

TRANSTALK

Thematic Network

Policy and Project Evaluation Methodologies

DELIVERABLE 5

Projects, Programmes, Policies: Evaluation Needs and Capabilities

(Work Package 3)

Contract: 1999-TN.10869

Project Co-ordinators

**Interdisciplinary Centre for Comparative Research
in the Social Sciences, Vienna**

Partners

**Institute for Transport Studies, Leeds, UK
Institut National de Recherche surs les Transports
et leur Sécurité (INRETS), France
National Teechnical University of Athens, Greece
University of East Anglia, UK**

**PROJECT FUNDED BY THE EUROPEAN COMMISSION UNDER THE
TRANSPORT RTD PROGRAMME OF THE FIFTH FRAMEWORK PROGRAMME**

Work Package 3 – An Inventory of Methods at Application Level

Deliverable 5: Projects, Programmes, Policies: Evaluation Needs and Capabilities

August 2001

Institute for Transport Studies, University of Leeds

Authors: Alan Pearman, Peter Mackie and John Nellthorp,
with supporting input from Christian Reynaux, Annette Panzera,
Dimitrios Tsamboulas and Liana Giorgi.

Executive Summary

Deliverable 5 is the final deliverable associated with Workpackage 2 of the TRANS-TALK thematic network project. In Workpackage 2, the consortium has organised a three-day workshop on the topic of *Projects, Programmes, Policies: Evaluation Needs and Capabilities* (Deliverable 3), prepared a database of evaluation procedures applied in a range of Fourth Framework transport projects (a separate written deliverable, Deliverable 4 and briefly summarised here in an appendix) and also prepared an overview of transport policy making processes in European countries. In Deliverable 5, we focus on reporting the main themes developed in the workshop and on the findings of the overview of transport policy making.

The workshop, held in Brussels between 6th. and 8th. November, 2000, addressed a range of important, policy-relevant questions for analysts and policy makers involved in the assessment of transport projects and policies at the European scale. As envisaged, it built upon the first TRANS-TALK workshop (*Policy and Project Evaluation: Context, Theory and Methods*, May 2000), which sought to establish a foundation of understanding among the thematic network members about policy and project evaluation methods used in sectors outside transport, to examine a wide range of different stakeholders' perspectives on evaluation in transport, and finally to place transport policy making in the wider context of European policy as a whole.

From the first workshop, there emerged a clear picture that evaluation in the transport sector has a strong technical basis and, partly as a consequence, a strong institutional basis also - much more so than in many other parts of the public sector. Nonetheless, its technocratic focus creates a weak link between the community of transport professionals who undertake the analysis and decision-makers and their policy advisers. The latter groups can fail to get the information they need in the form they want it or at the time they need it. Transparency in communication is critical, as is a full appreciation by both providers and users of evaluation assessments respectively of the requirements of different user groups and the capabilities of, and caveats associated with, different analytical procedures. Often users can be left feeling that they do not fully understand what they want to understand and analysts that their task has not been adequately specified, or has been under-resourced, or that unrealistic expectations exist of what they can deliver.

Circumstances such as these, combined with continuing pressure on all parties to make clear, competent and professional inputs to transport planning processes at both national and European levels suggest strongly that it is advisable to reflect once again on what evaluation can deliver, and to do so in an environment that actively encourages a wide range of user and technical perspectives to be explored.

Moreover, the social and policy background against which transport evaluation takes place is changing rapidly, making the technical process more complex, and threatening further opportunities for communication failure between analysts and the users of their analysis. Such developments include greater emphasis on multi-modal evaluation; more need to undertake cross-sectoral evaluation, with links between the transport sector and the wider economy and competitiveness; greater demands to

reflect social and regional impacts in evaluation; a growing focus on transport service provision at the pan-European level; and a rapidly expanding set of concerns surrounding environmental sustainability.

Broadly, two views exist about what role evaluation of transport proposals should have. They reflect different interpretations of the role and function of evaluation and, arguably, different world views also. One is simply that evaluation is a tool to assess value for money. As such, it has an auditing role, separate from and consciously independent of the decision process. An alternative view is that evaluation is very much part of a negotiation and deliberation process, through which socially desirable transport actions are gradually identified.

This latter is an important emerging theme in the transport sector is to see evaluation as an integral part of a bargaining and argumentation process, through which the acceptability of projects is decided on the basis of what is acceptable to the main stakeholders. How can this approach to decision making best be supported, adopting, improving and integrating best practice from several of the main schools of thought about evaluation of policy options?

In reality, many would argue that evaluation must involve both elements of social audit and argumentation. It is often for just this reason that misunderstandings arise between evaluation experts and users. It is particularly important when carrying out evaluations to be conscious of timing, the capabilities of the available tools, availability of data and other practical constraints. Seeing evaluation as a process, during which different facets will be more or less prominent, was a theme that emerged from a number of the papers and discussions at the second workshop.

Against this general background, the process of European integration has served to exacerbate a number of the concerns outlined above. In particular, it has emphasised the variety of different spatial and strategic levels at which transport evaluation takes place and the problems of co-ordinating them. Policies are constructed, assessed and selected by actors at the European, national, regional and city-wide levels. These policies engender in turn the creation of programmes to implement the policies, which themselves are evaluated. Finally, each project within a programme is identified in detail and is subject to its own evaluation.

Achieving adequate consistency between these different phases, all of which are expected to combine to deliver a coherent set of public decisions about transport provision, is a major challenge. The decision-making bodies are likely to be different between the various stages. They will not automatically share identical objectives or values. Even if they do, they may not be clearly articulated and understood by all parties involved. The amount of detailed information to support assessment will vary. The time and other resources available to support evaluation will be different and not necessarily consistent with the magnitude of the decision to be made. In the European context, many of these dilemmas are at their most severe when considering EU policy towards the accession countries.

In Deliverable 5, we present an assessment of current thinking around the Workshop theme of *Projects, Programmes, Policies: Evaluation Needs and Capabilities*. While it draws heavily on the papers presented and the discussions had, at the Workshop, it

is not restricted simply to that input. The unifying theme is that, ultimately, evaluation is the servant of its users. The advice it offers must serve their needs. The plural is important. Contemporary evaluation must serve many users. The advice needs to consider and respect both the underlying circumstances of the people receiving it and the technical and administrative context within which it is placed. It needs to be the right type of information, as accurate as possible relative to immediate decision making needs, delivered in a timely fashion and in a form truly to facilitate its understanding and application by the people receiving it. While conventional evaluation procedures have some strengths in these respects, there are also some weaknesses. Moreover, the needs of users are changing as the policy environment changes and thus evaluation must change also.

In exploring these themes, Deliverable 5 outlines some of the changes in scale and scope that are affecting the practice of transport evaluations, highlights changing social and political concerns and their impacts on evaluation and emphasises the increasing concern to achieve wider active participation in planning processes. It then picks up some of the more detailed and technical aspects of the Workshop's discussions in relation to methods of evaluation and the increasing concern with how to implement wishes for broader types of evaluation, such as Strategic Environmental Assessment and the need to identify and incorporate in evaluation the European value added of major international developments in transport networks.

The strong interdependence in practice between what types of evaluation can be effected and the capabilities of models (and in turn their dependence on data) is reviewed. The practical importance of political and administrative influences is touched upon and the whole concept of major national level strategic planning of transport is explored, again emphasising the strong dependence between transport and a much broader planning environment.

In summary, the key messages to emerge are these:

- Transport evaluation has a strong technical pedigree and institutional basis. Nonetheless there are important issues to be resolved. Users/politicians complain that (a) they do not get what they ask for; (b) they do not get the input at the right time; (c) there is a lack of transparency and (d) they do not understand what it is all about.
- When such communication failures occur, it is advisable to reflect on what evaluation is good for.
- Broadly, there are two possible answers: (a) evaluation is a tool to assess value for money - as such it must be independent and separate from the decision process; (b) evaluation is a tool to help negotiation and deliberation. The two answers reflect different interpretations of the role and function of evaluation and perhaps also different world-views.
- Evaluation should arguably a mixture of both, although multiple roles put special emphasis on the need for clarity of understanding about the whole process of planning transport actions and the need to understand what role evaluation can take at different stages (especially bearing in mind practical considerations like data availability and the time frame that evaluation must be undertaken within if it is to be useful), and the relationship between evaluations undertaken at different stages.

- Evaluation is the servant of its users. But contemporary evaluation must serve many users. This is complicated by the changing scale and nature of planning processes, increased delegation and the parallel quest for more formalised procedures. The increase in the number of users also reflects that there is a wider range of questions to be answered (environment, social concerns, etc.). Besides setting new technical challenges the increase of the number of users posits procedural challenges (democratisation of decision-processes is less about the outputs, more about the process of reaching outputs).
- Reflection on the history of national transport plans and their development both reinforces many of the above points and serves as a basis for learning about how better to integrate evaluation into transport planning as a whole.
- The procedural challenges and related communication problems necessitate paying more attention to the framework to be followed in evaluation. Thus even if we remain within a CBA/MCA frame of analysis, it is clear that any CBA must be extended through consideration of MCA, but more importantly preceded by a brainstorming/discussion on key issues.
- We should not despair that these technical and procedural problems cannot be solved. Indeed in part they are solved already. The question remains rather one of applying new knowledge about evaluation (for example concerning economic development, sustainability, local assessment) and of embedding these technical developments in an appropriate social and political process.

Papers presented at the workshop addressing all the above concerns are to be published as an edited volume, Alan Pearman, Peter Mackie and John Nellthorp (eds.) *Transport Projects, Programmes and Policies: Evaluation Needs And Capabilities*, Ashgate, (forthcoming 2002). Copies of drafts of the papers selected for publication and/or presented at the workshop are included as a separate annex to this deliverable.

INDEX

1.	INTRODUCTION.....	1
2.	OVERALL AIMS OF APPRAISAL.....	2
3.	SUPPORTING THE NEEDS OF USERS	3
	<i>Changes in scale and scope</i>	5
	<i>Range of social concerns</i>	6
	<i>People who interact with evaluation processes and preferred mode of support</i> ...	8
	The evaluation framework	9
	Cost-benefit analysis	10
	Multi-criteria analysis	11
4.	DEVELOPMENTS IN THE TECHNICAL ASPECTS OF EVALUATION.....	12
	<i>Wider Economic Impacts</i>	13
	The TRANS-TALK Papers.....	14
	Network Effects and Community Added Value	19
	<i>Environmental Sustainability</i>	19
	<i>Local Assessment</i>	21
5.	TENSIONS BETWEEN TECHNICAL APPRAISAL & PRACTICAL CONSIDERATIONS...22	
	<i>Practicality</i>	22
	<i>Data availability, modelling and coherence</i>	23
6.	MASTERPLANS	24
	<i>Background and history</i>	24
	<i>An integrated transport system</i>	27
	<i>The political dimensions</i>	29
	Political objectives and corrective measures.....	29
	Corrective measures to market rules	30
	Technical approaches to infrastructure projects.....	30
	Decentralised local choices	31
	The extension of political objectives and implementation measures	31
	<i>Assessment</i>	33
7.	CONCLUSIONS	33
	REFERENCES:	35
	APPENDIX 1	37

1. Introduction

Evaluation in the transport sector has a long pedigree stretching back at least to Dupuit's bridge (Dupuit, 1844). A series of studies in the 1960s helped to create a form of analysis which decision-makers find useful, and which was therefore resourced by a cadre of transport planners drawn from economics, engineering, planning and mathematical disciplines. This generic development has spanned many overlapping sub-categories such as cost-benefit analysis, multi-criteria analysis, planning balance sheet and framework approaches. All of these are intended to provide technical support to help the decision-maker answer the question. Is a particular case of action such as building a bridge, worth undertaking or not?

Transport evaluation also has a strong institutional and technical status relative to other sectors. This is partly no doubt due to the characteristics of transport projects, each specifically located, with unique mixes of traffic, economic and environmental features, and each requiring decision on the merit of the case. It is also due to the public nature of most road and transport infrastructure project; public authorities found themselves needing a methodology both for internal privatisation and decision-making purposes, and for external public consultation and a planning issue inquiry proposes. In some countries, institutional support has extended to the creation of standard manuals, and to delegation of decision making from the Ministry of Finance to the Transport Ministry on condition that projects pass acceptance tests at agreed levels. The effect of this has been to create a small transport appraisal industry of civil servants, consultants and academics whose task is to implement and improve appraisal so as to serve the decision-making process. For a thorough review of the development of cost-benefit analysis, and particularly its application in transport, see Foster (2001).

However, it is sometimes agreed (see for example Parsons, 2000) that the relating technocratic focus of transport approval creates a weak link between the professional community of modellers and appraisal people and the decision makers and policy advisers who are their clients. These people need the right information, at the "right" time, and in digestible form, to support the decision they have to make.

In terms of the right information, there is frequently a tension between the measures of impact which the appraisal system is capable of providing and the real concerns of decision-makers acting on behalf of the community. Nowhere is this better exemplified than in the case of the valuation of travel time. Travel time savings have typically been the principal items of monetised benefit for road schemes, yet politicians and the public have difficulty in giving credibility to the proposition that 20,000 3 minutes time savings per day for 30 years adds up to a benefit of (say) 20 million euros of present value. Decision-makers may be more interested in the effects on transport reliability, or the local and regional economy, which are of more direct social concern, but are much harder to evaluate.

Information is only useful if it is timely. The perfect cost-benefit analysis which arrives on the Ministers desk a week after the decision was announced is of strictly limited value. Therefore an important area to get right is the relationship between the appraisal process and the project cycle. This requires discipline on both sides; decision-makers need to see appraisal as a helpful aid rather than as a threat to their

untrammelled direction, while appraisal people need to learn to understand the project cycle and operate within it. Transparency is clearly desirable here, we shall see in later papers that fuzzy processes within which deadlines remain undefined until it is too late to meet them are inimical to good quality appraisal - and therefore we would argue place at risk effective use of public money

Information should be digestible. This seems self-evident, but can be difficult to achieve. It means that there is a strong role for translators and interpreters - people who are qualified to understand the appraisal reports and are capable of presenting the results in ways which aid the decision process. This interpreting role has been under-acknowledged in the past, and the lack of it may be one reason why appraisal has failed to be more influential.

The need for non-technical summarisation of technical appraisal reports has become even more acute since a number of policy developments have combined to increase complexity. Whereas a generation ago the standard appraisal context was at the project level, with emphasis on the direct cost and benefits of the project, we now see:

- closer links between programme objectives and project acceptability
- assessment at the level of packages and plans as well as individual projects or policy action
- multi-modal appraisal
- consideration of a wider set of impacts including reports on economic competitiveness social and regional cohesion, and environmental sustainability.

2. Overall aims of appraisal

In order to decide whether there is a problem, and how best to respond to it, it is worth reviewing the overall aims of the technical appraisal of project and policies. This may be defined as the well-known process from search through modelling and evaluation to decision, complementation and ex-post evaluation. In practice, however this volume focuses on those parts of the process modelling and evaluation, which directly feed the decision. Two visions of this process are considered.

On one view, appraisal is a tool for assessing value for money. As such, it should be based on a set of principles and practices which have a quality of independence from transient political considerations. It is interesting to note the high level of continuity and connection in evolution practice, independently of the political colour of the government. A pure version of this model would seek to maximise value for money, which a modified version would set a minimum acceptable value of money threshold, leaving a degree of discretion as to which of the satisfactory projects or policies were actually implemented. Those who see appraisal in this way often stress its status as an input to quasi-judicial proceedings such as Planning Inquiries and hence to the desirability of maintaining the independence of the appraisal as an 'objective' assessment of the merits of the case, from the scheme promoter as an interested party to the case. This can pose problems, especially for Government projects.

Within that model, in measuring value for money, further choices exist between a pure willingness-to-pay calculation and various forms of socially weighted willingness to pay. The first of these sees cost-benefit analysis as commercial

appraisal extended to cover consumer supplies and externalities. It relies on an assumption that tax and transfer policies are available to correct for the unwarranted distributive effects of market economies. The second rejects that assumption in favour of some form of adjustment from private to social values especially in the context of public project where payment for the benefits is not directly extracted through the price system. Aspects of this debate are covered by the papers by Sugden and Ponti¹.

On the second view, taken up in the paper by Viegas and Macario, appraisal should be seen as an intrinsic part of the bargaining/argumentation process by which projects get decided which are satisfactory from the perspectives of the main stakeholders. This implies the need for a framework or balance sheet approach in which the impacts of projects on residents, travellers, environmental interests, economic planning interests and others are identified. At the technical level these perspectives may be brought together in social weightings derived for example from planners' performances, as in multi-criteria analysis. On this view, appraisal results are not just an information source on which decision-makers draw, but an active part of the process by which social trade-offs are made and decisions reached.

Probably most real-world appraisal regimes contain elements of both models and are themselves therefore in some sense a compromise. This suggests that we need to pay attention to three aspects of the interface between appraisal and decision-making. First, there is the role of appraisal at different *stages* in the decision process. There is the familiar conundrum that appraisal is most likely to influence decisions which are genuinely open, yet requires data which is only available right at the end of the process by which time most options may be politically foreclosed. How to get serious, credible appraisal earlier in the project cycle is a key question. Secondly, different methods of appraisal are clearly appropriate for different types of decision (projects, policies, large, small). There are trade-offs here between consistency (one appraisal size suits all) and the innate desirability of treating a large risky irreversible infrastructure project differently in appraisal terms from a small, reversible management measure. Thirdly, there are practical constraints including the cost and time taken to undertake the appraisal itself. Again there are tensions between the political need for flexibility in the timing of decisions and the need to undertake a programme of technical appraisal work in an efficient and not excessively rushed manner. The need for a mutual understanding between the technical appraisal and decision-making communities of how appraisal is expected to fit within the project cycle is paramount.

3. Supporting the needs of users

In this section, the needs of users are explored further, relating more specifically some of the desiderata of evaluation to the practical realities, and illustrating many of the arguments with observations drawn from the papers presented at the second TRANS-TALK workshop.

The two previous sections have argued that appraisal is not an end in itself, but needs to interface with the full decision process, providing advice at many stages and levels. Ultimately, evaluation is the servant of its users. The advice it offers must serve their

¹ Note: where papers or authors are mentioned without a specific reference, they are papers delivered at the second TRANS-TALK workshop in Brussels (November 2000) and are included in the separate Annex that accompanies this deliverable.

needs. The advice needs to consider and respect both the underlying circumstances of the people receiving it and the technical and administrative context within which it is placed. It needs to be the right type of information, as accurate as possible relative to immediate decision making needs, delivered in a timely fashion and in a form truly to facilitate its understanding and application by the people receiving it. While conventional evaluation procedures have some strengths in these respects, there are also some weaknesses. Moreover, the needs of users are changing as the policy environment changes and thus evaluation must change also.

This last observation serves to emphasise that there are in fact many classes of user of transport evaluations, so that the target audience is not a simple one. Moreover, the needs of individual user groups will vary across the planning cycle and perhaps with respect also to the administrative and social context within which they find themselves working. One important trend, however, is towards transport evaluations having to serve a more diverse set of users, all of whom need to be served by the evaluation, not excluded from it. We return to this point below.

Conventional evaluation models have arguably delivered a proportion of this set of requirements for some time. There may be inadequacies, due in part to changing needs and in part to long-term, inherent limitations in the methodologies used, but the need is for evolution, not revolution. How can established approaches be broadened, or absorbed into a wider assessment system in a way that responds to the changing pattern of user needs? It is also important to bear in mind the value that simply enforcing any form of public scrutiny has. The knowledge that the strengths and weaknesses of alternatives will be publicly examined in some sort of open and rigorous framework is a significant disincentive to the worst potential abuses of power.

Arguably, one of the most significant changes in what is expected of evaluation has been the change in the scale and nature of transport planning processes. We will return to this in more detail below, but, at the European level, the fact that quite separate evaluations – city, regional, national and international – may be evaluating individuals proposals at different stages of their planning has profound consequences. It puts an emphasis on more formal evaluation systems and raises myriad questions of consistency in data availability, modelling as well as evaluation itself. Arguably it also changes the role of the transport professional, putting greater emphasis still on his/her role as a neutral source of profiling information about the strength and weaknesses of alternatives and a communicator of such information. Correspondingly, the role of professional as advocate may diminish. In a wider and more open public environment, the importance of communication and the establishment of public trust become more important still. It is also worth bearing in mind that the ultimate goal is not evaluation and decision making, but implementation. The way in which evaluation is managed can have a marked effect on the environment within which implementation may later be facilitated or barred.

Another important influence on the role of the professional but also on the nature of the evaluation work undertaken is a growing tendency to outsourcing and one towards delegation. Both argue for clearer and more explicit evaluation procedures and more neutral roles in the overall process, with clear separation of responsibilities both from

politicians and other stakeholders, such as Ministry strategic planners. Clearly, the management of relationships here needs to be subtle.

At the same time as there is a pressure for more formalised evaluation procedures from one perspective, there may also be countervailing pressures in the opposite direction induced by different types of user need. Specifically, the question is whether evaluation is an objective benchmarking exercise applied to alternatives that are already largely formed, or whether evaluation is seen as one part in a formative process of identifying good ways ahead and becomes one component in a much wider system of argumentation (Viegas and Macario) about how particular transport problems should be responded to.

Methodologies for evaluation have typically been:

- Project based in their underlying structure and purpose
- Road-based
- Inter-urban
- Focussed primarily on economic efficiency
- Concerned about distributional questions to only a limited extent
- Only rarely responsive to interactions outside the transport sector (in terms of land-use changes, etc.)
- Not consciously oriented towards sustainability concerns.

The second TRANS-TALK workshop highlighted in particular three aspects of contemporary debate and development in transport evaluation that address many of the above limitations and have direct links to the support of user needs:

- Changes in the physical scale and the scope of planning
- Changes in the range of social concerns that need to be explored and illuminated
- Changes in the range of people interacting with the evaluation process and their preferred mode of support

Note that many of these issues interact and/or overlap and it is to some extent arbitrary as to which of the three headings forms the starting point for discussion.

Changes in scale and scope

An important change in transport evaluation has been the substantial widening of both the geographical scale and the scope of activities that evaluation is asked to throw light on. This is reflected both in the sponsorship of the TRANS-TALK network by the European Commission and by the title of the second workshop, highlighting concerns at Policy, Programme and Project level of analysis.

A cocktail of influences – better modelling and computational capabilities, changing political institutions, growing concern about environment, exhaustion of transport capacity, etc. – has encouraged government bodies at all ranges of physical scale to seek more considered transport proposals with higher degrees of integration within and between them. Lauridsen’s paper to the workshop usefully summarises how some countries are now developing substantial experience of national “masterplans” for transport and are beginning to feed the lessons learned from earlier ones into contemporary practice. A fuller discussion of this scale of strategic national transport

planning is given in section 6, which summarises a larger report prepared as part of the overall TRANS-TALK project.

The importance of political and institutional factors and their role on shaping the evaluation process is emphasised by Lauridsen. Effectively, the needs of users have had a direct impact on what evaluation must deliver. Equally, however, Linkama's contribution, based on the Finnish National Road Administration work on strategic road management emphasises the need for users to learn from the evaluation community also. For example, having too many goals and/or ill-defined goals is not an uncommon output of politically driven processes, but is usually inconsistent with effective planning and policy evaluation.

The strength of user need for a programmatic perspective, integrating physical scales of planning and across modes of transport, is one to which the modelling and evaluation communities of transport professionals is responding, but needs to continue to bear actively in mind. But there are substantial practical difficulties. Achieving consistency between the detailed project-based planning that should ultimately support the implementation of individual schemes and the broader strategic level, with its complex interdependencies between schemes is still a long way off.

Similarly, although there is now more multi-modal modelling and evaluation than in the past, this aspect of formal evaluation still has a long way to develop. Increasingly, however, user communities, both political and grass-roots, are expecting modally integrated solutions to transport problems.

Finally, in terms of user needs related to scale and scope of analysis, the international dimension is important, especially bearing in mind the imminent expansion of the EU to the east and the accompanying infrastructure needs.

There are many detailed issues of evaluation practice in international contexts that have been addressed, for example, by the EUNET project. Over and above direct impact evaluation questions, however, are a set of issues relating to identifying precisely what the impacts of major international projects (like the extension of the TENs to the east) might be. Whether these are seen as questions for modellers, evaluation specialists or both is an open question, but arguably both communities have problems to address. Specifically, questions of European Value Added and identification of network-wide effects of major schemes remain in part unanswered, but of substantial significance, since, arguably, TEN projects can often not be properly assessed unless the European added value is identified and fully incorporated in evaluation. Assessment from a purely national standpoint (or indeed a group of separate national standpoints) is inadequate and in turn threatens to undermine decisions on the allocation of financial resources. These issues are touched on in section 4.1 of this deliverable. Specific aspects are addressed in a number of the papers delivered at the workshop – those by Banister and Berechman, Oosterhaven and Knapp, and Roy.

Range of social concerns

A further dimension in which changing user needs carry implications for the practice of transport evaluation at project, policy or programme level arises through changing social and political perceptions of the range of impacts that should be taken into

account in formal evaluations. Some of these manifest themselves most directly in terms of the impacts perceived as relevant by different stakeholder groups, an important factor in a world in which more direct consideration of, and response to, the ways in which different groups in society are affected by proposals is increasingly accepted socially and by politicians. The stakeholder perspective on changing evaluation needs will be discussed later in this section.

In addition to stakeholder concerns broadening the required perspective that evaluation must reflect, there are also other factors that are strongly influencing how transport evaluations are undertaken. Of these, by far the most important is environmental impact. The effect of increased environmental concern shows itself in two ways and is reflected in these two ways in discussions and papers at the workshop.

Firstly, there have been major efforts in recent years, which are continuing, to bring into formal project-level appraisal a series of transport project impacts on the environment. These have raised difficult questions in terms of definition, impact measurement and evaluation that are still the subject of active debate and theoretical and empirical research. Typical of this debate is the workshop paper by Lake and colleagues exploring the monetary evaluation of noise reductions, see also section 4.2.

Recently, the complexity of this debate has been increased by a developing focus on sustainability. The resulting emphasis on longer-term environmental implications raises substantial modelling and evaluation challenges, including difficult questions like inter-generational equity and the forecasting of technological change. It will require the identification of performance indicators that are not in common use at present, may well be difficult to define and then to operationalise, and where there may be real difficulties in maintaining consistency between different elements of the planning process. To take one example, many would see the quality of urban environments as a key feature of sustainable urban transport planning. However, simply defining what constitutes a good environment is far from straightforward. Secondly, even if the definition can be agreed conceptually, are there models that can predict the relevant impact levels? Can evaluation parameters then be identified that will allow translation from measured impact to any agreed scale of assessment, say in cost-benefit analysis or multi-criteria analysis terms? Finally, is it possible both to reflect this dimension of concern at high levels of abstraction for the initial optimisation model and then to embed it in more detailed evaluation of specific packages of measures?

Directly related to the sustainability debate is the question of Strategic Environmental Assessment (SEA). There is no doubt that the ability to assess from this perspective at the strategic scale of thinking is increasingly part of what users expect as part of a comprehensive evaluation of major transport policies or programmes, e.g., the EU directive on “Assessment of the Effects of Certain Plans and Programmes on the Environment”. However, as the workshop paper by Tomlinson and Fry makes clear, SEA is still in its early phases of development. Transportation planning sits relatively comfortably alongside the principles of SEA, but in practice a transport market that is increasingly fragmented (partly a reflection of EC policy) poses problems in terms of lines of responsibility for controlling environmental impact.

Other areas of changing social concern that have implications for how transport sector evaluations need to be undertaken include a growing wish on the part of users to understand the distributional consequences of transport activities. Although in part reflected through the stakeholder dimension, there is a broader concern to expose, understand and respond to general questions of equity. While cost-benefit analysis/welfare economics can in principle tackle such questions, in practice the mechanisms for doing so lack practicality. Multi-criteria analysis has ways of exploring distributional questions, but is always open to the criticism that the value judgements that underlie how this is done are those of a decision making group, not of society as a whole. There is a clear, but perhaps unbridgeable gap here between what some end users would like in the way of prescriptive output from evaluation exercises and what can, in practice, be delivered.

Thus overall, there are some significant gaps between expressed user needs in terms of the range of concerns that evaluation is typically able to incorporate and what is needed to support policy making. Although progress is being made in responding to some of these needs, notably through better incorporation of environmental impacts, there are still many outstanding problems.

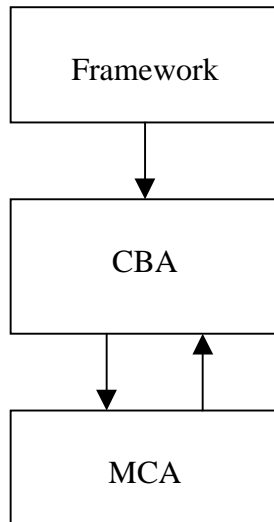
People who interact with evaluation processes and preferred mode of support

Changing social trends and expanding modes of communication mean that the range of people who are in a position to be involved in evaluation activities in the transport sector is widening. At the “top” of the hierarchy, there is an increasing capability to demonstrate the implications of different transport actions to policy makers interactively, in a way that encourages greater direct involvement on their part in evaluation and its implications. At the same time and for broadly similar reasons, individual citizens are increasingly able to seek direct involvement. This presents a substantial challenge to evaluation professionals, since the needs of these different groups, while having many features in common, are not identical.

Arguably the most important concern is to ensure that the impacts of competing proposals are presented to these different groups in as effective a way as possible, but such that the basic information base is common and compatible.

In recent years, it is arguable that a broad consensus has been reached about general approaches to evaluation in transport, to the extent that it is not necessary to make a case in detail. While there are still disputes about balance between aspects and many theoretical and practical issues of detail in implementation that are far from settled, many of these discussions lie outside the scope of this deliverable.

The three basic components of evaluation are the evaluation framework, aggregation through cost-benefit analysis and aggregation through multi-criteria analysis.



They are not mutually exclusive, but complementary. Each should be seen as an aspect of decision *support*. Neither individually, nor collectively, do they “make” the decision as to which strategy to adopt.

The evaluation framework

The evaluation framework forms the basis for:

- Communication
- Initial informal understanding and assessment
- Possible revision or screening out of alternatives
- The application of cost-benefit analysis
- The application of multi-criteria analysis
- Possible iterations through the process to examine new or amended alternatives

The framework and the choice of performance indicators to be included in the framework are the most critical steps of all in seeking good evaluation practice.

A further use of frameworks, if supported by further disaggregation (note: the practicality of this can be constrained by data and modelling limitations) is to throw light on distributional questions, for example, it might be useful to understand how impacts are distributed between households, business, Government, etc. – winners and losers. Presented in a two-dimensional table, this level of detail could rapidly become unwieldy, but computer-based presentation now facilitates presentation of selected data in disaggregate form.

In essence, the framework is simply a presentational device. Its main purpose is to overcome humans’ limited capacity as an intuitive processor of complex and unusual information, by ensuring that all data considered relevant to evaluation is explicitly set down and available. In doing so, it also ensures that all alternatives are assessed against the same set of criteria, something that cannot be guaranteed in the absence of some type of formalisation. At the same time, the very fact that all relevant data is in the open also acts as a deterrent against deliberate or sub-conscious misrepresentation of the impacts of alternatives, since all data is open to challenge.

In listing impacts, it is helpful to try to ensure that particular areas of concern are not represented in detail out of all proportion to others. This is because, irrespective of whether formal aggregation of impacts is later undertaken, there may be a tendency to give more weight to those impact areas that are represented by higher numbers of rows, irrespective of their intrinsic importance, whether or not formal weighting of impact rows is done. Thus, for example, if impacts associated with sustainability are represented in great detail, whereas those associated with safety are not, there is some danger that the former may be over-weighted and the latter under-weighted. This may be particularly a concern with less experienced users of evaluation procedures.

On occasions, simply inspecting data in a framework may be enough to determine which alternative is preferred, or to identify a short-list for consideration within a political decision-finalising process. The more common situation, however, by far, is to be faced with several alternatives, each with different strengths and weaknesses. The challenge to be faced is how to trade these off against each other in a consistent way so as to identify one alternative that is demonstrably stronger than the others. For this, some form of aggregation is needed.

The two principal approaches to aggregation for evaluation are cost-benefit analysis (CBA) and multi-criteria analysis (MCA).

In the former, the relative weights given to different dimensions of impact are based on market prices for those effects, sometimes adjusted in various ways to ensure that the weights reflect the true social costs and benefits in resource terms, unaffected, say, by tax distortions. Where market prices do not exist, various procedures exist for approximating them.

In multi-criteria analysis, impacts are given weights derived directly from an exploration with decision makers of their objectives for the decision in question.

Cost-benefit analysis

CBA is very well established in transport as a means of aggregating the impacts of competing transport proposals so as to get an overall ranking in terms of contribution to net social well-being. There are numerous texts and manuals outlining both its theory and practice, see, for example, Pearce and Nash (1981), Sugden and Williams (1978).

Cost-benefit analysis seeks to evaluate each forecast impact of implementing a project at its social opportunity cost and bases its choice among alternatives on the overall sum of the costs and benefits. It has a number of strong attractions as a base for assessing potential public expenditure, notably its link back to the widely understood and readily comparable yardstick of money. But it also has disadvantages. Among these are problems in dealing with the distribution of impacts, spatially or socially, difficulty in establishing money values for a number of crucial environmental and social impacts, a broad acceptance of the current distribution of income and hence buying power as a basis for establishing societal values, disputes over the handling of inter-generational effects and an inability to reflect decision makers' objectives if these differ from those implied by market forces. Many of these issues have already been highlighted as ones that are of particular importance where sustainability may be a key concern.

Another concern with CBA is the relatively high degree of sophistication necessary in determining unit values for impacts and the amount of data necessary for evaluation. While these may not be issues towards the end of major analyses, they do cause difficulty for smaller projects, where resources may not be available to gather necessary data, or at early stages in analysis, when the data may not yet be available.

As part of the recent EUNET project, an in-depth assessment of CBA in application at the trans-European network level of thinking has been undertaken. In particular, Deliverable 9 (Nellthorp *et al.*, 1998) thoroughly assesses not only current appraisal practice and general appraisal issues, but also explores the specifics of evaluation not only of all the major direct impacts of transport projects that would typically be incorporated in a CBA, but also all environmental and indirect socio-economic impacts. See also Grant-Muller *et al.* (2001).

Multi-criteria analysis

Monetary-based assessments of public policy alternatives are often a central, *necessary* part of a search for well-informed decisions. Arguably, however, they are not *sufficient* to ensure the multi-faceted understanding of policy that is increasingly required. Multi-criteria assessments offer an additional perspective. Social and political concerns in fields such as energy and sustainability and in support of Strategic Environmental Assessment point in the direction of forms of analysis that go beyond the existing capability of monetary evaluation.

There are many distinct multi-criteria approaches, responding to a number of different types of potential application in terms of, e.g.:

- the time available to undertake the analysis;
- the amount or nature of data available to support the analysis;
- the analytical skills of those supporting the decision
- the administrative culture and requirements of the organisation involved.

The best offer a good combination of: internal consistency and logical soundness; transparency; ease of use; data requirements not inconsistent with the importance of the issue being considered; realistic time and manpower resource requirements for the analysis process; ability to provide an audit trail; and software availability, where needed. For a wider overview, see Dodgson *et al.* (2000).

In particular, one style of MCA that is not explored here relates to those models that focus on argumentation, that is, are “constructive” in the sense of consciously seeking to support a process of dialogue with decision-makers that helps establish both suitable alternatives and their evaluation (see Viegas and Macario paper). Although such methods can be very effective in small group work with local stakeholders for a transport problem, they have the disadvantage of not readily embedding into any wider optimisation and evaluation framework and generally of being less supportive of the formal assessment of alternatives, which for major transport planning exercises is normally inevitable.

Common to most MCA methods are a concern first to identify decision makers’ objectives and then to respond to them in terms of the decision support provided. Also, even in the most structured and formalised, there is an emphasis on the decision *process* and seeing the procedures used as a way to facilitate shared understanding of the choice faced and the alternatives available.

To the extent that monetary methods can fail to capture all key features of a decision, multi-criteria methods offer an alternative:

- that is open and explicit;
- where the choice of objectives and criteria are open to analysis and to change if they are felt to be inappropriate;
- where scores and weights, when used, are also explicit, are developed according to established techniques and can be cross-referenced to other sources of information on relative values, if necessary;
- where performance measurement can be sub-contracted to experts, so need not necessarily be left in the hands of the decision making body itself;
- that can provide a means of communication, within the decision making body and between that body and the wider community;
- that provides an audit trail.

All the above are potentially important inputs to the effective development and defence of public policy choices. Moreover, growing concern with process and wider participation in process serves to highlight that it is important that the style of evaluation provided offers some opportunity to explore the implications of differing perspectives. While no amount of exploration will change fundamentally opposed views to a consensus, it is true to say that enhanced understanding of how and why opinions on packages vary can be the basis for seeking re-design to accommodate the concerns of stakeholders and perhaps the identification of an agreed alternative package derived by amending one of the original ones. Even where complete consensus cannot be achieved, the fact that an open and participative evaluation has been seen to take place can often have a significant influence on stakeholders' willingness to accept the finally proposed option.

The likelihood that open, participative methods of evaluation may make a contribution to the identification of alternatives that meet sustainability goals needs to be borne in mind and reflect in its recommended procedures.

4. Developments in the technical aspects of evaluation

Evaluation in the transport sector has a strong theoretical and technical basis. The nature of these theoretical/technical foundations was questioned, debated and to some extent clarified, in TRANS-TALK Workshop 1. The outcome of that discussion is reported in TRANS-TALK Deliverable D2.

In Workshop 2, the discussion moved on to a more technical level. The workshop included a stream of sessions on Key Issues in Project Evaluation, which focused on some of the technical 'gaps' in the current state of the art. These gaps are the subject of research in transport, economics and policy research institutes across Europe. A central aim of these sessions was to identify how far the tools and techniques developed so far go in meeting policy-makers' needs.

The particular areas covered by the papers at TRANS-TALK WS2 included:

- *wider economic impacts*. In particular, impacts on economic competitiveness are seen to be of high political importance, but until now difficult to measure. Papers by Oosterhaven and Banister/Berechman consider these issues. The

discussion touched on the definition of ‘network effects’ and ‘community added value’.

- *environmental sustainability.* A variety of technical issues relating to valuation and discounting need to be addressed. Papers by Beuthe, Lake and Tomlinson tackle this area.
- *local assessment.* Access to employment, education, social, health and other opportunities are of policy relevance, especially at a local level and where issues of social exclusion exist. The paper by Halden makes a pertinent contribution, from an accessibility analysis perspective.

The focus of the TRANS-TALK Workshop session was specifically on contemporary issues. Complementary to that discussion are two new journal articles on the gradual evolution of transport appraisal since the 1950s, one with a European focus by authors at the University of Leeds; and another by a key figure in UK transport policy over the last 30 years - Sir Christopher Foster (Grant-Muller et al., 2001; Foster, 2001). We will not dwell on the historical dimension here.

Wider Economic Impacts

The UK SACTRA and Dutch OEEI reports (SACTRA, 1999; OEEI, 2000) mark a subtle change in official thinking about wider economic impacts in transport appraisal. The old official ‘line’ in both countries was that the total economic benefits of new transport infrastructure were well represented by the transport sector benefits from a conventional CBA. This view was often backed-up by references to the theoretical and empirical literature, including the articles by Mohring and Williamson (1969) and Dodgson (1973), both published in leading journals. In practice, this line meant that the key appraisal information relevant to economic impacts was a cost-benefit analysis focused solely on the transport sector (we will abbreviate this to TCBA (Transport Cost-Benefit Analysis)).

The old ‘line’ was sometimes unsatisfactory from a policy viewpoint. This was evident from the use of various types of ‘economic impact assessment’ alongside TCBA (for examples, see SACTRA (1999), Chapter 9). These assessments displayed great variety in methodology and assumptions, but what they had in common was the aim of identifying changes in employment and output in specific regional areas, as a consequence of the transport investment².

Some studies were concerned with the very localised area, or corridor, in which the project was located. This made sense where the appraising organisation had a purely local remit or when most of the effects would be felt locally. The analysis usually proceeded by examining the potential for bringing unemployed resources into employment - eg. empty commercial property; vacant sites for business and housing; and unemployed labour. This sort of analysis was most often used for local projects in localised areas of high unemployment. As exercises in evaluation, these types of analysis are notable for:

- their reliance on very detailed local information;
- a high degree of input from stakeholders in the local economy who are in a position to understand the potential market responses to the project; and

² SACTRA (1999) Chapter 9 gives a review of selected UK examples.

- the professional judgement of the analyst in filtering and assimilating the objective data and the judgements of others in reaching a conclusion.

SACTRA (1999) pointedly remarked of these local evaluations that “little of what is done can be described as standard practice”. Indeed, the variation in methodology from study to study has prompted calls for something more robust, consistent and transparent.

At the regional scale, other types of ‘economic impact assessment’ have been used. Certain types of models appear frequently: input-output analysis; regional growth/multiplier type models; and (sometimes crude) business location models. Again, however, SACTRA were critical:

- there is concern about partiality - the assessments tend to focus on impacts in the geographical area of interest to the sponsoring organisation, so effects elsewhere (which may be positive or negative) are given little consideration. Such a partial picture is problematic from a member-state or an EU perspective.
- there is also a concern about double-counting - since the direct benefits in terms of travel time and cost have already been calculated in money terms in the transport sector, it is unclear to what extent any changes in output (or employment) are manifestations of the same benefits in the final goods market, or to what extent they are additional.
- perhaps most fundamentally, doubt exists whether the models used are capable of representing the complex network of linkages between the various markets involved: the labour market; the property market; passenger transport; freight transport; product markets; etc.

The policy needs which were apparent from the discussion at Workshop 2 were:

- for practical methods which can predict, *ex ante*, the spatial employment and output impacts of projects;
- for a clearer understanding of the relationship between this information and the conventional CBA results - in particular, are there novel methods which can not only predict these wider economic impacts but also provide a comprehensive and robust measure of the net benefits of projects?

These are the gaps in the current state-of-the-art in evaluation practice, which it is hoped to address through the findings of new research.

The TRANS-TALK Papers

Workshop 2 heard two papers on wider economic impacts, from Banister and Berechman, and from Oosterhaven and Knaap.

Banister and Berechman take the more conceptual approach. They consider the general question of “whether, in advanced economies, transport infrastructure investments can engender economic development at the regional level, or merely facilitate its attainment” (our emphasis). Underlying this question, they uncover a series of conceptual and analytical issues. By defining these issues more clearly, and taking a stance on some of them in the light of the available evidence, the authors begin to establish an analytical framework within which the impacts of transport initiatives can be predicted and evaluated.

On the general question, Banister and Berechman conclude that transport infrastructure improvements can stimulate local and regional development if certain 'necessary market conditions' are in place.

The main conditions are argued to be:

- the presence of positive externalities from transport improvements, for example:
 - agglomeration economies when firms relocate to form new 'centres' of business;
 - labour market economies;
 - transport 'network economies' (eg. the joining of two disjoint networks, opening up trade);
 - environmental externalities.

and

- reinforcing policy conditions, such as the re-skilling of the workforce, efficient local government; the necessary supporting infrastructure, etc.

When these conditions are in place, transport improvements can potentially boost productivity, reduce production costs and promote more efficient use of resources in addition to the first-round accessibility benefits. These changes will be reflected in the traditional 'economic development' indicators: regional output and employment.

Banister and Berechman conclude with a suggested revision to project appraisal practice. This is a 'twin approach' based on "a conventional cost benefit analysis [TCBA] and a complementary analysis that takes a much wider view of the investment proposal which explicitly relates the contribution of a project to a) the transport network as a whole; b) the value added of the project in terms of its contribution to local employment, the potential for increases in productivity, and the environmental impacts; and c) the distributional impacts in terms of the spatial effects on the regional and local distribution of services and facilities, and the social impacts".

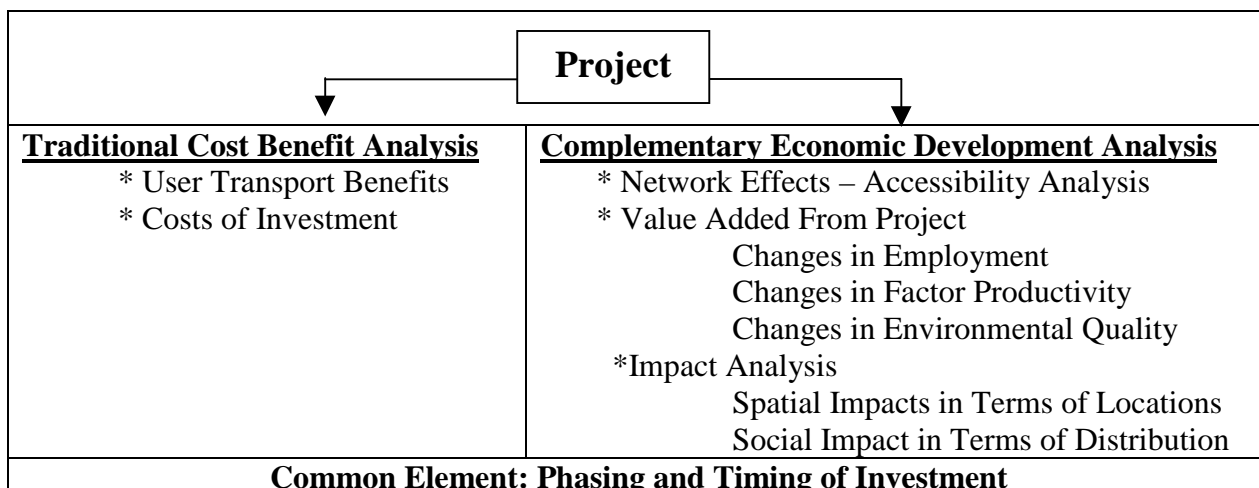


Figure 1: Banister and Berechman’s Suggested Twin Approach to Project Appraisal

As regards the research which will be needed to operationalise such a framework, Banister and Berechman argue that a solid foundation for the relationship between transport and economic development will come from *ex post* studies of transport investment projects. Monitoring of the spatial incidence of the effects will be key to understanding the magnitudes of the linkages involved.

The second paper presented in this area was by Oosterhaven and Knaap. Their starting point - that estimating the spatial economic impacts of transport infrastructure is a unresolved issue that has ‘plagued’ economic science - strongly echoes the policy needs identified in the discussion at the Workshop. In current transport planning practice, there is a shortage of robust and standardised³ formal methods in use which can predict spatial economic impacts.

Oosterhaven and Knaap devote a third of their paper to a review of various modelling approaches which have been used to describe parts of the transport-economy system. These include: micro-level business surveys; quasi production functions; accessibility models; economic potential models; and national/regional economic models linked to transport cost models. Whilst there is value in all of these approaches, each has fundamental weaknesses and omissions in relation to the complex network of transport-economy linkages which are recognised by the state-of-the-art analysis in this field.

Hence Oosterhaven and Knaap concentrate on what they consider to be the two leading contenders for the methodology which can take this area forward. These are:

- spatial computable general equilibrium (SCGE) models, and
- land-use transport interaction (LUTI) models.

³ SACTRA’s criticism of local economic impact assessment was that the methods did not represent any sort of ‘standard practice’ - see above.

LUTI models have been in existence for decades (see Wilson, 1998; David Simmonds Consultancy and ME&P, 1999). They consist of inter-linked transportation models and land-use models (or - better - location models). Used primarily for urban transport and land-use planning, they “mostly employ a system dynamics type of modelling and are primarily developed to predict future growth and to analyse policy scenarios”. Having said this, the transportation sub-models within the best LUTI models are highly developed and in the authors’ judgement are capable of providing not only reasonably robust estimates of price and quantity changes in the transport sector, but also ‘reasonable’ estimates of transport users’ benefits. This capability follows from the use of random utility discrete choice modelling of transport behaviour - in line with the state of the art in transport modelling as a whole. All of this modelling is done at a highly disaggregate level, in terms of spatial zones, household types, modes of transport, etc.

In the ‘land-use’ sub-models, “the scientific uncertainty around the location behaviour of firms” is greater. Fixed input-output ratios and pricing rules fail to capture the regional competitiveness effects which drive trade, and in which scale economies and diseconomies and factor endowments are critical (see Figure 2). The location of service activities can be explained relatively well, because their location decisions are driven by the locations of residents and of industrial activities, particularly at the intra-urban level. However, “the power of LUTI models in estimating the inter-regional location effect of transport measures is much less”. Indeed, because of the fixed ratios used to model production and price decisions, the longer-term effects of transport changes are particularly unreliable.

Also problematic for evaluation, is the restrictive way in which consumer and producer choice outside transport is modelled (fixed ratios, assumption of perfect competition, absence of scale economies, etc). This is problematic because the benefit estimates in cost-benefit analysis depend upon this aspect of the modelling - both consumer and producer (non-transport) surpluses are relevant.

Hence, Oosterhaven and Knaap conclude that: whilst LUTI models are the best-tested approach in spatial transport-economy modelling, and are well suited to analyse infrastructure issues at the level of large urban agglomerations, they are not well able to generate reliable benefit estimates beyond the transport user benefits. Since it is the wider economic benefits which are of policy interest, this is a key limitation.

Spatial computable general equilibrium (SCGE) models are argued to provide a theoretically more satisfying approach, which is especially suited to model the interregional impacts of new or improved transport infrastructure at a larger spatial scale.

SCGE models place greater emphasis on the economic conditions which stimulate trade between regions and hence the levels of employment and output in those regions. Spatial differentiation (into regions or sub-regions) sets these apart from country-level CGE models, although the latter still have export and import sectors to/from the rest of the world. Figure 2 shows the underlying conceptual model of transport project impacts on a region. When transport costs change, the system moves to a new equilibrium which may include changes in prices, production, consumption and trade (in the short run), changes in the number of firms per region in each sector

(in the medium term) and changes in the number of workers per region (in the long-run) - as the production sector and the labour market adjust.

It worth noting that:

- SCGE models are at present comparative-static models, emphasising the comparison of alternative states of the world - this is ideal for use in project appraisal and evaluation⁴;
- because of their foundation in microeconomics, SCGE models are theoretically well suited to the evaluation role and the derivation of benefit estimates outside the transport sector.

Experience from testing an SCGE model with a rail improvement project in the Netherlands has highlighted both the potential of these models and some problems. Some clear spatial patterns have emerged from the analysis, including a regional redistribution of employment and some national (generative) effects, as well as changes in output, consumer prices and consumer welfare. It is relatively straightforward to convert the utility gains in the model into an equivalent income increase, providing the required input to CBA.

On the other hand, problems included the need to rely on 'guesstimates' for certain input data because not all the data required for this type of model were yet readily available. Also the analysis showed that the specification of transport costs is critical, and the 'iceberg type' cost specification used could be improved upon.

In the light of Oosterhaven and Knaap's paper, it is interesting to reflect on whether these unresolved issues are primarily modelling problems or evaluation problems. The modelling problem is that we lack credible and robust (and standardised) methods to predict spatial employment and output effects. Getting these quantities right clearly has a role to play in informing the decision-maker and generating data for the evaluation. SCGE and LUTI appear to offer ways forward on this issue. But for evaluation, the outputs that are of interest are not only predictions of behaviour, but predictions of welfare - or changes in consumer and producer surplus - beyond the transport sector. Oosterhaven and Knaap argue that SCGE models are capable of providing outputs to evaluation on the wider economic impacts because of the way they specify production and consumption relations whereas LUTI models are inherently limited. SACTRA report similar concerns: "... the spatially differentiated production model [as in SCGE] seems to us to be inherently attractive. Given that the basic units in the LUTI models are zones with mixes of economic activity, we remain unclear how this type of effect [competitiveness and agglomeration] can be satisfactorily incorporated within these models" (SACTRA, 1999, Para 10.134).

Having said this, benefit estimation from LUTI models has not been a neglected field either (see Martinez and Araya, 1998; Jara-Diaz, 1986; Williams, 1977). Further productive debate between the protagonists can be expected. As Oosterhaven & Knaap recognise, the challenge for SCGE models is to demonstrate their empirical validity by increasing the objectivity of the input data and testing more models in real-

⁴ although the attractive (but assumed) stability of growth behaviour of LUTI models is missing, and the detail on physical land-use which characterises LUTI models is omitted.

world applications. They also have some way to go before they can match the level of spatial detail in LUTI models, although that is less important at the EU/country/regional level than at the local urban level.

Given the possibilities which are created by SCGE models, further research and development of them seems important, including attention to the benefit measures arising.

Network Effects and Community Added Value

In the light of both the Banister and Berechman paper and the Oosterhaven and Knaap paper, it seems that some progress may be being made - almost as a by-product - on the issues of 'network effects' and 'community added value', which are of particular concern to the European Commission. Firstly, Banister and Berechman describe how the joining of 'disjoint networks' can stimulate trade and economic growth. This is analogous to the real-world problem of 'missing-links', particularly across borders, in the Trans-European network. A mathematical framework for analysing this situation is provided by SCGE models, which include functional relationships for production, trade and transport costs in an equilibrium framework. The question of how much of these effects are additional to the standard TCBA benefits, may simply be a matter of differencing, the total less the restricted (TCBA) benefits.

Secondly, 'community added value' is often discussed in terms of the output and employment effects for the EU as a whole, as a result of major infrastructure projects in key locations. Unlike an evaluation based on a transport model with no linked production or trade model, an evaluation based on an SCGE model is potentially capable of predicting these effects, and of identifying their spatial distribution. This could be valuable in associating output and employment gains with the Objective 1,2 and 5 regions in European regional policy.

Finally, there is a complementary aspect to European-level evaluation which was first identified by Roy (Roy, 1995) - and see his paper at this Workshop - and which was incorporated in the EUNET European-level appraisal methodology (Nellthorp, et al, 1998). That is the need to include all transport user benefits *whether or not they are obtained by residents of any particular country, and whether they arise on the 'home' network or in another country* - but to be sure to include them only once. Difficulties arise when attempting to 'add' the benefits in country-level evaluation to produce a European-level evaluation, because of the inconsistencies in assumptions about which benefits are and are not relevant, when seen from a higher level.

Environmental Sustainability

Whilst the wider economic impacts are of paramount importance for European policy, TRANS-TALK's stream on 'Key Issues in Project Evaluation' also included papers on the analysis of environmental impacts. This is a critical area for country-level and EU-level evaluation, because there are significant 'gaps' in the state-of-the-art, yet environmental sustainability is a key policy objective alongside economic development.

Amongst the most significant 'gaps' in the state-of-the-art recorded in a recent European review of transport appraisal methodologies (EUNET Project – Nellthorp et al., 1998; Bristow and Nellthorp, 2000) are the lack of monetary values for noise which are transferable and command a reasonable degree of assent among the various

national/European authorities. The problem has been one both of survey methodology (contingent valuation or hedonic pricing) and of localised, specific survey evidence being used to address noise conditions which vary in perception from place to place. Some contributors have been optimistic: for example, the ECMT report on internalising the external costs of transport (ECMT, 1998) and the Tinch report in the UK (Tinch, 1996) identified values for widespread application. The observation that above a certain level, noise values per decibel change are more-or-less constant irrespective of the base level on the (logarithmic) decibel scale is also very convenient from an evaluation perspective. Six out of 15 EU member states place a value on noise in country-level transport appraisal (Bristow and Nellthorp, 2000). However, the values lack a common basis and do not offer a clear platform for a European definition, measure and associated money values.

The paper by Lake, Bateman, Day and Lovett presented at TRANS-TALK Workshop 2 tackled two issues: the appropriate value for noise based on one large-sample hedonic pricing case study; and the question of transferability. As the authors explain:

“The draft EC directive on the Assessment and Management of Environmental Noise proposes the idea of noise maps for urban agglomerations and for areas near major roads, railway and airports. The aim of such maps is to inform the public on the level of noise in their local area and should form the basis of plans to cut noise pollution. However, as acknowledged in the directive, measures to reduce noise pollution must take into account the results of cost-effectiveness and cost-benefit studies (EU,2000). Central to this argument is the need to obtain a money value for noise that can be integrated into a cost-benefit framework”.

Citing recent literature reviews and unsuccessful attempts to put the method into practice, the authors rule out contingent valuation as a suitable basis for a noise value. They identify theoretical problems and the empirical failure to obtain reliable information from respondents about small future changes in noise, which the respondents do not perceive clearly or in quantitative terms. By contrast, the hedonic pricing method seeks to isolate a value for traffic noise from property market price data. The well-known problems with this method - the correlation of noise with accessibility and the variation of noise with the amount of screening of a property from the traffic (not just distance from the traffic) - are addressed in the authors' work using very detailed data in a GIS format.

Based on data gathered in Glasgow, Scotland, the authors find a best estimate value per one decibel reduction in noise of 0.2% of the property's value. This compares well with other recent research findings, being within the same confidence interval but slightly lower - probably because the correlation and screening issues have been addressed. Having said that, the authors recognise that their results may still incorporate some element of the valuation of local air pollution, if that too is correlated with noise. Work in progress in and around a second UK city will provide evidence both on the ability to separate-out these values and on the transferability of the results. In conclusion, there is a little further to go, but it seems that more robust values for noise change are well within reach, and should be available for evaluation purposes in the short to medium term.

A rather different perspective on evaluation methods incorporating the environment is given in the paper by Beuthe, Degrandart, Geerts and Jourquin. This shows how economic modelling can be used to predict the benefits of a policy, rather than a specific infrastructure project. The policy in question is one of internalising external costs through road pricing. The model includes monetary values for a range of environmental impacts, and the values are taken from a range of studies reported during the 1990s. The authors conclude that a reduction of 500 million euro in total external costs is possible across the Belgian network - or 25% of the 'do-nothing' costs. Although the work abstracts from questions of implementation, it shows the potential for externalities - including environmental harm - to be reduced, and its results at a disaggregate level point the direction in which taxes and charges would need to be changed to achieve all or part of this result.

Another key issue for European evaluation, and a general theme of TRANS-TALK, is the connection between project, programme and policy level evaluation. The evaluation of environmental impacts is codified at the project level in the Environmental Impact Assessment directives, meanwhile Strategic Environmental Assessment operates at a higher level. Workshop 2 heard (in a paper from Tomlinson and Fry) how SEA could interact with EIA to secure both a forward-looking strategic approach to managing environmental sustainability and the detailed feedback on mitigation measures which is such a key part of EIA. Key questions involve phasing and 'tiering' - there is no point carrying out an SEA after the detailed project options in a corridor have been narrowed-down; on the other hand multiple projects may have cumulative effects. Part of the role of SEA is to take an overview - including direct involvement through partnership working with the developers of individual projects. Since the timescales of the individual projects are often disconnected, there is a major challenge here to SEA. The authors refer to practice in the US where 'tiering' is employed to help ensure that the environmental implications of an action are addressed at appropriate levels within the decision-making process and with an appropriate amount of effort to provide robust information for decision-makers.

Local Assessment

Whilst EU and country-level assessment are of central interest in TRANS-TALK, local-level assessment can also be very important in defining and implementing transport policy that affects citizens' quality of life every day. At the local level, the distributional aspects can be particularly important - as declining localities and problems of social exclusion can be pinpointed, whereas at the regional level these tend to be submerged in average data on transport flows, employment, incomes, etc.

The discussion at Workshop 2 centred on the role of stakeholder participation as a key ingredient in local appraisal. This was covered in Chapter 2 above. However, on a technical level, there appears to be scope to make greater use of accessibility analysis in this context.

Accessibility analysis shifts the focus away from actual trips towards trip opportunities, specifically opportunities to access:

- employment, training and education;
- health and social services;
- shopping and leisure activities.

Whilst practical appraisal methods such as the UK local transport plan assessment have increasingly emphasised the qualitative aspects of these opportunities, the paper from Halden argued for a more quantitative modelling-type approach, whereby data on trip opportunities and ‘deterrence functions’ (analogous to generalised cost) are combined to produce numerical accessibility indicators. Equity issues are emphasised, with separate accessibility indicators for car-owning and non-car-owning households.

Halden recognised that the data needs of this type of analysis are extensive, but noted that both for analysis and presentation, it ties in well with GIS and can give an extra layer of information to the decision-maker.

5. Tensions between technical appraisal and practical considerations

Two other factors, not so far explored in depth, are important. The first is a need for practicality in relation to the working circumstances of practising planners. The second, closely related to the first, is a full recognition of the interdependence between data availability, modelling capability and implementable approaches to evaluation. Further, there is an important question of the timing of availability of information. What is typically available at the beginning of the process, when initial strategic level planning is being undertaken, is far less detailed than what can be developed subsequently. But when the initial evaluations are being undertaken, it is only the basic information that is accessible. Consistency in evaluation cannot extend to applying identical evaluation processes during all stages. It must simply do the best it can to ensure that stages build on each other in a coherent way.

Practicality

A number of papers delivered at the Workshop emphasised the political and other realities that real-world evaluation has as its context. The paper by Turro presented a perspective from a major lender for transport infrastructure, the European Investment Bank, and argued that, while most evaluations it encounters are being carried out in line with the state of the art, there are still substantial gaps in the insights that such evaluation provides, gaps that urgently need attention. European Interest (European Value Added) was highlighted as an area of concern, together with the need better to exploit GIS and other IT developments and the need for progress regarding a number of aspects of the parameterisation of evaluation models.

Similarly, the contributions of Sweet and of Peters draw out particular questions of practicality with special relevance to the expansion of transport systems capabilities into the accession countries. Many of these questions lie at the interface between the political and administrative dimensions. For example, Sweet highlights the interplay between national and international assessment of projects and the importance of ensuring that information about projects that may be instigated at a local level is sufficient to allow others in fact to carry out an evaluation. Both Sweet and Peters explore the concept of corridors as a means of conceptualising high-level, strategic intervention in national and international transport systems, which poses problems both of evaluation and threatens the over-prioritisation of projects within identified corridors at the expense of possibilities in other areas. The political necessity and administrative attractiveness of formulating and presenting major strategic developments in broad-brush terms that are not then necessarily consistent with a truly efficient allocation of resources challenges specialists in modelling and

evaluation to derive procedures that deliver the kind of insights that users need at the time they need them.

Data availability, modelling and coherence

It is important to ensure harmonisation of data availability, modelling capability and evaluation. The SPOTLIGHTS Fifth Framework project is currently exploring this concern, which centres on the difficulties of matching the precision and reliability of model output and evaluation to realistic expectations of what models can do, especially early on in the planning sequence, on the basis of data with limited accuracy, possibly not collected directly for the purpose for which it is now required and often at levels of spatial aggregation that are too coarse for what is wanted. Again, the problems of data availability in accession countries, although a difficulty that should diminish with time, is a major constraint with regard to decisions that have to be made imminently.

Achieving adequate consistency between these different phases, all of which are expected to combine to deliver a coherent set of public decisions about transport provision, is a major challenge. It is not simply that evaluations undertaken in different phases may be based on different data and/or models. The decision-making bodies are likely to be different between the various stages. They will not automatically share identical objectives or values. Even if they do, they may not be clearly articulated and understood by all parties involved. The amount of detailed information to support assessment will vary. The time and other resources available to support evaluation will be different and not necessarily consistent with the magnitude of the decision to be made. In this respect, there is much to be learned from good ex-post evaluation through specific case studies, see, for example, the Workshop contributions of Leleur and Larsen. An, related issue touched upon by these contributions and discussed within the Workshop itself is the way in which evaluation may be constrained in advance by decisions of various kinds made outside the influence of the evaluation team.

Concerns of meta-planning, technical, administrative and political practicality, and consistency across the full range of the planning and evaluation process is very much the territory of high-level strategic planning of transport and related systems, or “masterplans”. Many European states have experience of the creation and use of such plans and their contents and approach are critical to TRANS-TALK. Both because of their ability to set an agenda for what projects come forward for evaluation and because of the technical questions of linking high-level thinking about transport systems to the evaluation of individual projects that underpins the proper allocation of public resources to different areas of expenditure, they are of central importance. For these reasons, TRANS-TALK has undertaken a special review and assessment of national masterplans. This is available as a separate document⁵, but is also summarised in the following section.

⁵ Reynaux and Panetta, 2001.

6. Masterplans

Background and history

Evaluating each European country's policy making processes is always difficult at the strategic level since the issues involved vary extensively from country to country. Each scheme represents its country's historical background, existing infrastructure, economy etc., Traditionally, the needs of each programme have been varied depending upon political, geographical, climate and economical perspectives.

It can therefore be seen that the objectives of transport plans have changed radically over the years and so it has been necessary to adapt planning procedures in line with these changes. Many European countries are at present publishing large, detailed transport plans outlining to the public their intended objectives and the measures they have chosen to achieve them. Their objectives can now be seen to be more similar than ever before reflecting the degree in which European integration is intensifying. Another common facet of the plans is the intention to monitor and evaluate these plans to ensure that measures are being carried out accordingly and that each agency is performing its allotted tasks. Policy objectives chosen in the large part reflect general policies not always directly linked to transport objectives.

For example, one of the biggest problems facing the world today is trying to protect our environment. Transport planning is today affected by these problems more than ever before, and so now most planning for the future looks at using more environmentally friendly modes; for example, trying to improve rail service, both at freight and passenger levels, pricing and taxation methods to control use of the car and so on. This direction has also stemmed from the problems of congestion faced by many countries (in some more severe than others) but, conversely, has also had to acknowledge problems in ensuring accessibility for more rural regions.

Public opinion is now playing a major role in transport policy, for example, a by-pass in the U.K could be deemed under cost benefit analysis a worthwhile project. However, if it creates environmentally sensitive issues and the public will is opposed, it is more than likely the project will not go ahead, for example, the recent rejection of the Hastings by-pass. This has then led to a far more complicated approach than the former cost benefit analysis models that were formerly the dominant planning tool in most European countries.

It is also a fact that land-use and transport planning is now coming together more to avoid problems that have arisen from having separate administrations in the past and now a great deal of major projects have integrated land-use and transport networks with great success; see for example, the Oresund link in Scandinavia and the Barcelona delta project in Spain.

Countries in Europe have also experienced different political systems and still do. In the last two decades, privatisation of former government administrative bodies has been in line with present economic and political objectives. That is, in the goal of improving efficiency, choice and service (for the consumer), it is often supposed that competition is healthy. Therefore, in the U.K for example many former public transport authorities have been privatised with at present varying degrees of success. In most countries, administration has been downsized with a larger number of outside

contractors used in order to reduce costs in the public sector, another feature here has been to create an inter-modal planning policy which embraces all modes together in order for them to form a cohesive network with the best coverage. Formerly, different modes were managed by separate agencies.

Concerning the evaluation methods and decision-making process, each country has developed different technical expertise as a result of the various factors effecting it but this knowledge is not yet being shared, analysed and adapted to European needs. Former areas of technical research that were once limited to one country's scope are now more available to all within the framework of the European Union. The IV FP projects have helped a lot in projects such as TENASSESS, CODE-TEN, SCENARIOS, POSSUM and now TRANS-TALK. The ECMT has also made a substantial contribution.

Taking all the above factors into consideration however it is possible the present situation as characterised by two main types of objective; these have been described as the global/systematic planning approach and the political objectives.

Firstly, the "*system*" approach consists of creating an analytical programme for transport that uses a global view and relies upon political inter-dependence. Many countries who previously followed and developed their infrastructures by separating modalities and administrative bodies have now embarked upon this course. France, Italy, the Netherlands and Spain are countries that could be said to be using such an approach where gradually the cumbersome administrations that have been traditionally in evidence are being replaced by less complex mechanisms leading to a more operational planning process.

The *political objectives* are formed by looking at goals to achieve and then adopting plans in order to reach these objectives. Political forces often drive how policy is formed and in order for the "good intentions" to be carried out it is necessary to back this up with a list of measures for achieving the goals; otherwise the approach can appear contradictory. Austria and Scandinavian countries could be grouped under this heading.

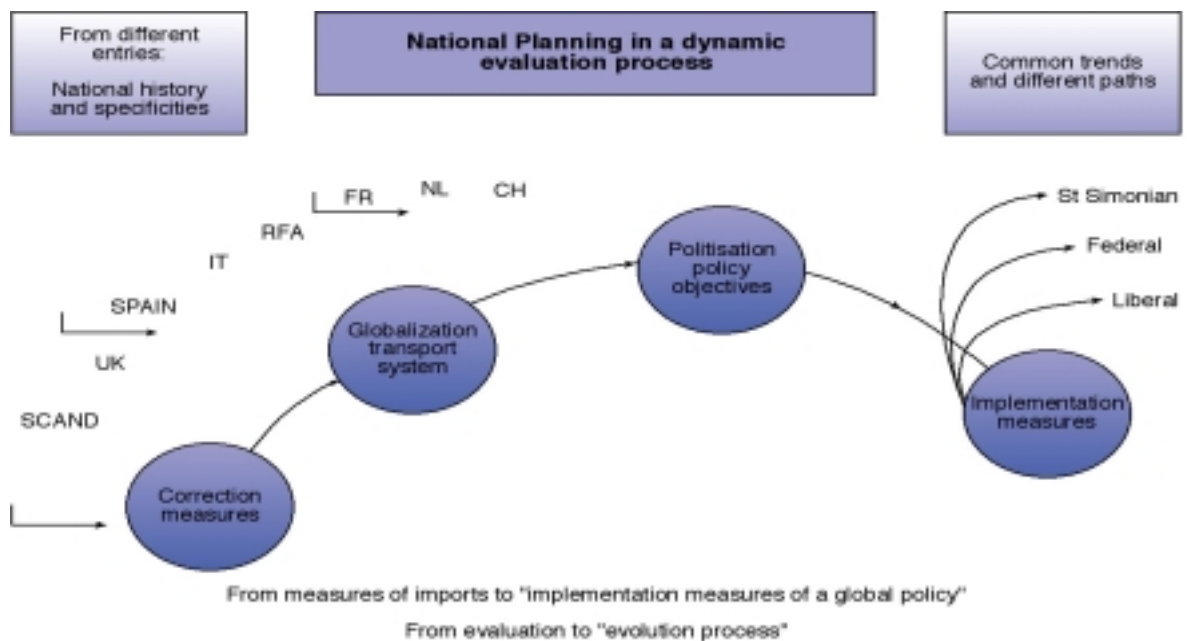
The future trend now is for countries to take elements from both these together and combine their respective advantages whilst discarding the disadvantages. But there are limits in common trends. Those limits are inherent to the limits of the country itself. After the single market, Europe is trying to adapt its institutions, define common values, and set a new model of co-operation: between a better approach and federalism. In Europe the choice is not clear and this diversity is reflected in transport planning, to some extent.

The information system, the methods' needs and the decision-making process are influenced by the initial planning system of the country and how the planning process has evolved. The deficiency in information available is often stressed. The systematic approach raised more and more difficult theoretical problems for strategic evaluation and the decision process is enlarged and complicated with the participation of stakeholders. Validation of a decision is no longer the result of economic evaluation but also the result of a 'democratic' process built upon dialogue between public

bodies concerned and public consultation. This consultation is a national planning process that is presented in two parts.

In the first part, the common trends of the planning process will be stressed: trend towards globalisation and politicisation of the objectives as well as new dimensions for implementing measures. The trends are obviously not independent but appear different from one country to another. A country might first stress its policy objectives before developing a strong system approach. The prescriptive part of the process, in this respect, will be very contradictory. Some global, theoretical approaches might not be included with strong policy measures. Strong transport measures might not refer to policy objectives or even global transport policy. However, it is more and more necessary to clarify the objectives of a transport measure and many countries have developed monitoring tools to evaluate more accurately actual policy impact.

The diagram below illustrates this concept of the National planning process, at what stage of this process various European countries are at and how evaluation is becoming more and more integrated into the process:



In this evolution process, the quality of expertise is very important. Statistics and models are often unable to meet policy maker needs. The system approach is very demanding, but a decision support tool will never be a substitute for the political responsibility of the decision matter. Therefore the “legitimacy” of the decision-making process becomes more and more important. The decision process becomes part of the system analysis, and gives the planning process a dynamism over time with phases of defining and evaluation of impacts of decisions. The prescriptive approach which could be considered more direct and simple to implement also becomes more complex because of constraints of transparency and efficiency.

The second part is an analysis of the different national planning processes and illustrates the analysis proposed in the first part. Again, the presentation of this

national policy document might differ considerably from country to country; the history of the process remains very strong and changes are not always explicit. The reference to the tools used, the information available and the decision process through national institutions is therefore very important and can only result from literature reviews from the first ten to twenty years. Because of a uniform trend of concepts and expertise, the differences are often more important in reality than they might appear through the reading of official documents.

An integrated transport system

Several countries have attempted to develop a global approach to the system of transport. The first one is probably Switzerland in the sixties, followed by the Netherlands, Germany and France. Switzerland expressed clearly this new approach. It is however more difficult afterwards to give a strict classification of the date of development of such approaches but it became clearly a tendency in the countries mentioned above.

At the beginning of the nineties the Commission mandated M. Pisani and Mrs Smitkroes to write a report on transport policy : in this report which still is an important reference for CTP this goal of global approach was proposed for a CTP.

Since then most countries moved towards this direction pushed either by the development of transport evaluation methodology (and the importance of the interdependencies between transport components) or by the politicisation of the transport planning process.

However it is important to stress that the reference to these objectives cover different realities. The tools employed and the mobilisation of institutions vary significantly from one country to another. Therefore a more accurate appreciation will only result from a deep analysis of the planning process itself.

The system approach indeed requires quite an important methodological background and a long decision process where different stakeholders are consulted:

- the methodological background has become more sophisticated and can be characterised by the definition of scenario, the use of projection tool and an evaluation methodology which in turn raised back the existence of the system of information
- a decision process has become more complex and cannot be the result of one institution or one administration involvement. Dialogue with professional and regions are necessary. However dialogue with neighbouring countries which would be also important is not yet a common practice.

The methodological background and the decision process have put new constraints and a stronger emphasis on the information system for transport planning. From general economic data showing the importance of the transport sector as a part of GDP, in public investment and in household budget, more information is required for the physical and territorial impacts of transport activity. For example, flows between regions for goods and passengers, geographical descriptions of infrastructure networks to measure accessibility indicators, land-use patterns and how they relate to transport infrastructure, emissions to assess impact on environment and more recently

implementation of monitoring systems (for example, motorway observations), so that the affects of a decision made can be measured (ex post evaluation).

For many countries the development of the information system reflects the importance given to the planning process as well as the approach prioritised; consistent detailed analysis of the transport system or just focusing on a few political indicators.

The information system is the starting point of any modelling to prepare projections and forecasts. The lack of appropriate transport statistics, as well as the lack of harmonisation of data between modes and countries is still regularly cited as hampering the proper development of the planning process. However, everybody now agrees that this critical situation should not prevent any attempt on qualitative analysis and projection modelling.

The increasing number of actors also raises new requirements and information needs. Physical information for social and environmental impacts, as mentioned before, but also information targeted to different social groups and actors.

Additionally, the information must be available over time, to permit monitoring and follow-up actions, so that the involvement of actors is possible throughout the whole planning process.

Therefore, the information is also the “end point” of the planning process and becomes a critical factor of its success.

The evaluation of the system approach is changing significantly. Ten or twenty years ago the planning process was renewed every five years (sometimes ten years, but not often) with a horizon in mind of ten or twenty years ahead. Decisions were taken according to investment priority (mainly infrastructure investment). The assessment of projects and how they were prioritised was made only once, for the following period, again mainly concerning infrastructure projects. The model approach was still very strong and only a few decisions were taken as regards trade off between modes. The planning process gave the framework for national and modal master-plans. Except in a few countries where methodologies to evaluate a modal infrastructure were not really harmonised except perhaps in countries like Germany. Attempts have also been made in France but were not fully satisfactory. The harmonisation of evaluation techniques between countries for road projects has probably made more progress in Europe than the harmonisation between modes within the same country.

The actual decisions made, ex post, is a different problem. It varies from one country to another. Such analyses should only be made by taking into account two important factors:

- The underlying hypothesis concerning the socio- economic environment as well as major transport policy decisions (tariffs and taxes for example): some are more realistic or optimistic than others.
- The annual budget figures, which decides which amount of public investment will be granted to transport, and respective modes of transport each year; the financial planning of the project rarely overrules the yearly budgetary

decisions in most countries. In fact the attempt to vote a multi-annual (e.g., a period of five years as opposed to every year) financing plan failed in France at the beginning of the eighties and subsequently the planning process lost much of its strength until the recent development of the new concept “schemas de services” (transport master-planning).

In Germany, the former plan of 1992 was closely linked to re-unification and this very important objective gave the process a moral strength so that the important volume of investments was maintained over the last ten years, although traffic predictions were not reached. In the Netherlands, passenger predictions also differed from the reality, but the planning process was more directed towards a global transport policy and less towards a hierarchical list of prioritised projects.

As compared to former planning processes, it is important to stress that the “new wave” of national plans are changing. The decision process becomes more and more a “dynamic” process where consultation procedures and information have become more important to the final decisions taken, as compared to more formal processes with well-identified outputs, resulting from a chosen evaluation technique whether it be CBA, or MCA (which does not mean that these techniques are no longer used, or even can be improved to adapt to new objectives).

Referring to the first TRANS-TALK seminar, a sequence of steps was proposed to characterise evaluation in transport: Information, Method, Evaluation and Decisions.

For such a sequence one could now substitute: Information Systems, method definition and decision procedures as being three components of an “evaluation process” of projects and policies, which in fact, becomes a new version of the planning process.

Therefore one should differentiate evaluation “techniques” from evaluation “process” which includes techniques, the information system and the decision procedure (which in turn includes the consultation process). The evaluation “techniques” were orientated towards social-economic efficiency. The evaluation process relies on both, socio-economic efficiency *and* political legitimacy.

This is probably why more and more planning processes tend to become a “sliding” process, with implementation of a monitoring system (or ex post evaluation) in order to connect trajectories or to adapt to the methodologies.

The political dimensions

Political objectives and corrective measures

Many countries do not have an actual planning process and have actively chosen not to have one. They limit the scope of their medium and long-term transport policy to several specific objectives related to infrastructure, investment, taxation and implementation of safety and environmental measures.

During the eighties, transport planning was weakened. Priority was put on the privatisation of public companies and liberalisation of the market, in particular liberalisation of the road transport sector. The prospect of the single market and open

access to European markets were pushed in the same direction: liberalisation was the pillar of European construction.

In the U.K, the government prioritised the market and proposed the privatisation of infrastructure on a grand scale: motorway privatisation was the objective in parallel with privatising rail operations and road infrastructure management.

In France, the planning process was also weakened and focus was put upon a more consultative process at the beginning of the nineties. It is only during recent times that the concept “ schema de services” has been implemented.

In this second approach to long term transport policy only a few general objectives are set. They are not specific to transport although their implementation in the transport sector might involve significant changes as demonstrated in the U.K; because of the history of the transport sector and because of the fact that it has always been a strongly regulated sector with important public interventions. The interactions between different types of actors and between the different components of the transport sector are not really considered. Only a few measures are considered and most of them are corrective to market rules, i.e., indirect interventions in transport organisation and performance.

In such a scheme the development of infrastructures as well as the development of public transport are considered as specific problems but irrelevant to the more general policy statement: they are technical problems that are managed by specialised administrations or agencies (e.g., road administration) or problems relevant to local administration (decentralisation).

Corrective measures to market rules

The corrective measures have been firstly, liberalisation and open access. Privatisation of large public companies cannot be only treated as corrective measures; it often appeared more difficult than expected and implied significant re-organisation of the transport sector. The privatisation of rail in the U.K has shown that it is not sufficient to decide on privatisation, but that long term analysis is necessary to manage long-term investment in infrastructure and maintenance.

However, some other measures can also be considered as corrective measures. Taxation of cars and petrol tax, for example. Different scenarios of tax increases on car usage are limited in European countries, but taxes must be harmonised at a European scale and the objectives of these scenarios are not always clear. Is the objective to reduce car usage or to increase budgetary revenue? Is this justified by the principle of internalisation of external costs?

After liberalisation and the single market, a major problem is now harmonisation at a European scale which includes not only taxation but also social harmonisation. Subjects are shifting from the economic field to a more social domain that is more difficult to handle because there are no simple principles such as “free enterprise” or “competition” to implement.

Technical approaches to infrastructure projects

In the technical approach to infrastructure investment, the general policy context has been certainly an indirect influence, mainly on the volume of the financial budgets

granted for public funding of infrastructure. But within global budgets, the choice of projects depends very much upon techniques to assess socio-economic profitability. Cost Benefit Analysis is still the most commonly used technique. Improvements are introduced concerning environmental impacts and safety, but the value of time is still a very critical parameter for inter-modal or international comparisons of socio-economic rates of return. Multi-criteria analysis is also used.

These techniques are well developed in most countries for road projects and urban projects. Road project harmonisation now needs to progress at a European scale.

Very often financial budgets are determined for each mode and there are no real multi-modal choices. These techniques are rarely applied to inter-modal terminals which are associated to rail infrastructure or port projects. Some regional plans do include multi-modal terminals, but terminal master-plans only exist in countries where a more global system approach has been developed.

In the application of the techniques a difficult subject is the traffic forecasts. Some general indicators of average traffic growth can be taken as a reference for infrastructure projects; but very often traffic forecasts are made independently for each mode and sometimes for each project with different socio-economic hypotheses relative to GDP growth. There is still no real link between project evaluation and programme evaluation for a complete set of projects.

Decentralised local choices

A limited national planning process does not necessarily imply a weak local planning process. The U.K gives a very good example of such a situation: limited national orientation for long term planning associated with a strong local planning system. Methodologies have been developed at national level with links to universities and high expertise consulting companies and then applied at a local level.

In many countries the importance given to local transport plans also reflects the importance of the role of local institutions. A major concern of local planning is the link between land-use and transport, which is a difficult area to co-ordinate and requires long-term policy actions.

The extension of political objectives and implementation measures

In more recent national plans, objectives are becoming more political. Their concerns with different areas of policy have increased so that transport policy embraces many aspects of social life. Their foundation is even changing and becoming less technical to allow wider public access. Such political presentations are also becoming more similar from one country to another so that it is difficult sometimes to identify the differences in the transport system analysis, and the tools used. Not a great deal of emphasis has been put on possible contradictions between objectives; safety for example, could be contradictory to energy saving (and consequently to CO² emissions), economic growth might imply more congestion and car use, the enlargement of Europe makes social harmonisation more difficult and so on....

In order to show this political determination to face transport problems, some governments have set some ambitious objectives and stressed implementation measures: strong reduction of casualties, strong transfers from car to public modes and the doubling of rail traffic to alleviate road traffic and reduce transport emissions.

This is the case in France and Germany where rail is expected to gain market share, a complete reversal of past trends. Although these types of objectives have not succeeded in the past they are presented as the sole possible solution to protect the environment.

The extension of political objectives has tended to cover the following objectives, with priority given to the environment. The protection of the environment and reduction of CO² emissions

- Promotion of rail and inter-modality
- Development of public transport and non-motorised modes
- Taxation and fuel prices
- Spatial cohesion and regional development
- European integration
- Social harmonisation
- Safety
- Democratisation of the decision process
- Monitoring and ex post evaluation

All have figured prominently in the previous sections of this report. Further details are available in Reynaux and Panzera (2001). The following table illustrates how these major political objectives have broadly figured in six countries' national masterplans.

	U.K	France	Italy	Nether-lands	Scandina-via	Germany
1. Protection of the Environment	++	++	++	+++	+++	++
Reducing CO ² emissions	++	++	++	+++	+++	++
2. Rail promotion (freight)	+	+++	+	++	+	+++
Inter-modality	++	+++	++	++	+	++
3. Public Transport improvements	++	++	+	++	+	+
Promoting non-motorised modes	+	+	+	+++	+	+
4. Taxation/ fuel prices	+	+	++	++	++	++
5. Spatial cohesion	++	+++	++	++	+	++
Regional development	+	++	++	++	++	+
6. European integration	+	++	+	+++	+	++
7. Social harmonisation	++	++	++	++	++	+++
8. Safety	++	++	++	+++	++	++
Democratisation	+	++	++	+++	+++	++
10. Monitoring / Evaluation	++	+	+	+++	+++	+

Assessment

The developments sketched out in this review of national transport plans (masterplans), although separate from the second TRANS-TALK workshop, complements the arguments that developed through the workshop papers and their subsequent discussion. Many of the issues that show through in tracing the historical development of such plans across different European states are precisely those that the papers have highlighted. In this regard, it is safe to say that many of these important evaluation questions are indeed “work in progress”, not only for specialists in evaluation, but also for the users of evaluation in practice.

7. Conclusions

Overall, we conclude that there is a need for technical improvement in evaluation, but that even more important is the need to open and maintain effective lines of

communication between analysts and decision takers. The user need dimension is critical. While the interactions between those developing methodologies and those using them can often be a challenging one, it is also potentially rewarding and of tremendous importance. The TRANS-TALK series of workshops have made a valuable contribution, but the spirit of mutual challenge and collaboration needs to be maintained, in the interests of all parties involved. In summary, the key messages to emerge are these:

- Transport evaluation has a strong technical pedigree and institutional basis. Nonetheless there are important issues to be resolved. Users/politicians complain that (a) they do not get what they ask for; (b) they do not get the input at the right time; (c) there is a lack of transparency and (d) they do not understand what it is all about.
- When such communication failures occur, it is advisable to reflect on what evaluation is good for.
- Broadly, there are two possible answers: (a) evaluation is a tool to assess value for money - as such it must be independent and separate from the decision process; (b) evaluation is a tool to help negotiation and deliberation. The two answers reflect different interpretations of the role and function of evaluation and perhaps also different world-views.
- Evaluation should arguably a mixture of both, although multiple roles put special emphasis on the need for clarity of understanding about the whole process of planning transport actions and the need to understand what role evaluation can take at different stages (especially bearing in mind practical considerations like data availability and the time frame that evaluation must be undertaken within if it is to be useful), and the relationship between evaluations undertaken at different stages.
- Evaluation is the servant of its users. But contemporary evaluation must serve many users. This is complicated by the changing scale and nature of planning processes, increased delegation and the parallel quest for more formalised procedures. The increase in the number of users also reflects that there is a wider range of questions to be answered (environment, social concerns, etc.). Besides setting new technical challenges the increase of the number of users posits procedural challenges (democratisation of decision-processes is less about the outputs, more about the process of reaching outputs).
- Reflection on the history of national transport plans and their development both reinforces many of the above points and serves as a basis for learning about how better to integrate evaluation into transport planning as a whole.
- The procedural challenges and related communication problems necessitate paying more attention to the framework to be followed in evaluation. Thus even if we remain within a CBA/MCA frame of analysis, it is clear that any CBA must be extended through consideration of MCA, but more importantly preceded by a brainstorming/discussion on key issues.
- We should not despair that these technical and procedural problems cannot be solved. Indeed in part they are solved already. The question remains rather one of applying new knowledge about evaluation (for example concerning economic development, sustainability, local assessment) and of embedding these technical developments in an appropriate social and political process.

References:

- Bristow, A.L. and Nellthorp, J. (2000) Transport Project Appraisal in the European Union, *Transport Policy* vol. 7, p51-60.
- Dodgson JS (1973), "External Effects and Secondary Benefits in Road Investment Appraisal" in *Journal of Transport Economics and Policy* 7(2).
- J. Dodgson, M. Spackman, A.D. Pearman and L.D Phillips, *Multi-Criteria Analysis: a Manual*, Department of the Environment, Transport and the Regions, London, pp.158, 2000. ISBN: 1 85112 454 3. Also at:
<http://www.environment.detr.gov.uk/multicriteria/index.htm>
- European Conference of Ministers of Transport (ECMT) (1998), *Efficient Transport for Europe: Policies for Internalisation of External Costs*. OECD, Paris.
- Foster CD (2001), 'Michael Beesley and cost benefit analysis' in *Journal of Transport Economics and Policy*, 35, p3-30.
- Grant-Muller SM, Mackie PJ, Nellthorp J and Pearman AD (2001), 'Economic Appraisal of European Transport Projects - The State of the Art Revisited' in *Transport Reviews* 21(2), p237-261.
- Jara-Diaz SR (1986), 'On the relation between users' benefits and the economic effects of transportation activities', *Journal of Regional Science* 26, p379-391.
- Martinez F and Araya CA (1998), 'Land use impacts of transport projects: user benefits, rents and externalities'. Paper presented at the 8th World Conference on Transport Research, Antwerp.
- Mohring, H. and Williamson (1969) Scale and "Industrial Reorganisation" Economies of Transport Improvements, *Journal of Transport Economics and Policy*, vol 3, pp251-271.
- Nellthorp, J., Mackie, P.J. and Bristow, A.L. (1998) *Measurement and Valuation of the Impacts of Transport Initiatives*, EUNET, Deliverable 9.
- OEEI (2000), *Appraisal of Infrastructural Projects: Guide for Cost-Benefit Analysis*.
- Parsons, W. (2000) *Analytical frameworks for policy and project evaluation: from welfare economics and public choice to management approaches*, paper presented to the first TRANS-TALK workshop, Brussels, 2000.
- Pearce, D.W. and Nash, C.A. *The Social Appraisal of Projects*, MacMillan, London, 1981.
- Reynaux, C. and Panetta, A. (2001) Overview of Evaluation Experiences and Lessons learnt through Different Transport Planning Procedures in Europe, INRETS, Paris. (Report prepared as part of TRANS-TALK, work package 3).
- Roy, R (1995), *Lost and found: the community component of the economic return on the investment in PBKAL*. European Centre for Infrastructure Studies Report, Rotterdam.
- SACTRA (Standing Advisory Committee on Trunk Road Assessment) (1999), *Transport and the Economy*. London: TSO.
- Simmonds D and Marcial Echenique & Partners (1999), *Review of Land Use and Transport Interaction Models*. Report to SACTRA Committee. London: DETR.
- Sugden, R. and Williams, A. *The Principles of Practical Cost-Benefit Analysis*, Oxford University Press, 1978.

Tinch R (1996), *The Valuation of Environmental Externalities*. London, HMSO.

Williams HCWL (1977), 'On the formation of travel demand models and economic evaluation measures of user benefit', *Environment and Planning A* 9, p285.

Wilson A (1998), "Land-use/transport interaction models - Past and future" in *Journal of Transport Economics and Policy*, 32(3).

Appendix 1

Deliverable 4: Evaluation Approaches and Database

Within Work Package 3 of TRANS-TALK, one of the tasks has been to undertake an overview and assessment of policy and project evaluation methods. This has been accomplished through a survey focusing principally on projects from the Fourth Framework Programme. The information collected has been presented within an Access database. Additionally, a description of the data gathering task and an assessment of the information obtained has been written up as TRANS-TALK Deliverable 4.

Deliverable 4 has sought to clarify the focus and key characteristics of the most common evaluation procedures being employed in the projects surveyed. It has taken account of the different policy situations to which the evaluation procedures have been applied and recognises the different user requirements, welfare and other assumptions reflected in the methods chosen.

Evaluation methods were characterised in terms of:

The level of analysis: Do the methods focus on the project level, the strategic level or the policy level: Project level evaluation methodologies focus on one particular infrastructure project appraisals; strategic-level evaluation methodologies consider sets of infrastructure projects or transport initiatives and examine these under specific external and/or internal conditions; and policy assessment methodologies look into the effects of one or a set of policy instruments on specific impact groups, or focus on the field of implementation in relation to institutional assessment. Each set of methodologies requires different tools and relies on different sets of data.

The scope of analysis: Depending on both pragmatic and theoretical considerations, different methodologies focus on one or a multiple set of impact types. In the latter case, how the impacts are combined (or weighted) differs depending on the underlying welfare assumptions of the method used, i.e. whether a cost-benefit, multi-criteria or system analytic perspective is taken.

The timing: It is necessary to distinguish between analysis undertaken for determining the contents of policy at the onset of policy or project implementation (ex-ante evaluation); assessment exercises undertaken for the purpose of monitoring or evaluating the progress of policy and/or project implementation (on-going evaluation); and analysis undertaken for providing policy-makers with information important for policy or project advocacy after the completion of the policy/project (ex-post evaluation). The user requirements differ in each case and need to be made explicit.

The context of evaluation and of decision-making: This may differ according to the level, scope and timing of the exercise, but also with reference to the theoretical level used (i.e. the principal assumptions made about public policy and societal relations). In this latter connection the value framework of both evaluators and policy-makers is an important contextual factor that needs itself to be placed under scrutiny and the question of the role of evaluation is in this case unavoidable. The problem of many

evaluation methodologies in the field of transport is that they are developed for a particular situation, often in a bottom-up fashion, and that they are not explicit about the context in they operate, making it difficult to apply them more generically –in that they are more akin to applications than to methodologies. An additional problem is that of interactions: for instance, methodologies focusing on the evaluation of projects still need to consider the policy context in which projects are implemented and the latter is neither homogeneous nor constant.

Projects included in the survey constituted a sub-set of those listed in Annex I of the *Report of Research Projects on Transport Economics*⁶. The selection process was completed in two stages:

- the first stage involved identifying and creating subsets of projects that relate to the main research areas of the 4th transport RTD FP -i.e. strategic research, rail transport, integrated transport, air transport, urban transport, waterborne transport and road transport.
- The second stage involved selecting projects from each of the above subsets, giving the highest priority to DG-TREN's projects; followed by projects sponsored by other DGs.

Approximately 100 projects were chosen for detailed examination, and from these a total of 42 usable replies was received from project coordinators.

From the statistical analysis of the questionnaires a number of conclusions can be drawn. The TRANS-TALK questionnaire asked specifically about research addressing six themes addressed in Workshop 2:

- Transport and economic development
- Distribution, Aggregation and Attribution
- Environmental evaluation
- Network effects
- Welfare basis of evaluation
- Time–Term-Uncertainty

26 out of the 42 projects have contributed in advancing the state of the art in one or more of the six research areas presented. Most of the contributions were found in the areas of “Transport and economic development”, “Strategic Research”, “Network effects”, “Environmental evaluation”, and “Welfare basis of evaluation”. TENASSESS, TERMINET, ECOPAC, EUNET, PROFIT, SAMI, ASTRA and ECONOMETRIST, for example, from the Strategic Research area have all developed their own advanced techniques and methods.

More specifically, the following correlations have been observed:

- Projects in the Strategic Research area have advanced the state of the art in the fields of Transport and Economic Development and Network Effects;
- Projects in the Road Transport area have advanced the state of the art in the area of Environmental Evaluation;
- Projects in the Rail Transport area have advanced the state of the art in the area of Network Effects.

⁶ ECMT, Documentation Centre, "Research on transport Economics", Vol. XXXII, Paris, 2000

There is also a notable contribution in advancing the state of the art from projects, which have a research orientation in the area of Road Transport.

As far as the rest of the research areas are concerned, there is a substantially smaller number of projects that have developed their own advanced techniques to solve particular projects. Especially is the Waterborne Transport area, none of the projects has dealt with any methodological issues that would require advancing the state of the art. It should be noted, however, that this conclusion is indicative - not decisive - since the size of the sample was quite small and the multiple objectives of each project will have caused some diffusion of the results.

The TRANS-TALK questionnaire also examined the extent to which projects have applied existing best practice. Principal findings were that:

- Projects focused in Urban Transport have applied existing best practice in the area of Time-Term-Uncertainty;
- Projects focused in Integrated Transport have applied existing best practice in the area of Network Effects;
- Projects focused in Strategic Research have applied existing best practice in the area of Transport and Economic Development.

In general 25 out of 42 projects have applied existing best practice in some of the research areas regarded within TRANS-TALK as requiring further development. The only positive, although, weak conclusion that was drawn indicated that many projects of the “*Strategic and Economic Development*” area have dealt with advancing the state of the art of particular methodological issues (see for example the projects ECOPAC, ECONOMETRIST and E-EIS).