

Unlike SCENARIOS which has defined policy scenarios on the basis of the major CTP objectives (most of which are shared across countries, albeit to a different degree), POSSUM has been considering three main types of framework conditions: technological developments, the possible decoupling of transport from economic growth and the political context organised around the theme of co-operation or polarisation and considering the strength of green values and the balance between local and international life styles. Combining these three framework conditions, nine possible images of the future were identified, of which three were considered plausible: (a) global competition for sustainable transport, the emphasis here being placed on the use of high-tech

to achieve the goals of sustainable mobility; (b) EU co-ordination of active citizens, characterised by the decoupling of transport from economic growth as a result of the wide diffusing of green consciousness; and (c) accord on sustainability, representing moderate technological development and moderate decoupling.

Work on scenarios has in the past few years given rise to a number of debates—still unresolved—concerning the meaning of scenarios, their more appropriate use in relation to forecasting or backcasting and the use of modelling to chart interactions in either a static or dynamic way, to name a few.

Scenarios can clearly be thought of in at least two ways: if considered as strictly external and static they can be thought of as equivalent to the constant coefficients in an equation describing the relation between a dependent and a set of independent variables (for instance in relation to impact assessment) and as such be used to make estimations of the dependent variable (actual or forecasted).

If scenarios are taken to be dynamic images of the future they represent a set of relations among various factors. The larger the number of factors considered however in constructing scenarios, the more complex it becomes to determine levels of interactions (two-way as opposed to three-way etc.) and type of effects (direct or indirect, including feedback parameters or not). In this case scenarios form part of the dependent variable that needs to be explained and can themselves be part of the forecasting or impact assessment exercise.

Both approaches are legitimate and useful for research depending on the objectives of the latter. The first approach would appear most useful for impact assessment where the hypotheses or assumptions (for instance regarding the relation of economic growth and transport flows) can be thought to be robust and where what is needed is merely to model different future trajectories under say an 'optimistic' as opposed to a 'pessimistic' scenario, whereby in this case the assumptions as such are not questioned (which still ought not to mean that they are not transparent¹⁶). The second approach is much more ambitious and seeks to simulate, describe and investigate real alternatives and their implications. It is more appropriate when charting possible sets of developments in periods of uncertainty or fast change or for experimenting with other mental schemata.

¹⁶ Christian Reynaud (1998) argues further that especially in comparative exercises, the assumptions underlying the pessimistic and optimistic scenarios need also not be the same.

2.4 Impact Assessment

The majority of the projects in the strategic transport research programme cluster around the 'impact assessment' theme.¹⁷ Next to producing results, the emphasis of this sub-programme has been to further refine existing methods of assessment and statistical procedures and/or existing models.

Socio-economic assessment

ECONOMETRIST tries to assess the effects of activities in the transport sector on the economies of the member states of the European Union and in doing so adjust relevant econometric models. Demonstration sites included Spain, the Netherlands and Italy.

ECOPAC seeks to compare the socio-economic impacts of transport infrastructure investments in five European countries, namely France, the UK, Germany, Spain and Finland, paying particular attention on employment effects.

EUNET has as a goal the further development of the MEPLAN model, a regional economic and transport model, to include refined socio-economic evaluation procedures (both cost-benefit and multicriteria) to allow the comprehensive assessment of large-scale transport initiatives. EUNET focuses on projects and not on policies, however it uses a typology of impacts which relates to CTP objectives. The **SASI** project which forms part of the EUNET focuses specifically on the accessibility impacts, paying attention to equity considerations.

The aim of **ASTRA** is to develop a tool for assessing the impacts of the construction of the TEN, including secondary and long-term. The proposed tool (the ASTRA Dynamics Platform) aims to integrate the key relationships assumed in various other models in the field of macroeconomics, regional economics, land use, transport and environment which are considered state-of-the-art (MEPLAN, STREAMS, QUEST II, IWW model on environment).

Not many projects deal directly with the issue of pricing. One of the few is **PETS**, the objective of which has been to collect and critically review information on the pricing of different modes across different European

¹⁷ The following review covers only about 90 per cent of the projects belonging to this cluster, as it has not been possible to include the relevant projects from the 4th call.

countries. Compared are the UK, France, Finland, Sweden and Norway, Portugal and the transalpine countries.

TRENEN_II_STRAN following on from **TRENEN** tries to develop a set of strategic models for assessing proposals concerned with taxation, pricing, regulation and financing in the field of transport. Tests have been performed at the city level in Belgium, Ireland, Italy, the Netherlands and Greece.

Intermodality and interoperability

EMOLITE focuses on intermodality. It has developed a model in the form of a decision support system to help identify the optimal location for intermodal terminals. Belgium and the Netherlands have served as demonstration sites. **EUROSIL** likewise focuses on intermodality, but on links rather than on terminals. Hence also its regional orientation. Demonstration sites include Germany, Austria, Hungary, the UK, Finland, Greece and Italy.

Using input from both PETS and QUITs (see below), **STEMM** has tried to develop a methodology for modelling intermodal chains for both passenger and freight transport. Through the testing of this methodology on the transalpine route and the channel tunnel, among others, it has been sought to identify institutional and regulatory barriers to intermodality.

Both EMOLITE and EUROSIL deal with interoperability but this is not the focus of their research work. The elaboration of proposals of how to best manage interoperability is instead the main research objective of **MINIMISE**. Particular emphasis is placed on identifying how transport markets can best be used for this purpose, considering competition, deregulation and systems management. In co-operation with MINIMISE, **SORT-IT** has been attempting to develop policy options and measures targeting transport organisation that can be introduced to promote interoperability.

Technology assessment

HINT looks at the impacts of the introduction of new technologies in the field of transport and seeks to develop strategies for the management of their human and organisational effects. **PROTEE** tries to identify those factors that facilitate the introduction and diffusion of new technologies in the field of transport. **TRANSIPOL** seeks to assess the effectiveness of political actions related to the integration of information, communication and navigation services in order to

identify CTP requirements for promoting the integration of relevant technologies in the field. **FANTASIE** has also been trying to identify those new technologies which could be expected to have a major impact on transport in Europe. FANTASIE includes technology forecasting and impact assessment, whereby the methodology used takes into account the variable effects that can be expected out of the gradual introduction of new technologies with resulting periods of time when 'old' and 'new' technologies co-exist.

Environmental assessment

In the field of the assessment of environmental impacts we find two projects: **MEET** has been estimating air pollutant emissions from transport activities with the objective of defining standards for inclusion in strategic environmental assessment (SEA). **COMMUTE** focuses on all types of environmental impacts (including emissions, noise, safety and land-use); it has been developing a model for assessing these for multi-modal networks.

Quality of transport services

QUITS takes a look at the transport systems as a whole, including transport services and tries to develop a methodology that allows their comparative evaluation in terms of quality and performance considering both external and internal costs. The methodology has been validated considering the Lille-London, Milan-Frankfurt and Munich-Patras routes across modes.

Work organisation

The main objective of **WORKFRET** is to contribute to the development of an efficient intermodal freight transport system taking into account the requirements and needs of the people who operate them, hence the emphasis on so-called working cultures. Compared have been the UK, Germany, the Netherlands, Spain and Greece.

The majority of the projects under this focal area concentrate on the impacts of infrastructure, infrastructure investment or infrastructure-related initiatives. Fewer are the projects which deal with other types of transport initiatives (regulations, economic measures like taxation or pricing, initiatives concerning education or training or measures related to the overall transport system

organisation). Nevertheless, most take into account policy considerations as external conditions or in relation to the typology of impacts or of the groups affected by specific types of impacts.

The link to policy has also been indirectly sought through the spreading of demonstration sites or case studies across Europe. The main objective of this focal area has nevertheless been to develop generic methodologies, i.e. models which can apply in different contexts or countries. Some routes (for instance the Transalpine route or the Channel) or countries (the UK or the Netherlands) have clearly been repeatedly studied and it would be interesting to consider comparing the results. Like in the case of projects under the information systems cluster, the real scope of the applicability of the models can however only be evaluated through secondary testing (i.e. in other environments and by other users).

2.5 Policy Assessment

Three projects can be classified in this focal area. How each has been dealing with policy assessment shows the complexity of the task but also exemplifies the interconnections among all of the focal areas of the strategic transport research programme.

Policy assessment is concerned with the evaluation and monitoring of policies. This necessitates inevitably both knowledge of the policy content and of the policy determination process. Still there are many levels of analysis that can fall under this umbrella definition of policy analysis.

TENASSESS comprises three distinct albeit interrelated orientations: Firstly, it has been concerned with the comparative analysis of the contents of transport policy and of the policy determination processes: it has considered most member states and CTP. Secondly, it has sought to develop a methodology (the TENASSESS PAM) for assessing the extent to which transport policy proposals, including infrastructure investment projects, can be said to meet transport policy objectives at different spatial levels. Thirdly, it has been concerned with the systematic analysis of barriers to CTP implementation as these emerge in the process of realisation of projects or initiatives (the TENASSESS Barrier Model).

In **CODE-TEN** the methods developed in TENASSESS have been combined with work deriving from SCENARIOS to study the corridor developments towards the East. The concept of the corridor is considered an extensive policy programme and studied as such, i.e. both with reference to its contents and the policy determination processes that underpin it. CODE-TEN however takes a step further in an attempt to develop a strategic assessment methodology for transport, aiming at studying the impacts of various infrastructure network variants, paying particular attention to long-term environmental and socio-economic impacts and their spatial distribution. Thus it seeks to combine policy assessment with impact assessment tools in the general framework defined by scenarios.

Like CODE-TEN, **SAMI** is expected to integrate the results of many other projects running under the strategic transport research programme. In SAMI this will provide a way to understand how CTP instruments, and specifically the process of standard setting with regards objectives on the one hand, and the research process, on the other, interact. 'What inputs of what type of research can be used to determine which parts of the CTP policy process and at what stage?' This in summary is the question that SAMI attempts to answer. To do this the so-called SAMI 'temple' structure has been developed. This has the CTP as a base and four scientific study methods (identified as frequently in use in the research programme) as pillars: these are CBA for establishing a hierarchy of objectives on the regional, national and supra-national levels; MCA for analysing policies available to the decision-maker given the level of decision-making; optimisation techniques used in conjunction with transport models for identifying optimal criteria, conditions and constraints; and SEA for investigating policy implications.

2.6 **Evaluation**

The review above has hopefully shown how extensive alone the strategic transport research programme is. As the programme approaches its end, there arises the necessity to evaluate the extent to which it has met its goals. For this reason, three evaluation studies have been commissioned. All three cover the whole of the transport programme and not alone the strategic area.

Based on a review of existing evaluation methodologies, **MAESTRO** will attempt to develop a new methodology for the practical needs of the transport RTD programme in terms of selecting pilot or demonstration projects.

SITPRO will be examining the results of the Transport RTD programme from a scientific and management viewpoint; whereas **ARTIST** will be assessing the actual and potential technological impacts of the programme.

3 Conclusions: Science and Policy Interaction

In the field of transport research, the Fourth Framework Programme has provided the first opportunity to explore strategic issues in a comprehensive manner, making it possible to begin to establish links between science and policy in a European framework.

In the field of information systems, research has shown that the process of Europeanisation is creating new demands in terms of data harmonisation which will not be easy to fulfil without co-ordinated action among the member states. As the appropriate structures for this purpose gradually come into place, there would appear a need to set standards both in terms of data collection and in terms of data management, also with reference to statistical procedures for data transformation and/or imputation. The latter, in turn, requires good knowledge of the transport sectors in the various countries and of how they currently differ. Technical knowledge is of no use without a theory to support it or contextual indicators to guide analysis. Research in this field has also made evident the need to promote dissemination across countries and across institutions.

Work on scenarios has helped to gradually pull the transport sector and the field of transport research in particular out of its sectoral isolation. That it is not possible to understand developments in the transport or any other field without taking into account developments in other sectors has probably always been true, but it has never before been so obvious or perhaps even urgent with respect to societal transformations. In conjunction with policy analysis this line of research also pushes onto the research agenda the important question of the role of the state in the process. CTP places a strong emphasis on liberalisation, yet the question of deregulation vs. regulated deregulation is one that still remains to be resolved and one that could be said to deserve more serious attention in future research programmes.

What pushes towards greater co-ordination and integration (both spatial as much as sectoral) are the 'new' concerns entailed in the 'sustainability' discourse. The ecological modernisation discourse underpinning the concept of sustainable mobility entails new challenges for the creative management of conflicts along the growth vs. cohesion dimension. The risk attached to it is that it may lead to blindness *vis-à-vis* the real costs of such a project in terms of equity. It is interesting that the definition of sustainability that has gained wide acceptance over the last several years is one that speaks of not compromising the possibilities of future generations through present activities oriented towards growth. This definition is interesting by reason of it being silent on the negative distribution effects (socio-economic as much as environmental) of the economic

growth principles for much of the world's population today, also within the European continent.

The emphasis placed on risk assessment exercises in the field of policy and impact analysis—strategic environmental assessment representing one example of this—suggests a gradual recognition of the need to bring back into the policy and science discourses the question of equity and of social integration. In the near future it is therefore necessary to place more emphasis on this topic. The issue, it ought to be recognised, is not so much one of methodology, it is rather one of policy-relevant results. And there can be no such results, even in the field of transport, without due recognition of the fact that neither opportunities nor costs are equally distributed.

Effecting an interaction between science and policy involves recognising that research is not apolitical. This however also does not make it equivalent to policy advocacy. It rather implies that research that claims or aims to be policy-relevant is by default critical.

In the Fourth Framework Programme strategic transport research has focused primarily on developing analytical tools (be it for impact assessment, data collection or harmonisation, scenarios or policy assessment) as it was felt, from both the demand and the supply sides, that these were lacking, at least at the European level. Despite this technical orientation of the programme, it has been possible to address policy-relevant issues. The main reason has probably been that 'European' models cannot be developed without at least some knowledge of what this 'Europe' is all about, and the Union is still a conglomeration of nation states each with its own set of specific social relations. Whether intended or unintended this will certainly count as one of the successful results of the programme. Nevertheless, after having established the necessary tools, it would seem appropriate to adopt a more active role in promoting analytical, rather than technical, research in the field of strategic transport in the future.

**DELIVERABLE R(5): INTERCONNECTIONS AMONG TASKS; FEHLER!
TEXTMARKE NICHT DEFINIERT.**

**A GUIDE TO THE FOURTH FRAMEWORK STRATEGIC TRANSPORT
RESEARCH PROGRAMME FEHLER! TEXTMARKE NICHT DEFINIERT.**

EXECUTIVE SUMMARY 1

INTRODUCTION 3

1 THE DEMAND SIDE: THE STRATEGIC TRANSPORT RTD PROGRAMMES

1.1	INTRODUCTION	5
1.2	GOALS AND OBJECTIVES	5
1.3	PROCESS OF FORMULATION	7
1.4	CONTENTS, STRUCTURE AND IMPLEMENTATION	8

2 THE SUPPLY SIDE: RESEARCH PROJECTS 13

2.1	INTRODUCTION	13
2.2	HORIZONTAL MEASURES: INFORMATION SYSTEMS, DATABASES & DISSEMINATION	13
2.3	SCENARIOS	16
2.4	IMPACT ASSESSMENT	19
2.5	POLICY ASSESSMENT	22
2.6	EVALUATION	23

3 CONCLUSIONS: SCIENCE AND POLICY INTERACTION 25

